



TEST REPORT

Reference No...... : WTN17F1298697S
Applicant..... : CIXI RUNSUN ELECTRICAL APPLIANCE CO LTD.
Address..... : LONGTOUCHANG INDUSTRIAL PARK, LONGSHANG TOWN, CIXI CITY, NINGBO CHINA
Manufacturer..... : CIXI RUNSUN ELECTRICAL APPLIANCE CO LTD.
Address..... : LONGTOUCHANG INDUSTRIAL PARK, LONGSHANG TOWN, CIXI CITY, NINGBO CHINA
Product Name..... : TWIN TUB WASHING MACHINE
Model No...... : See model list on page 3
Standards..... : Safety of household and similar electrical appliances
Part 2-4: Particular requirements for spin extractors
Part 2-7: Particular requirements for washing machines
IEC 60335-1:2010+A1:2013
IEC 60335-2-4:2008+A1:2012
IEC 60335-2-7:2008+A1:2011
Date of Receipt sample..... : 2017-12-17
Date of Test..... : 2017-12-18 to 2018-01-02
Date of Issue..... : 2018-01-04
Test Report Form No...... : WSH-6033524&7H-01A
Test Result..... : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

Waltek Services (Foshan) Co., Ltd.

Address: No. 13-19, 2/F, 2nd Building, Sunlink International Machinery City, Chencun Town, Shunde District, Foshan, Guangdong, China
Tel: +86-757-23811398
Fax: +86-757-23811381

Compiled by:

William He

William He / Project Engineer

Approved by:



Jerry Mu
Jerry Mu / Manager



Test item description: TWIN TUB WASHING MACHINE

Trade Mark: See label

Model/Type reference: See model list on page 3

Ratings: See model list on page 3

Copy of marking plate:

Model:XPB80-800S
Rated Washing Capacity:8.0kg
Rated Spinning Capacity:3.8kg
Rated Washing input Power:480W
Rated Spinning Power:180W
220V-240V~ 50/60Hz IPX4 660W



Qualified Certification

Item No.:XPB80-800S

Inspector Number:01

Production Number:

CIXI RUNSUN ELECTRICAL APPLIANCE CO LTD.

Remark:

1. All models use the same label except model name and rating.
2. When the equipment is vended to EU, then name and address of the importer or authorized representative within the EEA shall be added on the equipment.

National differences:

EU group differences were considered according to below standard:

EN 60335-1:2012+A11:2014

EN 60335-2-4:2010+A1:2015

EN 60335-2-7:2010+A1:2013+A11:2013

EN 62233:2008

Summary of testing:

1. These samples are tested and complied with the requirements of standards listed on this report.
2. Full tests were carried out on model XPB80-800S assembled with washing motor XPD150 and spinning motor XTD-60. Tests of clause 10, 11, 13, 19.7 and Annex D were carried out on model XPB36-800S assembled with washing motor XPD-90 and spinning motor XTD-30. Tests of clause 10, 11, 13, 19.7 and Annex D were carried out on model XPB58-800S assembled with washing motor XPD-120 and spinning motor XTD-45. Test of clause 21.101 was carried out on all models.

**Test item particulars**

Classification of installation and use.....: Stationary appliance and indoor used only

Supply Connection.....: Power cord with a non-detachable plug, type Y

Possible test case verdicts:

- test case does not apply to the test object.....: N

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

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

General remarks:

"(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 point is used as the decimal separator.

General product information:

1. The appliance is for household and indoor use only.
2. All models are totally identical except for rated capacity, washing motor and spinning motor.

Details see below table:

Details see below table.								
Model	Wash capacity (kg)	Spin capacity (kg)	Ratings	Protection Class	Capacit or	Wash motor	Spin motor	Outlook appearance
XPB25-800S	2.5	2.0	220-240V~, 50/60Hz , 360W	Class I, IPX4	7+3μF	XPD90	XTD-30	a
XPB28-800S	2.8							
XPB32-800S	3.2							
XPB36-800S	3.6							
XPB42-800S	4.2	3.2	220-240V~, 50/60Hz , 440W	Class I, IPX4	10+4μF	XPD-120	XTD-45	b
XPB48-800S	4.8							c
XPB52-800S	5.2							d
XPB58-800S	5.8							e
XPB60-800S	6.0	3.2	220-240V~, 50/60Hz , 660W	Class I, IPX4	12+5μF	XPD-150	XTD-60	f
XPB68-800S	6.8	3.5						
XPB72-800S	7.2							
XPB78-800S	7.8	3.8						
XPB80-800S	8.0							h



IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
5	GENERAL CONDITIONS FOR THE TESTS		P
	Tests performed according to clause 5, e.g. nature of supply, sequence of testing, etc.		P
5.2	The tests of 21.101, 21.102 and 22.101 are carried out on the same appliance as that used for the test of Clause 18 (IEC 60335-2-4)		P
	The relevant tests of 21.101, 21.102 and 22.104 shall be carried out on the same appliance used for the test of clause 18 (IEC 60335-2-7)		N
5.3	The tests of 21.101 and 21.102 are carried out before the test of clause 18. The test of 22.101 is carried out after the test of Clause 18 (IEC 60335-2-4)		P
	Test of 15.101 carried out before test of 15.3 (IEC 60335-2-7)		P
	Relevant tests of 21.101 and 21.102 carried out before test of clause 18 (IEC 60335-2-7)		N
	The test of 22.104 is carried out after the test of clause 18 (IEC 60335-2-7)		N
5.7	Doubt is considered to exist if the temperature of the water is within 6 K of the boiling point and the difference between the temperature rise of the relevant part and the limit specified does not exceed 25 K minus the room temperature. (IEC 60335-2-7)		N
6	CLASSIFICATION		P
6.1	Appliances shall be of Class I, II or III..... : (IEC 60335-2-4 & 7)	Class I	P
6.2	Protection against harmful ingress of water		P
	Appliances at least IPX4 (IEC 60335-2-4 & 7)	IPX4	P
7	MARKING AND INSTRUCTIONS		P
7.1	Rated voltage or voltage range (V)..... : :	See model list on page 3	P
	Symbol for nature of supply, or..... :	See model list on page 3	P
	Rated frequency (Hz)..... :	See model list on page 3	P
	Rated power input (W), or..... :	See model list on page 3	P
	Rated current (A)		N
	Manufacturer's or responsible vendor's name, trademark or identification mark	See label	P
	Model or type reference	See model list on page 3	P
	Symbol IEC 60417-5172, for Class II appliances		N
	IP number, other than IPX0	IPX4	P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Maximum water level for appliances without automatic water level control (IEC 60335-2-7)		P
	Symbol IEC 60417-5180, for Class III appliances, unless		N
	the appliance is operated by batteries only		N
	Symbol IEC 60417-5018, for class II and class III appliances incorporating a functional earth		N
	Symbol IEC 60417-5036, for the enclosure of electrically-operated water valves in external hose-sets for connection of an appliance to the water mains, if the working voltage exceeds extra-low voltage		N
	Appliances not intended for connection to the hot water supply and not provided with heating elements shall be marked with the substance of the following: "Do not connect to the hot water supply" (IEC 60335-2-7)		P
7.2	Warning for stationary appliances for multiple supply		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		P
	Different rated values marked with the values separated by an oblique stroke		N
7.4	Appliances adjustable for different rated voltages or rated frequencies, the voltage or the frequency setting is clearly discernible		N
	Requirement met if frequent changes are not required and the rated voltage or rated frequency to which the appliance is to be adjusted is determined from a wiring diagram		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 arithmetic mean value of the rated voltage range		P
	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		P
	Symbol for nature of supply placed next to rated voltage		N
	Symbol for Class II appliances placed unlikely to be confused with other marking		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Units of physical quantities and their symbols according to international standardized system		P
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply, unless		N
	correct mode of connection is obvious		N
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		N
	- marking of terminals exclusively for the neutral conductor (letter N)		N
	- marking of protective earthing terminals (symbol IEC 60417-5019)		P
	- marking of functional earthing terminals (symbol IEC 60417-5018)		N
	- 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 use of figures and letters.	P
	This also applies to switches which are part of a control		P
	If figures are used, the off position indicated by the figure 0		P
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		P
	If the off position is only indicated by letters, the word "off" is used. (IEC 60335-2-4 & 7)		N
7.11	Indication for direction of adjustment of controls		P
7.12	Instructions for safe use provided		P
	Details concerning precautions during user maintenance		P
	The instructions state that:		P
	- the appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction		P
	- children being supervised not to play with the appliance		P



IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	For a part of class III construction supplied from a detachable power supply unit, the instructions state that the appliance is only to be used with the power supply unit provided		N
	Instructions for class III appliances state that it must only be supplied at SELV, unless		N
	it is a battery-operated appliance, the battery is a primary one or a secondary one charged outside of the appliance		N
	For appliances for altitudes exceeding 2000 m, the maximum altitude is stated :		N
	The instructions for appliances incorporating a functional earth states that the appliance incorporates an earth connection for functional purposes only		N
	Maximum mass of dry cloth in kilograms, specified (IEC 60335-2-4 & 7)		P
7.12.1	Sufficient details for installation supplied		N
	For an appliance intended to be permanently connected to the water mains and not connected by a hose-set, this shall be stated		N
	If different rated voltages or different rated frequencies are marked, the instructions state what action to be taken to adjust the appliance		N
	If the label specified in 7.101 is supplied with the appliance, the installation instructions shall state that it has to be permanently fixed to the wall close to the appliance (IEC 60335-2-4)		N
	For appliances intended for communal use in blocks of flats, and having an interlock system that has to be energized in order to release the lid, the installation instructions shall state that a device for switching off the appliance automatically is not to be installed in the supply circuit (IEC 60335-2-4)		N
	For washing machines having ventilation openings in the base, the installation instructions shall state that the openings must not be obstructed by a carpet (IEC 60335-2-7)		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		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions state that the fixed wiring must be protected		N
7.12.4	Instructions for built-in appliances:		N
	- dimensions of space		N
	- dimensions and position of supporting and fixing		N
	- minimum distances between parts and surrounding structure		N
	- minimum dimensions of ventilating 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	Type Y attachment	P
	Replacement cord instructions, type Z attachment		N
7.12.6	Caution in the instructions for appliances incorporating a non-self-resetting thermal cut-out that is reset by disconnection of the supply mains, if this cut-out is required to comply with the standard		N
7.12.7	Instructions for fixed appliances shall state how the appliance is to be fixed		N
	Fixing method shall not depend on the use of adhesives		N
7.12.8	Instructions for appliances connected to the water mains:		P
	- max. inlet water pressure (Pa).....:	0.85MPa	P
	- min. inlet water pressure, if necessary (Pa) :	0.01MPa	P
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		N
7.13	Instructions and other texts in an official language	English	P
7.14	Marking clearly legible and durable, rubbing test as specified		P
7.15	Markings 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



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		P
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		N
	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
	The symbol IEC 60417-5018 placed next to the symbol IEC 60417-5172 or IEC 60417-5180		N
	The caution relating to connection to the hot water supply shall be on the appliance at its point of attachment to the water supply (IEC 60335-2-7)		N
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		P
7.101	Appliances intended for communal use in blocks of flats, and having an interlock system that has to be energized in order to release the lid, shall be supplied with a label that states the substance of the following, unless the instruction is marked on the appliance: (IEC 60335-2-4)		N
	This spin extractor has to be connected to the supply mains before the lid can be opened. Do not force it open. (IEC 60335-2-4)		N
8	PROTECTION AGAINST ACCESS TO LIVE PARTS		P
8.1	Adequate protection against accidental contact with live parts		P
8.1.1	Requirement applies for all positions, detachable parts removed		P
	Lamps behind a detachable cover not removed, if conditions met		N
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap		N
	Use of test probe B of IEC 61032, with a force not exceeding 1 N: no contact with live parts		P
8.1.2	Use of test probe 13 of IEC 61032, with a force not exceeding 1 N, through openings in class 0 appliances and class II appliances/constructions: no contact with live parts		P
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032, with a force not exceeding 1 N: no contact with live parts of visible glowing heating elements		N
8.1.4	Accessible part not considered live if:		N
	- 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 μ F		N
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μ C		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:		N
	- built-in appliances		N
	- fixed appliances		N
	- appliances delivered in separate units		N
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
	For built-in appliances and fixed appliances, after installation, use of test probe B of IEC 61032		N
9	STARTING OF MOTOR-OPERATED APPLIANCES		N
	Requirements and tests are specified in part 2 when necessary		N
10	POWER INPUT AND CURRENT		P
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



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	If the power input varies throughout the operating cycle and the maximum value of the power input exceeds, by a factor greater than two, the arithmetic mean value of the power input occurring during a representative period, the power input is the maximum value that is exceeded for more than 10 % of the representative period		N
	Otherwise the power input is the arithmetic mean value		P
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N
	the rated power input is related to the arithmetic mean value		N
	The selected representative period is the period, such as filling with water, washing, rinsing, water extraction, spinning or braking, during which the power input is the highest (IEC 60335-2-7)		P
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2	(see appended table)	N
	If the current varies throughout the operating cycle and the maximum value of the current exceeds, by a factor greater than two, the arithmetic mean value of the current occurring during a representative period, the current is the maximum value that is exceeded for more than 10 % of the representative period		N
	Otherwise the current is the arithmetic mean value		N
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N
	the rated current is related to the arithmetic mean value of the range		N
	The selected representative period is the period, such as filling with water, washing, rinsing, water extraction, spinning or braking, during which the current is the highest (IEC 60335-2-7)		N
11	HEATING		P
11.1	No excessive temperatures in normal use		P
11.2	The appliance is held, placed or fixed in position as described.....:	In a test corner	P
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	the windings are non-uniform or it is difficult to make the necessary connections		N
11.4	Heating appliances operated under normal operation at 1.15 times rated power input (W)		N
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage (V).....	(see appended table)	P
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage (V).....		N
11.7	Appliances are operated for five periods of water extraction, the periods being separated by a rest period. Each rest period, which includes the braking time, has duration of 1 min for each kilogram of dry textile material or 4 min, whichever is longer. During the rest period, the textile material is re-saturated with water (IEC 60335-2-4)		P
	For appliances incorporating a programmer or timer, the water extraction period is the maximum allowed by the control (IEC 60335-2-4)		P
	For other appliances, the water extraction period has a duration of (IEC 60335-2-4)		N
	-15 min for continuous-flow rinsing appliances;		N
	- 5 min for other appliances.		N
	If a longer period is indicated in the instructions, this period applies instead (IEC 60335-2-4)		N
	Appliances with a programmer: (IEC 60335-2-7)		N
	-3 cycles with programme that results in highest temperature rises		N
	-rest period of 4 min between cycles		N
	Others appliances sequences of test as specified (IEC 60335-2-7)		P
	-for appliances without means for water extraction and for washing machines with a hand-operated wringer: washing		N
	-for appliances having a single drum for washing and water extraction: washing followed by water extraction		N
	-for appliances having separate drums for washing and water extraction, which can-not be used simultaneously: washing and water extraction separated by an additional 4 min rest period		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	-for appliances having separate drums for washing and water extraction, which can be used simultaneously washing together with water extraction so that the operations terminate simultaneously		P
	- for appliances having a single drum (dried=washed) washing followed by water extraction, followed by drying		N
	- for appliances having a single drum (dried<washed) washing followed by water extraction, followed by 2 drying periods, with an additional rest period 4 min before each drying period. In this case only 2 cycles of operation are carried out.		N
	For appliances with a timer, the washing period, the water extraction period and the drying are equal to the maximum period allowed by the timer (IEC 60335-2-7)		P
	For appliance without a timer (IEC 60335-2-7)		N
	Type of washing machine:		N
	Duration of washing (min)		N
	Duration of water extraction : 5min		N
	The rest period, including any braking time, has a duration of 4 min. (IEC 60335-2-7)		P
	After the specified sequence of operation, discharge pumps that are driven by a separate motor and switched on and off manually, are subjected to 3 operating periods separated by rest periods of 4 min. (IEC 60335-2-7)		N
11.8	Temperature rises monitored continuously and not exceeding the values in table 3	(see appended table)	P
	If the temperature rise of a motor winding exceeds the value of table 3, or		N
	if there is doubt with regard to Classification of insulation,		N
	tests of Annex C are carried out		N
	Sealing compound does not flow out		N
	Protective devices do not operate, except		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		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1.15 times the rated power input (W).....:		N
	Motor-operated appliances and combined appliances supplied at 1.06 times the rated voltage (V)	(see appended table)	P
	Protective impedance and radio interference filters disconnected before carrying out the tests		N
13.2	For class 0, class II, class II constructions and class III appliances, leakage current measured by means of the circuit described in figure 4 of IEC 60990		P
	For other appliances, a low impedance ammeter may be used		P
	Leakage current measurements	(see appended table)	P
	For stationary class I appliances, the leakage current not exceeding 3,5 mA, or 1 mA/kW of rated power input with a limit of 5 mA, whichever is greater(IEC 60335-2-7)		P
13.3	The appliance is disconnected from the supply		P
	Electric strength tests according to table 4.....:	(see appended table)	P
	No breakdown during the tests		P
14	TRANSIENT OVERVOLTAGES		N
	Appliances withstand the transient over-voltages 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.....:	(see appended table)	N
	No flashover during the test, unless		N
	of functional insulation if the appliance complies with clause 19 with the clearance short-circuited		N
15	MOISTURE RESISTANCE		P
15.1	Enclosure provides the degree of moisture protection according to Classification of the appliance		P
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		P
	No trace of water on insulation which can result in a reduction of clearances or creepage distances below values specified in clause 29		P
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529	IPX4	P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Water valves containing live parts 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		P
	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, and		P
	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		P
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		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, and		N
	for IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min		N
	Appliances with type X attachment fitted with a flexible cord as described		N
	Detachable parts subjected to the relevant treatment with the main part		P
	However, if a part has to be removed for user maintenance and a tool is needed, this part is not removed		N
15.2	Appliances shall be constructed so that spillage of liquid in normal use does not affect their electrical insulation (IEC 60335-2-4)		P
	Spillage of liquid does not affect the electrical insulation even if an inlet valve fails to close (IEC 60335-2-7)		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Appliances with type X attachment, except those having a specially prepared cord, are fitted with the lightest permissible type of flexible cord and having the smallest cross-sectional area specified in Table 13 (IEC 60335-2-4 & 7)		N
	The inlet to the discharge pump or to the gravity drain is blocked. The drum is filled as specified for normal operation, the mass of water being twice the mass of the dry textile material. Any water remaining after the saturation process is poured into the appliance, which is supplied at rated voltage and operated for 1 min or the maximum period allowed by the programmer or timer, whichever is shorter (IEC 60335-2-4)		P
	In addition, continuous-flow rinsing appliances having a vertical axis are completely filled with saturated textile material and 10 l of water is poured in over a period of 20 s. The appliance is then operated while supplied at rated voltage (IEC 60335-2-4)		N
	Appliances intended to be filled with water by the user are completely filled with water containing approximately 1 % NaCl. A further quantity of this solution equal to 15 % of the capacity of the appliance or 0,25 l, whichever is greater, is poured in steadily over a period of 1 min (IEC 60335-2-7)		N
	Other appliances are operated until the maximum water level is reached, and 5 g of the detergent specified in Annex AA is added for each litre of water in the appliance. The inlet valve is held open and the filling is continued for 15 min after first evidence of overflow or until the inflow is automatically stopped by other means (IEC 60335-2-7)		P
	For appliances that are loaded from the front, the door is then opened if this can be achieved manually and without damage to the door interlock system (IEC 60335-2-7)		N
	For all appliances, 0,5 l of water containing approximately 1 % NaCl and 0,6 % of rinsing agent, as specified in Annex AA, is poured over the top of the appliance, the controls being placed in the on position. The controls are then operated through their working range, this operation being repeated after a period of 5 min (IEC 60335-2-4 & 7)		P
	The appliance shall then withstand the electric strength test of 16.3 and inspection shall show that there is no trace of water on insulation that could result in a reduction of clearances or creepage distances below the values specified in Clause 29 (IEC 60335-2-4 & 7)		P
15.3	Appliances proof against humid conditions		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Checked by test Cab: Damp heat steady state in IEC 60068-2-78		P
	Detachable parts removed and subjected, if necessary, to the humidity test with the main part		P
	Humidity test for 48 h in a humidity cabinet	25°C, 93% R.H.	P
	Reassembly of those parts that may have been removed		P
	The appliance withstands the tests of clause 16		P
15.101	Foaming does not affect electrical insulation - Electric strength test according subclause 16.3 (IEC 60335-2-7)		P
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		P
16.1	Leakage current not excessive and electric strength adequate		P
	Protective impedance disconnected from live parts before carrying out the tests		N
	Tests carried out at room temperature and not connected to the supply		P
16.2	Single-phase appliances: test voltage 1.06 times rated voltage (V).....:	(see appended table)	P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by $\sqrt{3}$ (V)		N
	Leakage current measurements	(see appended table)	P
	Limit values doubled if:		N
	- all controls have an off position in all poles, or		N
	- the appliance has no control other than a thermal cut-out, or		N
	- all thermostats, temperature limiters and energy regulators do not have an off position, or		N
	- the appliance has radio interference filters		N
	With the radio interference filters disconnected, the leakage current do not exceed limits specified	(see appended table)	N
16.3	Electric strength tests according to table 7	(see appended table)	P
	Test voltage applied between the supply cord and inlet bushing and cord guard and cord anchorage as specified	(see appended table)	P
	No breakdown during the tests		P
17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		N
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use.....:	(see appended table)	N



IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Appliance supplied with 1.06 or 0.94 times rated voltage under the most unfavourable short-circuit or overload likely to occur in normal use (V).....:		N
	Basic insulation is not short-circuited		N
	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		N
	However, limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N
18	ENDURANCE		P
	Appliances having lids that can be opened while the drum is rotating shall be constructed so that braking mechanisms and lid interlocks withstand the stresses to which they may be exposed in normal use (IEC 60335-2-4)		P
	The appliance is supplied at 1,06 times rated voltage and operated under normal operation until the motor has reached its maximum speed. (IEC 60335-2-4)		P
	The lid is then fully opened. The test is repeated after the drum has been at rest for a period long enough to ensure that the appliance does not attain an excessive temperature (IEC 60335-2-4)		P
	The test is carried out (IEC 60335-2-4)		P
	- for braking mechanisms		P
	3 500 times for separate spin extractors		N
	1 000 times for spin extractors incorporated in washing machines		P
	- for lid interlocks, 6 000 times		P
	The textile material is re-saturated with water at least every 250 times (IEC 60335-2-4)		P
	After the test, the appliance shall be fit for further use and compliance with this standard shall not be impaired (IEC 60335-2-4)		P
18.101	Appliances shall be constructed so that the lid or door interlock withstands the stresses to which it may be exposed in normal use. (IEC 60335-2-7)		N
	The lid or door is subjected to 10 000 cycles of opening and closing (IEC 60335-2-7)		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	For appliances having a drying function, the number of cycles is 13 000 (IEC 60335-2-7)		N
	After the test, compliance with 20.103 to 20.105 shall not be impaired (IEC 60335-2-7)		N
18.102	The braking mechanism of appliances having a lid that can be opened during the water extraction period shall withstand the stresses to which it may be exposed in normal use. (IEC 60335-2-7)		N
	Appliance supplied at 1.06 rated voltage (IEC 60335-2-7)		N
	Test carried out 1000 times, the textile material re-saturated with water at least every 250 times (IEC 60335-2-7)		N
	After the test, the appliance shall be fit for further use and compliance with this standard shall not be impaired. (IEC 60335-2-7)		N
19	ABNORMAL OPERATION		P
19.1	The risk of fire, mechanical damage or electric shock under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe	(see appended table)	N
	Appliances incorporating heating elements subjected to the tests of 19.2 and 19.3, and		N
	if the appliance also has a control that limit the temperature during clause 11 it is subjected to the test of 19.4, and		N
	if applicable, to the test of 19.5		N
	Appliances incorporating PTC heating elements are also subjected to the test of 19.6		N
	Appliances incorporating motors subjected to the tests of 19.7 to 19.10, as applicable		P
	Appliances incorporating electronic circuits subjected to the tests of 19.11 and 19.12, as applicable		N
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		N
	Appliances incorporating voltage selector switches subjected to the test of 19.15		N
	Unless otherwise specified, the tests are continued until a non-self-resetting thermal cut-out operates, or		N
	until steady conditions are established		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	If a heating element or intentionally weak part becomes open-circuited, the relevant test is repeated on a second sample		N
	If more than one test is applicable to the same appliance, they are carried out one by one after the appliance cooled down to the room temperature		N
	For combined appliances, the tests carried out with motors and heating elements operating simultaneously under normal operation		N
	When a control required short-circuited, it may be rendered inoperative instead		N
	For appliances incorporating a programmer or timer, the tests of 19.2 and 19.3 are replaced by the tests of 19.101 (IEC 60335-2-7)		N
	Test of 19.7 is not carried out on motor driving moving parts of oscillating agitator (IEC 60335-2-7)		N
	Appliances not intended for connection to the hot water supply and not provided with heating elements are also subjected to the test of 19.102. (IEC 60335-2-7)		P
19.2	Test of appliances with heating elements with restricted heat dissipation; test voltage (V), power input of 0.85 times rated power input (W).....:	Replaced by the 19.101	N
	Restricted heat dissipation is obtained without water, with just sufficient water to cover the heating elements.....(IEC 60335-2-7)		N
19.3	Test of 19.2 repeated; test voltage (V), power input of 1.24 times rated power input (W).....:	Replaced by the 19.101	N
19.4	Test conditions as in clause 11, any control limiting the temperature during tests of clause 11 short-circuited		N
	If more than one control incorporated, they are short-circuited in turn.		N
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the sheath		N
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N
	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
	Appliances with a neutral, tested with it connected to the sheath		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
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 (V)		N
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque, or	Washing motor	P
	locking moving parts of other appliances		N
	Locked rotor, capacitors open-circuited one at a time		P
	If an appliance having more than one motor, each motor tested separately		N
	Test repeated with capacitors short-circuited one at a time, unless		N
	capacitor is of Class P2 of IEC 60252-1		P
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed		P
	An electronic timer or programmer that operates to ensure compliance with the test before the maximum period under the conditions of Clause 11 is reached, is a protective electronic circuit		N
	Other appliances supplied with rated voltage for a period as specified		N
	Winding temperatures not exceeding values specified in table 8	(see appended table)	P
	Test not applicable (IEC 60335-2-4)		P
	Appliances without a programmer or timer are operated for 5 min.....(IEC 60335-2-7)		N
19.8	Multi-phase motors operated at rated voltage with one phase disconnected		N
19.9	Test not applicable (IEC 60335-2-4)		P
	The running overload test is carried out on appliances that have overload protective devices incorporating electronic circuits to protect the windings of the drum motor. (IEC 60335-2-7)		N
	If the protective device senses the winding temperature directly, the test is not applicable. (IEC 60335-2-7)		N
19.10	Series motor operated at 1.3 times rated voltage for 1 min (V).....		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	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		N
	they comply with the conditions specified in 19.11.1		N
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8, unless		N
	restarting does not result in a hazard		N
	Appliances having a device with an off position obtained by electronic disconnection, or a device placing the appliance in a stand-by mode, subjected to the tests of 19.11.4		N
	If the safety of the appliance under any of the fault conditions depends on the operation of a miniature fuse-link complying with IEC 60127, the test of 19.12 is carried out		N
	During and after each test the following is checked:		N
	- the temperature of the windings do not exceed the values specified in table 8		N
	- the appliance complies with the conditions specified in 19.13		N
	- 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 both of the following conditions are met:		N
	- the base material of the printed circuit board withstands the test of Annex E		N
	- any loosened conductor does not reduce clearance or creepage distances between live parts and accessible metal parts below the values specified in clause 29		N
19.11.1	Fault conditions a) to g) in 19.11.2 are not applied to circuits or parts of circuits meeting both of the following conditions:		N
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		N
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction of other parts of the appliance does not rely on the correct functioning of the electronic circuit		N



IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
19.11.2	Fault conditions applied one at a time, the appliance operating under conditions specified in clause 11, but supplied at rated voltage, duration of the tests as specified:		N
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in clause 29		N
	b) open circuit at the terminals of any component		N
	c) short circuit of capacitors, unless		N
	they comply with IEC 60384-14		N
	d) short circuit of any two terminals of an electronic component, other than integrated circuits		N
	This fault condition is not applied between the two circuits of an optocoupler		N
	e) failure of triacs in the diode mode		N
	f) failure of microprocessors and integrated circuits except components such as thyristors and triacs		N
	g) failure of an electronic power switching device		N
	Each low power circuit is short-circuited by connecting the low-power point to the pole of the supply source from which the measurements were made		N
19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to g) of 19.11.2		N
19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or		N
	a device that can be placed in the stand-by mode,		N
	subjected to the tests of 19.11.4.1 to 19.11.4.7, the device being set in the off position or in the stand-by mode		N
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, the tests being carried out after the protective electronic circuit has operated, except that		N
	appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena.		N
	Surge protective devices disconnected, unless		N
	They incorporate spark gaps		N
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3		N
	The frequency ranges tested both from 80MHz to 1 000MHz and from 1,4GHz to 2,0 GHz		N
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified		N
	Test level 3 with a repetition rate of 5 kHz for signal and control lines		N
	Test level 4 with a repetition rate of 5 kHz for the power supply lines		N
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified		N
	An open circuit test voltage of 2 kV is applicable for the line-to-line coupling mode		N
	An open circuit test voltage of 4 kV is applicable for the line-to-earth coupling		N
	Earthed heating elements in Class I appliances disconnected		N
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		N
19.11.4.6	Appliances having a rated current not exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11		N
	Appliances having a rated current exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-34		N
	The values specified in IEC 61000-4-34 are applied at zero crossing of the supply voltage		N
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level Class 2		N
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60s the power supply is reduced to a level such that the appliance ceases to respond or parts controlled by the programmable component cease to operate		N
	The appliance continues to operate normally, or		N
	requires a manual operation to restart		N
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



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Temperature rises not exceeding the values shown in table 9.....:	(see appended table)	P
	Compliance with clause 8 not impaired		P
	If the appliance can still be operated it complies with 20.2		P
	Insulation, other than of class III appliances or class III constructions that do not contain live parts, withstands the electric strength test of 16.3, the test voltage as specified in table 4:		P
	- basic insulation (V)	1000V	P
	- supplementary insulation (V)	1750V	P
	- reinforced insulation (V).....	3000V	P
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstand the electric strength test of 16.3, the test voltage being twice the working voltage		P
	The appliance does not undergo a dangerous malfunction, and		P
	no failure of protective electronic circuits, if the appliance is still operable		N
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		N
	- 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
	If the appliance contains lids or doors that are controlled by one or more interlocks, one of the interlocks may be released provided that:		N
	- the lid or door does not move automatically to an open position when the interlock is released, and		N
	- the appliance does not start after the cycle in which the interlock was released		N
	The textile material shall not ignite and shall not show any charring or glowing (IEC 60335-2-7)		N
	During the tests of 19.101 and 19.102, the temperature of windings shall not exceed the values specified in table 8. (IEC 60335-2-7)		N
	The appliance shall comply with 20.103 to 20.105 if it can still be operated. (IEC 60335-2-7)		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
19.14	Appliances operated under the conditions of clause 11, any contactor or relay contact operating under the conditions of clause 11 being short-circuited		N
	For a relay or contactor with more than one contact, all contacts are short-circuited at the same time		N
	A relay or contactor operating only to ensure the appliance is energized for normal use is not short-circuited		N
	If more than one relay or contactor operates in clause 11, they are short-circuited in turn		N
19.15	For appliances with a mains voltage selector switch, the switch is set to the lowest rated voltage position and the highest value of rated voltage is applied		N
19.101	Fault conditions applied, appliance supplied at rated voltage and operated under normal operation. (IEC 60335-2-7)		N
	-programmer stopping in any position		N
	-disconnection and reconnection of one or more phases of the supply		N
	-open-circuiting or short-circuiting of components		N
	-failure of magnetic valve		N
	-failure or blocking the mechanical parts of water-level switch, except if		N
	-the cross-sectional area of the tube supplying the air chamber is greater than 500mm ² with a minimum dimension of 10mm, -the outlet of the chamber is at least 20mm above the highest water level, and -the tube connecting the air chamber to the water-level switch is fixed so that there is no likelihood of bending or pinching		N
	-puncture of the capillary tube of a thermostat		N
19.102	Appliances not intended for connection to the hot water supply and not provided with heating elements are operated under the conditions of cl. 11, except that they are supplied at rated voltage and filled with water at a temperature of 65 °C± 5°C (IEC 60335-2-7)		P
20	STABILITY AND MECHANICAL HAZARDS		P
20.1	Appliances having adequate stability		P
	The drum is empty, or filled as specified for normal operation, whichever is more unfavourable (IEC 60335-2-4)		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	The appliance is empty or filled as specified for normal operation, whichever is more unfavourable (IEC 60335-2-7)		P
	Doors and lids are closed and any castors turned to the most unfavourable position (IEC 60335-2-7)		P
	Tilting test through an angle of 10°, appliance placed on an inclined plane/horizontal support, not connected to the supply mains; appliance does not overturn		P
	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, and		P
	have adequate mechanical strength		P
	This requirement does not apply to those parts of the appliance that necessarily exposed to performing the appliance's working function		N
	Enclosures that can be opened by overriding an interlock are considered to be detachable parts		N
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard by unexpected closure		N
	Not possible to touch dangerous moving parts with the test probe described		P
20.101	Appliances shall not be adversely affected by an unbalanced load (IEC 60335-2-4)		P
	The appliance is placed on a horizontal support and a load having a mass of 0,2 kg or 10 % of the maximum mass of textile material specified in the instructions, whichever is higher, is fixed to the inside wall of the drum half-way along its length (IEC 60335-2-4)	0.38kg	P
	The appliance is supplied at rated voltage and operated for 5 min or the maximum period allowed by a programmer or timer, whichever is shorter (IEC 60335-2-4)		P
	The test is carried out four times, the load being moved each time through an angle of 90° around the wall of the drum (IEC 60335-2-4)		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	If compliance relies on the operation of an electronic circuit, the test is repeated with the fault conditions in a) to g) of 19.11.2 applied one at a time to the electronic circuit. (IEC 60335-2-4)		N
	The appliance shall not overturn and the drum shall not hit other parts except the enclosure (IEC 60335-2-4)		P
	After the test, the appliance shall be fit for further use (IEC 60335-2-4)		P
	Top load appliances of drum type: provided with an interlock which disconnects motor before door or lid opening exceeds 50mm (IEC 60335-2-7)		N
	If a removable or sliding lid is provided, the motor shall be de-energized as soon as the lid is removed or displaced and not possible to start motor unless the lid is in the closed position (IEC 60335-2-7)		N
	Compliance checked by inspection, by measurement and by the following test: test probe B of IEC 61032 is applied in order to try and release any interlock that is needed to comply with the requirement. The interlock shall not release. (IEC 60335-2-7)		N
20.102	The lid or door shall be interlocked so that the appliance can only be operated when the lid or door is in the closed position (IEC 60335-2-4)		P
	Test probe B of IEC 61032 is applied in order to try and release any interlock that is needed to comply with the requirement. The interlock shall not release (IEC 60335-2-4)		P
	Balance test in conditions as specified (mass kg) fixed to the inside wall of the drum: (IEC 60335-2-7)		P
	Operating at rated voltage, test made 4 times with mass moved through 90° each time (IEC 60335-2-7)		P
	If compliance relies on the operation of an electronic circuit, the test is repeated with the fault conditions in a) to g) of 19.11.2 applied one at a time to the electronic circuit. (IEC 60335-2-7)		N
	The appliance shall not overturn and the drum shall not hit other parts except the enclosure (IEC 60335-2-7)		P
	Appliance is fit for further use (IEC 60335-2-7)		P
20.103	For appliances having a drum with a rotational kinetic energy exceeding 1 500 J, or (IEC 60335-2-4)		N
	- for appliances having a single lid, a maximum peripheral speed exceeding 20 m/s (IEC 60335-2-4)		N
	- for appliances incorporating two lids, a maximum peripheral speed exceeding 25 m/s (IEC 60335-2-4)		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	it shall not be possible to open the lid while the drum is in motion (IEC 60335-2-4)		N
	Compliance is checked by inspection, by measurement of the maximum peripheral speed, by calculation of the rotational kinetic energy and by the following test (IEC 60335-2-4)		N
	The appliance is supplied at rated voltage and operated empty. The force determined during the test of 22.101 with the lid interlocked is applied to the lid in an attempt to open it (IEC 60335-2-4)		N
	If compliance relies on the operation of an electronic circuit, the test is repeated under the following conditions applied separately:		N
	- the fault conditions in a) to g) of 19.11.2 applied one at a time to the electronic circuit; (IEC 60335-2-4)		N
	- the electromagnetic phenomena tests of 19.11.4.1 to 19.11.4.6 applied to the appliance. (IEC 60335-2-4)		N
	In an appliance containing lids or doors that are controlled by one or more interlocks, one of the interlocks may be released provided that the following conditions are fulfilled:(IEC 60335-2-4)		N
	- the lid or door does not move automatically to an open position when the interlock is released; and (IEC 60335-2-4)		N
	- the appliance will not restart after the cycle in which the interlock was released. (IEC 60335-2-4)		N
	It shall not be possible to open the lid while the drum is in motion (IEC 60335-2-4)		N
	If the drum is not cylindrical, the peripheral speed is the mean peripheral speed (IEC 60335-2-4)		N
	If the electronic circuit is programmable, the software shall contain measures to control the fault/error conditions specified in Table R1 and is evaluated in accordance with the relevant requirements of Annex R. (IEC 60335-2-4)		N
	For washing machines of the drum type that are loaded from the front or from the top, the door or lid shall be interlocked so that the appliance can only be operated when the door or lid is in the closed position (IEC 60335-2-7)		N
	Compliance checked by inspection, by measurement and by the following test: test probe B of IEC 61032 is applied in order to try and release any interlock that is needed to comply with the requirement. The interlock shall not release. (IEC 60335-2-7)		N
20.104	For appliances having a drum with a rotational kinetic energy not exceeding 1 500 J and (IEC 60335-2-4)		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	– for a appliances having a single lid, a maximum peripheral speed not exceeding 20 m/s (IEC 60335-2-4)		N
	– for appliances incorporating two lids, a maximum peripheral speed not exceeding 25 m/s (IEC 60335-2-4)		P
	moving parts shall not be accessible while the motor is energized or when the drum speed exceeds 60 r/min (IEC 60335-2-4)		P
	The braking system shall not be affected by the penetration of water (IEC 60335-2-4)		P
	Compliance is checked by measurement of the maximum peripheral speed, by calculation of the rotational kinetic energy and by the following test, which is carried out after repeating the spillage test of 15.2 (IEC 60335-2-4)		P
	The appliance is supplied at rated voltage and operated empty. For appliances having a single lid and for appliances incorporating two lids where the second lid does not open independently of the first lid, the lid or first lid as appropriate is gradually opened and (IEC 60335-2-4)		N
	– with an opening of 4 mm to 10 mm, it shall not be possible to touch parts rotating at a speed exceeding 60 r/min with the test probe 12 of IEC 61032 (IEC 60335-2-4)		N
	– with an opening greater than 10 mm, but not more than 12 mm, it shall not be possible to touch parts rotating at a speed exceeding 60 r/min with a test rod 3 mm in diameter and 120 mm long. In addition, the test probe B of IEC 61032 is applied and shall not come within a distance of 20 mm from the rotating parts (IEC 60335-2-4)		N
	– with an opening greater than 12 mm, the motor shall be disconnected from the supply and within 7 s, the drum speed shall not exceed 60 r/min (IEC 60335-2-4)		N
	For appliances incorporating two lids where the second lid opens independently of the first lid, the first lid is gradually opened and with an opening greater than 50 mm, the motor shall be disconnected from the supply and within 2 s the drum speed shall not exceed 20 m/s (IEC 60335-2-4)		P
	The second lid is gradually opened and (IEC 60335-2-4)		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	– with an opening of 4 mm to 10 mm, it shall not be possible to touch parts rotating at a speed exceeding 60 rev/min with the test probe 12 of IEC 61032; (IEC 60335-2-4)		P
	– with an opening greater than 10 mm, but not more than 12 mm, it shall not be possible to touch parts rotating at a speed exceeding 60 r/min with a test rod 3 mm in diameter and 120 mm long. In addition, the test probe B of IEC 61032 is applied and shall not come within a distance of 20 mm from the rotating parts (IEC 60335-2-4)		P
	– with an opening greater than 12 mm and within 7 s, the drum speed shall not exceed 60 r/min (IEC 60335-2-4)		P
	If compliance relies on the operation of an electronic circuit, the test is repeated under the following conditions applied separately: (IEC 60335-2-4)		N
	-the fault conditions in a) to g) of 19.11.2 applied one at a time to the electronic circuit; (IEC 60335-2-4)		N
	-the electromagnetic phenomena tests of 19.11.4.2 and 19.11.4.5 applied in turn to the appliance. (IEC 60335-2-4)		N
	In an appliance containing lids or doors that are controlled by one or more interlocks, one of the interlocks may be released provided that the following conditions are fulfilled: (IEC 60335-2-4)		N
	-the lid or door does not move automatically to an open position when the interlock is released; and (IEC 60335-2-4)		N
	-the appliance will not restart after the cycle in which the interlock was released. (IEC 60335-2-4)		N
	If the electronic circuit is programmable, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of Annex R. (IEC 60335-2-4)		N
	It shall not be possible to open the lid or door of the appliance while the speed exceeds 60 r/min if the drum has a rotational kinetic energy exceeding 1 500J, or a maximum peripheral speed exceeding (IEC 60335-2-7)		N
	-20 m/s for drums that rotate about the horizontal axis,		N
	-40 m/s for drums that rotate about the vertical axis,		N
	In an appliance containing lids or doors that are controlled by one or more interlocks, one of the interlocks may be released provided that the following conditions are fulfilled: (IEC 60335-2-7)		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	- the lid or door does not move automatically to an open position when the interlock is released; and		N
	- the appliance will not restart after the cycle in which the interlock was released.		N
	If compliance relies on the operation of an electronic circuit, the test is repeated under the following conditions applied separately: (IEC 60335-2-7)		N
	- the fault conditions in a) to g) of 19.11.2 applied one at a time to the electronic circuit;		N
	- the electromagnetic phenomena tests of 19.11.4.2 to 19.11.4.5 applied to the appliance.		N
	If the electronic circuit is programmable, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of Annex R. (IEC 60335-2-7)		N
20.105	Protective devices fitted in the upper part of spin extractors having a vertical axis shall be positioned or protected so that the device is not likely to be damaged by textile material that may escape from the drum in normal use (IEC 60335-2-4)		P
	Appliances shall have an automatic means for switching off the motor, or for reducing the drum speed to 60 r/min, when the lid or door is opened if the drum has a rotational kinetic energy not exceeding 1 500J, and a peripheral speed not exceeding: (IEC 60335-2-7)		N
	-20 m/s for drums that rotate about the horizontal axis,		N
	-40 m/s for drums that rotate about the vertical axis		N
	If compliance relies on the operation of an electronic circuit, the test is repeated under the following conditions applied separately: (IEC 60335-2-7)		N
	- the fault conditions in a) to g) of 19.11.2 applied one at a time to the electronic circuit;		N
	- the electromagnetic phenomena tests of 19.11.4.2 and 19.11.4.5 applied in turn to the appliance.		N
	If the electronic circuit is programmable, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of Annex R. (IEC 60335-2-7)		N
21	MECHANICAL STRENGTH		P
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
	Checked by applying 3 blows to every point of the enclosure like to be weak, in accordance with test Ehb of IEC 60068-2-75, spring hammer test, with an impact energy of 0,5 J		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	The appliance shows no damage impairing compliance with this standard, and		P
	compliance with 8.1, 15.1 and clause 29 not impaired		P
	If small dents do not reduce clearance or creepage distances below the values specified in clause 29 and small chips do not adversely affect protection against access to live parts or moisture, those small things are ignored		P
	If the inner cover withstands the test, fracture of the outer decorative cover is ignored		P
	If doubt, supplementary or reinforced insulation subjected to the electric strength test of 16.3		N
	If necessary, repetition of groups of three blows on a new sample		N
	If cracks not visible by the naked eye, surface cracks in fibre-reinforced mouldings and similar materials are ignored		P
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		P
	Test not applicable if the thickness of supplementary insulation is at least 1 mm and reinforced insulation at least 2 mm		P
	The insulation is tested as specified, and does withstand the electric strength test of 16.3		P
21.101	Lids of appliances shall have adequate mechanical strength (IEC 60335-2-4)		P
	A rubber hemisphere having a diameter of 70 mm and a hardness between 40 IRHD and 50 IRHD is fixed to a cylinder having a mass of 20 kg and dropped from a height of 100 mm onto the centre of the lid (IEC 60335-2-4)		P
	The test is carried out three times, after which the lid shall not be damaged to the extent that moving parts become accessible (IEC 60335-2-4)		P
	Lids and doors shall have adequate mechanical strength (IEC 60335-2-7)		N
	Compliance is checked by 21.101.1 for lids, and 21.101.2 for doors		P
21.101.1	A rubber hemisphere –diameter 70 mm, hardness between 40 and 50 HIRD- is fixed to a cylinder – mass 20 kg- and dropped from a height of 100 mm onto the centre of the lid (IEC 60335-2-7)		N



IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Test carried out 3 times, after which the lid shall not be damaged to such an extent that moving parts become accessible.		N
21.101.2	A vertically downwards force of 150 N is applied I the most unfavourable position to the door while it is open at an angle of $90^\circ \pm 5^\circ$. The force is maintained for 1 mm. (IEC 60335-2-7)		N
	After the test, the appliance shall not be damaged or deformed to such an extent that compliance with 20.103 to 20.105 is impaired (IEC 60335-2-7)		N
21.102	Lids and their hinges shall have adequate resistance to distortion (IEC 60335-2-4)		P
	A force of 50 N is applied to the open lid in the most unfavourable direction and position (IEC 60335-2-4)		P
	The test is carried out three times, after which the hinges shall not have worked loose and the appliance shall not be damaged or deformed to such an extent that compliance with the appropriate requirements of 20.102 to 20.104 is impaired (IEC 60335-2-4)		P
	Lids shall have adequate resistance to distortion (IEC 60335-2-7)		N
	A force of 50 N is applied to the open lid in the most unfavourable direction and position. Test carried out 3 times , after which the hinges shall not have worked loose and the appliance shall not be damaged or deformed to such an extent that compliance with 20.103 to 20.105 is impaired (IEC 60335-2-7)		N
22	CONSTRUCTION		P
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled		N
22.2	Stationary appliance: means to ensure all-pole disconnection from the supply being provided:		P
	- a supply cord fitted with a plug, or		P
	- a switch complying with 24.3, or		N
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided, or		N
	- an appliance inlet		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected Class 01 and Class I appliances, connected to the phase conductor		N
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 torque of 0.4Nm; the pins are not rotating, unless		N
	rotating does not impair compliance with this standard		N
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		N
22.5	No risk of electric shock when touching the pins of the plug, for appliances having a capacitor with rated capacitance equal to or greater than 0,1 μ F, the appliance being disconnected from the supply at the instant of voltage peak		P
	Voltage not exceeding 34 V (V)	17.0V	P
	If compliance relies on the operation of an electronic circuit, the electromagnetic phenomena tests of 19.11.4.3 and 19.11.4.4 are applied		N
	The discharge test is then repeated three times, voltage not exceeding 34 V (V).....		N
22.6	Electrical insulation not affected by condensing water or leaking liquid		P
	Electrical insulation of Class II appliances not affected if a hose ruptures or seal leaks		N
	Requirements relating to leakage from containers, hoses, coupling and similar parts of the appliance is not applicable to parts that withstand the ageing test specified in annex BB (IEC 60335-2-7)		N
22.7	Adequate safeguards against the risk of excessive pressure in appliances containing liquid or gases or having steam-producing devices		N
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use		N



IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances, unless		N
	the substance has adequate insulating properties		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, if:		N
	- a non-self-resetting thermal cut-out is required by the standard, and		N
	- a voltage maintained non-self-resetting thermal cut-out is used to meet it		N
	Non-self-resetting thermal motor protectors have a trip-free action, unless		N
	they are voltage maintained		N
	Reset buttons of non-self-resetting controls so located or protected that accidental resetting is unlikely		N
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		P
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		P
	Tests as described		P
22.12	Handles, knobs etc. fixed in a reliable manner		P
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		P
	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		P
22.13	Unlikely that handles, when gripped as in normal use, make the operator's hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P
	No exposed pointed ends of self-tapping screws or other fasteners, likely to be touched by the user in normal use or during user maintenance		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
22.15	Storage hooks and the like for flexible cords smooth and well rounded		P
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands and no undue wear of contacts		N
	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		N
22.18	Current-carrying parts and other metal parts resistant to corrosion		P
22.19	Driving belts not relied upon to provide the required level of insulation, unless		P
	constructed to prevent inappropriate replacement		N
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless		N
	material used is non-corrosive, non-hygroscopic and non-combustible		N
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless	No such material	N
	impregnated		N
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used	No such material	N
22.24	Bare heating elements, except in class III appliances or class III constructions that do not contain live parts, adequately supported		N
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N
22.25	Sagging heating conductors, except in class III appliances or class III constructions that do not contain live parts, cannot come into contact with accessible metal parts		N
22.26	For class III constructions the insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation		N
22.27	Parts connected by protective impedance separated by double or reinforced insulation		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
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		P
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		P
22.31	Neither clearances nor creepage distances over supplementary and reinforced insulation reduced below values specified in clause 29 as a result of wear		P
	Neither clearances nor creepage distances between live parts and accessible parts reduced below values for supplementary insulation if wires, screws etc. become loose		P
22.32	Supplementary and reinforced insulation constructed or protected against pollution so that clearances or creepage distances are not reduced below the values in clause 29		P
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2		N
	Ceramic material not tightly sintered, similar materials or beads alone not used as supplementary or reinforced insulation		N
	Ceramic and similar porous material in which heating conductors are embedded is considered to be basic insulation, not reinforced insulation		N
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N
22.33	Conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts are not in direct contact with live parts, or		P
	unearthed metal parts separated from live parts by basic insulation only		N
	Electrodes not used for heating liquids		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	For class II constructions, conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts, not in direct contact with basic or reinforced insulation, unless		P
	the reinforced insulation consists of at least 3 layers		N
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation, unless		N
	the reinforced insulation consists of at least 3 layers		N
	An air layer not used as basic or supplementary insulation in a double insulation system if likely to be bridged by leaking liquid		P
22.34	Shafts of operating knobs, handles, levers etc. not live, unless		P
	the shaft is not accessible when the part is removed		N
22.35	For other than class III constructions, handles, levers and knobs, held or actuated in normal use, not becoming live in the event of a failure of basic insulation		P
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of a failure of basic insulation, are either adequately covered by insulation material or their accessible parts are separated from their shafts or fixings by supplementary insulation		P
	This requirement does not apply to handles, levers and knobs on stationary appliances and cordless appliances, other than those of electrical components, provided they are reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		P
	Insulating material covering metal handles, levers and knobs withstand the electric strength test of 16.3 for supplementary insulation		P
22.36	For appliances other than Class III, handles continuously held in the hand in normal use so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless		N
	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 and their casings, if of metal, separated from accessible metal parts by supplementary insulation, unless		N
	the capacitors comply with 22.42		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
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
	If the appliance cannot operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch for stopping the operation. The actuating member of the switch being easily visible and accessible		N
22.41	No components, other than lamps, containing mercury	No such material	N
22.42	Protective impedance consisting of at least two separate components		N
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N
	Resistors checked by the test of 14.1 a) in IEC 60065		N
	Capacitors checked by the tests for class Y capacitors in IEC 60384-14		N
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N
22.44	Appliances not having an enclosure that is shaped or decorated like a toy		P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.3 due to deformation as a result of an external force applied to the enclosure		P
22.46	For programmable protective electronic circuits used to ensure compliance with the standard, the software contains measures to control the fault/error conditions in table R.1		N
	Software that contains measures to control the fault/error conditions specified in table R.2 is to be specified in parts 2 for particular constructions or to address specific hazards		N
	These requirements are not applicable to software used for functional purpose or compliance with clause 11		N



IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	If the software modified, the evaluation and relevant tests are repeated if the modification influences the test results involving protective electronic circuits		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 is to 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	There is a control on the appliance manually adjusted to the setting for remote operation before the appliance can be operated in this mode		N
	There is a visual indication showing that the appliance is adjusted for remote operation		N
	These requirements not necessary on appliances that can operate as follows, without giving rise to a hazard:		N
	- continuously, or		N
	- automatically, or		N
	- remotely		N
22.52	Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold		N
22.53	Class II appliances and class III appliances that incorporate functionally earthed parts have at least double insulation or reinforced insulation between live parts and the functionally earthed parts		N
22.54	Button cells and batteries designated R1 not accessible without the aid of a tool, unless		N
	the cover of their compartment can only be opened after at least two independent movements have been applied simultaneously		N
22.101	Interlocks shall be constructed so that lids or doors are unlikely to be forced open in normal use (IEC 60335-2-4)		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	The lid or door is opened manually as in normal use, the force applied being measured. The lid or door is closed and interlocked. An attempt is then made to open the lid or door in the same way (IEC 60335-2-4)		N
	It shall not be possible to force open the lid or door with a force less than 10 times the value originally measured, with a minimum of 50 N (IEC 60335-2-4)		N
	Appliances shall be constructed so that when the water level is above the lower hedge of the door opening, it shall not be possible to open the door by a simple action while the appliance is operating. (IEC 60335-2-7)		N
	It is not applicable to appliance fitted with interlock doors or doors that are opened by means of a key or by two separate actions, such as pushing and turning. (IEC 60335-2-7)		N
	If compliance relies on the operation of an electronic circuit and the appliance is capable of heating the water to 90 °C, the test is repeated under the following conditions applied separately: (IEC 60335-2-7)		N
	– the fault conditions in a) to g) of 19.11.2 applied one at a time to the electronic circuit;		N
	– the electromagnetic phenomena tests of 19.11.4.2 and 19.11.4.5 applied to the appliance.		N
	If the electronic circuit is programmable, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of Annex R. (IEC 60335-2-7)		N
22.102	Cloth cannot come in contact with heating element (IEC 60335-2-7)		N
22.103	Appliances shall be constructed so that, during normal use, filter compartments cannot be opened by a simple action. (IEC 60335-2-7)		N
	It is not applicable to appliances intended for connection to the cold water supply only and without means to heat the water or to appliances fitted with filter compartment covers that are: (IEC 60335-2-7)		N
	– interlocked;		N
	– opened by means of a key;		N
	– opened by two separate actions such as pushing and turning; or		N
	– opened by rotating by more than 180 °		P
22.104	Lid and door interlocks shall be constructed so that they are unlikely to be forced open in normal use (IEC 60335-2-7)		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
22.105	Any mechanical release mechanism intended to be open the loading door after a failure shall only be accessible by using a tool. (IEC 60335-2-7)		N
23	INTERNAL WIRING		P
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		P
	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		N
	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		N
	Flexible metallic tubes not causing damage to insulation of conductors		N
	Open-coil springs not used		N
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N
	No damage after 10 000 flexings for conductors flexed during normal use, or		N
	100 flexings for conductors flexed during user maintenance		N
	Electric strength test of 16.3, 1000 V between live parts and accessible metal parts		N
	Not more than 10% of the strands of any conductor broken, and		N
	not more than 30% for wiring supplying circuits that consume no more than 15W		N
23.4	Bare internal wiring sufficiently rigid and fixed		N
23.5	The insulation of internal wiring subjected to the supply mains voltage withstanding the electrical stress likely to occur in normal use		P
	Basic insulation electrically equivalent to the basic insulation of cords complying with IEC 60227 or IEC 60245, or		N
	no breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	For class II construction, the requirements for supplementary insulation and reinforced insulation apply,		N
	except that the sheath of a cord complying with IEC 60227 or IEC 60245 may provide supplementary insulation.		N
	A single layer of internal wiring insulation does not provide reinforced insulation		N
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by clamping at both ends, or		N
	be such that it can only be removed by breaking or cutting		N
23.7	The colour combination green/yellow only used for earthing conductors		P
23.8	Aluminium wires not used for internal wiring		P
23.9	Stranded conductors not consolidated by soldering where they are subjected to contact pressure, unless		N
	the contact pressure is provided by spring terminals		P
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52)		N
23.101	Insulation and sheath of internal wiring for the supply of magnetic valves and similar components shall be at least equivalent to the electrical characteristics of light polyvinyl chloride sheathed flexible cord (code designation 60227 IEC 52) (IEC 60335-2-7)		N
24	COMPONENTS		P
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components.....:	(see appended table)	P
	Motors not required to comply with IEC 60034-1, they are tested as part of the appliance		P
	Relays tested as part of the appliance, or		N
	alternatively acc. to IEC 60730-1, and meeting the additional requirements in IEC 60335-1		N
	The requirements of Clause 29 apply between live parts of components and accessible parts of the appliance		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Components can comply with the requirements for clearances and creepage distances for functional insulation in the relevant component standard		P
	30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections		P
	Components that have not been previously tested to comply with the IEC standard for the relevant component are tested according to the requirements of 30.2		P
	Components that have been previously tested to comply with the resistance to fire requirements in the IEC standard for the relevant component need not be retested provided the specified conditions are met		P
	If these conditions are not satisfied, the component is tested as part of the appliance.		P
	Power electronic converter circuits not required to comply with IEC 62477-1, they are tested as part of the appliance		N
	If components have not been tested and found to comply with relevant IEC standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		N
	For components mentioned in 24.1.1 to 24.1.9 no additional tests specified in the relevant component standard are necessary other than those specified in 24.1.1 to 24.1.9		N
	Components not tested and found to comply with relevant IEC standard and components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		P
	Lampholders and starterholders that have not being tested and found to comply with the relevant IEC standard, tested as a part of the appliance and additionally according to the gauging and interchangeability requirements of the relevant IEC standard		N
	No additional tests specified for nationally standardized plugs such as those detailed in IEC/TR 60083 or connectors complying with the standard sheets of IEC 60320-1 and IEC 60309		P
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, complying with IEC 60384-14		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	If the capacitors have to be tested, they are tested according to Annex F		N
24.1.2	Transformers in associated switch mode power supplies comply with Annex BB of IEC 61558-2-16		N
	Safety isolating transformers complying with IEC 61558-2-6		N
	If they have to be tested, they are 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	Approved	P
	If they have to be tested, they are tested according to Annex H		N
	If the switch operates a relay or contactor, the complete switching system is subjected to the test		N
	If the switch only operates a motor starting relay complying with IEC 60730-2-10 with the number of cycles of a least 10 000 as specified, the complete switching system need not be tested		N
24.1.4	Automatic controls complying with IEC 60730-1 with the relevant part 2. The number of cycles of operation being at least:		N
	- thermostats: 10 000		N
	- temperature limiters: 1 000		N
	- self-resetting thermal cut-outs: 300		N
	- voltage maintained non-self-resetting thermal cut-outs: 1 000		N
	- other non-self-resetting thermal cut-outs: 30		N
	- timers: 3 000		N
	- timers (IEC 60335-2-4) 10 000		N
	- energy regulators: 10 000		N
	- programmers : (IEC 60335-2-7) 3 000		N
	The number of cycles for controls operating during clause 11 need not be declared, if the appliance meets the requirements of this standard when they are short-circuited		N
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D		P
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection declared for subclause 6.5.2 of IEC 60730-2-8 is IPX7		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Thermal cut-outs of the capillary type comply with the requirements for type 2.K controls in IEC 60730-2-9		N
	For lid interlocks, the number of cycles of operation declared for Subclauses 6.10 and 6.11 of IEC 60730-2-12 shall not be less than 6 000. (IEC 60335-2-4)		N
	For lid or door interlocks, the number of cycles of operation declared for subclauses 6.10 and 6.11 of IEC 60730-2-12 shall not be less than 7) (IEC 60335-2-7)		N
	-6 000		N
	-for washing machines including drying operation: 9 000		N
	-interlock operates more than once during normal operation, the minimum number of cycles is increased accordingly.		N
24.1.5	Appliance couplers complying with IEC 60320-1		N
	However, for 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	For remote operation of the appliance via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151		N
24.1.8	The relevant standard for thermal links is IEC 60691		N
	Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of Clause 19		N
24.1.9	Contactors and 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 cycles of operations in 24.1.4 selected according to the contactor or relay function in the appliance		N
24.2	Appliances not fitted with:		P
	- switches or automatic controls in flexible cords		N
	- devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	- thermal cut-outs that can be reset by soldering, unless		N
	the solder has a melting point of at least 230 °C		N
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and have a contact separation in all poles, providing full disconnection under overvoltage category III conditions		N
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance, and used accordingly	Rated voltage: 450V	P
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load	Measured voltage: 330V	P
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42 V		N
	In addition, the motors comply with the requirements of Annex I		N
24.7	Detachable hose-sets for connection of appliances to the water mains comply with IEC 61770		N
	They are supplied with the appliance		N
	Appliances intended to be permanently connected to the water mains not connected by a detachable hose-set		N
24.8	Motor running capacitors in appliances for which 30.2.3 is applicable and that are permanently connected in series with a motor winding, not causing a hazard in event of a failure		P
	One or more of the following conditions are to be met:		P
	- the capacitors are of Class P2 according to IEC 60252-1		P
	- the capacitors are housed within a metallic or ceramic enclosure		N
	- the distance of separation of the outer surface to adjacent non-metallic parts exceeds 50 mm		N
	- adjacent non-metallic parts within 50 mm withstand the needle-flame test of Annex E		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	- adjacent non-metallic parts within 50 mm Classified as at least V-1 according to IEC 60695-11-10		N
24.101	Thermal cut-outs incorporated in washing machines for compliance with 19.4 shall be not self-resetting (IEC 60335-2-7)		N
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		P
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		P
	- supply cord fitted with a plug, the current rating and voltage rating of the plug being not less than the corresponding ratings of its associated appliance		P
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance, or		N
	- pins for insertion into socket-outlets		N
25.2	Appliance not provided with more than one means of connection to the supply mains		P
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		N
25.3	Appliance intended to be permanently connected to fixed wiring provided with one of the following means for connection to the supply mains:		N
	- a set of terminals allowing the connection of a flexible cord		N
	- a fitted supply cord		N
	- a set of supply leads accommodated in a suitable compartment		N
	- a set of terminals for the connection of cables of fixed wiring, cross-sectional areas specified in 26.6, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N
	- a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate types of cable or conduit, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N
	For a fixed appliance constructed so that parts can be removed to facilitate easy installation, this requirement is met if it is possible to connect the fixed wiring without difficulty after a part of the appliance has been fixed to its support		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimension according to table 10 (mm).....:		N
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in clause 29		N
25.5	Method for assembling the supply cord to the appliance:		N
	- type X attachment		N
	- type Y attachment		P
	- type Z attachment, if allowed in relevant part 2		N
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N
	For multi-phase appliances supplied with a supply cord and that are intended to be permanently connected to fixed wiring, the supply cord is assembled to the appliance by type Y attachment		N
25.6	Plugs fitted with only one flexible cord		P
25.7	Supply cords, other than for class III appliances, being one of the following types:		P
	- rubber sheathed (at least 60245 IEC 53)		N
	- polychloroprene sheathed (at least 60245 IEC 57)		N
	- polyvinyl chloride sheathed. Not used if they are likely to touch metal parts having a temperature rise exceeding 75 K during the test of clause 11		N
	• light polyvinyl chloride sheathed cord (60227 IEC 52), for appliances not exceeding 3 kg		N
	• ordinary polyvinyl chloride sheathed cord (60227 IEC 53), for other appliances	H05VV-F	P
	- heat resistant polyvinyl chloride sheathed. Not used for type X attachment other than specially prepared cords		N
	• heat-resistant light polyvinyl chloride sheathed cord (60227 IEC 56), for appliances not exceeding 3 kg		N
	• heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), for other appliances		N
	Supply cords for class III appliances adequately insulated		N
	Test with 500 V for 2 min for supply cords of class III appliances that contain live parts		N
25.8	Nominal cross-sectional area of supply cords not less than table 11; rated current (A); cross-sectional area (mm ²)	Max. 1.7A Supply cord: 0.75mm ²	P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
25.9	Supply cords not in contact with sharp points or edges		P
25.10	Supply cord of class I appliances have a green/yellow core for earthing		P
	In multi-phase appliances, the colour of the neutral conductor of the supply cord is blue.		N
25.11	Conductors of supply cords not consolidated by soldering where they are subject to contact pressure, unless		P
	the contact pressure is provided by spring terminals		N
25.12	Insulation of the supply cord not damaged when moulding the cord to part of the enclosure		N
25.13	Inlet openings so constructed as to prevent damage to the supply cord		P
	If it is not evident that the supply cord can be introduced without risk of damage,, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		N
	If unsheathed supply cord, a similar additional bushing or lining is required, unless the appliance is		N
	class 0, or		N
	a class III appliance not containing live parts		N
25.14	Supply cords moved while in operation adequately protected against excessive flexing		N
	Flexing test, as described:		N
	- applied force (N)		N
	- number of flexings		N
	The test does not result in:		N
	- short-circuit between the conductors, such that the current exceeds a value of twice the rated current		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 to the cord or the cord guard		N
	- broken strands piercing the insulation and becoming accessible		N
25.15	For appliances with supply cord and appliances to be permanently connected to fixed wiring by a flexible cord, conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	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:		P
	- fixed appliances: pull 100 N; torque (not on automatic cord reel) (Nm):		N
	- other appliances: values shown in table 12: mass (kg); pull (N); torque (not on automatic cord reel) (Nm):		P
	Pull and torque test of supply cord, values shown in table 12: mass (kg); pull (N); torque (not on automatic cord reel) (Nm)	100N, 0.35Nm	P
	Cord not damaged and max. 2 mm displacement of the cord	0.8mm	P
25.16	Cord anchorages for type X attachments constructed and located so that:		N
	- replacement of the cord is easily possible		N
	- it is clear how the relief from strain and the prevention of twisting are obtained		N
	- they are suitable for different types of supply cord		N
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless		N
	they are 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		N
	it is part of a specially prepared cord		N
	- screws which have to be operated when replacing the cord do not fix any other component, unless		N
	the appliance becomes inoperative or incomplete or the parts cannot be removed without a tool		N
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N
	- for Class 0, 0I and I appliances they are of insulating material or are provided with an insulating lining, unless		N
	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		N
	if of metal, they are insulated from accessible metal parts by supplementary insulation		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	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, test with the cord supplied with the appliance	Type Y	P
25.18	Cord anchorages only accessible with the aid of a tool, or		N
	Constructed so that the cord can only be fitted with the aid of a tool		P
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N
	Tying the cord into a knot or tying the cord with string not used		N
25.20	The conductors of the supply cord for type Y and Z attachment insulated from accessible metal parts	Type Y	P
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed:		N
	- to permit checking of conductors with respect to correct positioning and connection before fitting any cover		N
	- so there is no risk of damage to the conductors or their insulation when fitting the cover		N
	- for portable appliances, so that the uninsulated end of a conductor, if it becomes free from the terminal, prevented from contact with accessible metal parts		N
	2 N test to the conductor for portable appliances; no contact with accessible metal parts		N
25.22	Appliance inlets:		N
	- live parts not accessible during insertion or removal		N
	Requirement not applicable to appliance inlets complying with IEC 60320-1		N
	- connector can be inserted without difficulty		N
	- the appliance is not supported by the connector		N
	- not for cold conditions if temp. rise of external metal parts exceeds 75 K during clause 11, unless		N
	the supply cord is unlikely to touch such metal parts		N
25.23	Interconnection cords comply with the requirements for the supply cord, except that:		N



IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	- the cross-sectional area of the conductors is determined on the basis of the maximum current during clause 11		N
	- the thickness of the insulation may be reduced		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 this standard is impaired when they are disconnected		N
25.25	Dimensions of pins that are inserted into socket-outlets compatible with the dimensions of the relevant socket-outlet.		N
	Dimensions of pins and engagement face in accordance with the dimensions of the relevant plug in IEC/TR 60083		N
26	TERMINALS FOR EXTERNAL CONDUCTORS		P
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		P
	Terminals only accessible after removal of a non-detachable cover, except		P
	for class III appliances that do not contain live parts		N
	Earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection		P
26.2	Appliances with type X attachment and appliances for the connection of cables to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless		N
	the connections are soldered		N
	Screws and nuts not used to fix any other component, 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, unless		N
	barriers provided so that neither clearances nor creepage distances between live parts and other metal parts reduced below the values for supplementary insulation if the conductor becomes free at the soldered joint		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
26.3	Terminals for type X attachment and for connection of cables of fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure but without damaging the conductor		N
	Terminals fixed so that when the clamping means is tightened or loosened:		N
	- the terminal does not become loose		N
	- internal wiring is not subjected to stress		N
	- neither clearances nor creepage distances are reduced below the values in clause 29		N
	Compliance checked by inspection and by the test of subclause 9.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified (Nm)		N
	No deep or sharp indentations of the conductors		N
26.4	Terminals for type X attachment, except those having a specially prepared cord and those for the connection of cables of fixed wiring, no special preparation of conductors such as by soldering, use of cable lugs, eyelets or similar, and		N
	so constructed or placed that conductors prevented from slipping out when clamping screws or nuts are tightened		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,		N
	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 of cables of fixed wiring suitable for connection of conductors with cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm ²)		N
	If a specially prepared cord is used, terminals need only be suitable for that cord		N
26.7	Terminals for type X attachment, except in class III appliances not containing live parts, accessible after removal of a cover or part of the enclosure		N
26.8	Terminals for the connection of fixed wiring, including the earthing terminal, located close to each other		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
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		N
	conductors ends fitted with means suitable for screw terminals		N
	Pull test of 5 N to the connection		N
26.11	For type Y and Z attachment, soldered, welded, crimped or similar connections may be used	Crimped connections were used.	P
	For Class II appliances, the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N
	If soldering, welding or crimping alone used, barriers provided so that clearances and creepage distances between live parts and other metal parts are not reduced below the values for supplementary insulation if the conductor becomes free		N
27	PROVISION FOR EARTHING		P
27.1	Accessible metal parts of Class 0I and I appliances permanently and reliably connected to an earthing terminal or earthing contact of the appliance inlet		P
	Earthing terminals and earthing contacts not connected to the neutral terminal		P
	Class 0, II and III appliances have no provision for earthing		N
	Class II appliances and class III appliances can incorporate an earth for functional purposes		N
	Safety extra-low voltage circuits not earthed, unless		N
	protective extra-low voltage circuits		N
27.2	Clamping means of earthing terminals adequately secured against accidental loosening		P
	Terminals for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm ² , and		N
	do not provide earthing continuity between different parts of the appliance, and		N
	conductors cannot be loosened without the aid of a tool		N
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
27.3	For a detachable part having an earth connection and being plugged into another part of the appliance, the earth connection is made before and separated after current-carrying connections when removing the part		N
	For appliances with supply cords, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		P
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N
27.4	No risk of corrosion resulting from contact between parts of the earthing terminal and the copper of the earthing conductor or other metal		P
	Parts providing earthing continuity, other than parts of a metal frame or enclosure, have adequate resistance to corrosion		N
	If of steel, these parts provided with an electroplated coating with a 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 the body of the earthing terminal is a part of a frame or enclosure of aluminium or aluminium alloys, precautions taken to avoid risk of corrosion		N
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		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 the clearances of basic insulation are based on the rated voltage of the appliance		P
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N
	Resistance not exceeding 0,1 Ω at the specified low-resistance test (Ω)	0.02 Ω	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



IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N
28	SCREWS AND CONNECTIONS		P
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 connections or connections providing earthing continuity		N
	Screws used for electrical connections or connections providing earthing continuity screwed into metal		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		P
	For type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw impairs basic insulation		N
	For screws and nuts; torque-test as specified in table 14	(see appended table)	P
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure is not transmitted through non-ceramic insulating material liable to shrink or distort, unless		P
	there is resiliency in the metallic parts to compensate for shrinkage or distortion of the insulating material		N
	This requirement does not apply to electrical connections in circuits of appliances for which:		N
	30.2.2 is applicable and that carry a current not exceeding 0,5 A		N
	30.2.3 is applicable and that carry a current not exceeding 0,2 A		N
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		P
	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



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	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:		N
	- 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
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		P
	This requirement does not apply to screws in the earthing circuit if at least two screws are used for the connection, or		P
	if an alternative earthing circuit is provided		N
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if the connections are subjected to torsion		N
29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		P
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	For coatings used on printed circuits boards to protect the microenvironment (Type 1) or to provide basic insulation (Type 2), Annex J applies		N
	The microenvironment is pollution degree 1 under type 1 protection		N
	For type 2 protection, the spacing between the conductors before the protection is applied is not less than the values specified in Table 1 of IEC 60664-3		N
	These values apply to functional, basic, supplementary and reinforced insulation		N
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless	(see appended table)	P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	for basic insulation and functional insulation they comply with the impulse voltage test of clause 14		N
	However, if the distances are affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1500V and above are increased by 0,5 mm and the impulse voltage test is not applicable		P
	For appliances intended for use at altitudes exceeding 2 000 m, the clearances in Table 16 is increased according to the relevant multiplier values in Table A.2 of IEC 60664-1		N
	Impulse voltage test is not applicable:		P
	- when the microenvironment is pollution degree 3, or		P
	- for basic insulation of Class 0 and Class 01 appliances		N
	- to appliances intended for use at altitudes exceeding 2 000 m		N
	Appliances are in overvoltage category II		P
	A force of 2 N is applied to bare conductors, other than heating elements		N
	A force of 30 N is applied to accessible surfaces		P
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		P
	The values of table 16 or the impulse voltage test of clause 14 are applicable	(see appended table)	P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1,0 mm if the microenvironment is pollution degree 1		N
	Lacquered conductors of windings considered to be bare conductors		P
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16	(see appended table)	P
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, using the next higher step for rated impulse voltage.....	(see appended table)	P
	For double insulation, with no intermediate conductive part between basic and supplementary insulation, clearances are measured between live parts and the accessible surface, and the insulation system is treated as reinforced insulation		P
29.1.4	Clearances for functional insulation are the largest values determined from:		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	- table 16 based on the rated impulse voltage.....:	(see appended table)	P
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		N
	If values of table 16 are largest, the impulse voltage test of clause 14 may be applied instead, unless		N
	the microenvironment is pollution degree 3, or		P
	the distances can be affected by wear, distortion, movement of the parts or during assembly		P
	However, clearances are not specified if the appliance complies with clause 19 with the functional insulation short-circuited		P
	Lacquered conductors of windings considered to be bare conductors		P
	However, clearances at crossover points are not measured		P
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N
29.1.5	Appliances having higher working voltages than rated voltage, clearances for basic insulation are the largest values determined from:		P
	- table 16 based on the rated impulse voltage.....:		P
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		N
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1 or Clause 4 of IEC 60664-4, the clearances of supplementary insulation are not less than those specified for basic insulation		N
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1, the clearances of reinforced insulation dimensioned as specified in Table F.7a are to withstand 160% of the withstand voltage required for basic insulation		N
	If clearances for basic insulation are selected from Clause 4 of IEC 60664-4, the clearances of reinforced insulation are twice the value required for basic insulation		N
	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



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation are based on the working voltage used as the rated voltage in table 15		N
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree	(see appended table)	P
	Pollution degree 2 applies, unless		N
	- precautions taken to protect the insulation; pollution degree 1		N
	- insulation subjected to conductive pollution; pollution degree 3		P
	A force of 2 N is applied to bare conductors, other than heating elements		N
	A force of 30 N is applied to accessible surfaces		P
	In a double insulation system, the working voltage for both the basic and supplementary insulation is taken as the working voltage across the complete double insulation system		P
	Pollution degree 3, and the insulation with a CTI not less than 250, (IEC 60335-2-7)		P
	Unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance due to : (IEC 60335-2-7)		N
	- condensation produced by the appliance		N
	- chemicals, such as detergent or fabric conditioner		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	(see appended table)	P
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 17		N
	Except for pollution degree 1, corresponding creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14		N
29.2.2	Creepage distances of supplementary insulation at least those specified for basic insulation in table 17, or	(see appended table)	P
	Table 2 of IEC 60664-4, as applicable		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
29.2.3	Creepage distances of reinforced insulation at least double those specified for basic insulation in table 17, or	(see appended table)	P
	Table 2 of IEC 60664-4, as applicable.....		N
29.2.4	Creepage distances of functional insulation not less than specified in table 18	(see appended table)	P
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 18		N
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N
29.3	Supplementary and reinforced insulation have adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		P
	Compliance checked:		P
	- by measurement, in accordance with 29.3.1, or		P
	- by an electric strength test in accordance with 29.3.2, or		N
	- for insulation, other than single layer internal wiring insulation, by an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3, and		N
	for accessible parts of reinforced insulation consisting of a single layer, by measurement in accordance with 29.3.4, or		N
	- by an assessment of the thermal quality of the material according to 29.3.3 combined with an electric strength test in accordance with 23.5, for each single layer internal wiring insulation touching each other, or		N
	- as specified in subclause 6.3 of IEC 60664-4 for insulation that is subjected to any periodic voltage having a frequency exceeding 30 kHz		N
29.3.1	Supplementary insulation have a thickness of at least 1 mm		P
	Reinforced insulation have 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 consist of at least 2 layers		N
	Reinforced insulation consist of at least 3 layers		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
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
29.3.4	Thickness of accessible parts of reinforced insulation consisting of a single layer not less than specified in table 19		N
30	RESISTANCE TO HEAT AND FIRE		P
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		P
	parts of thermoplastic material providing supplementary or reinforced insulation		P
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P
	External parts tested at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C)	(see appended table)	P
	Parts supporting live parts tested at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125 °C, whichever is the higher; temperature (°C)	(see appended table)	P
	Parts of thermoplastic material providing supplementary or reinforced insulation tested at 25 °C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C).....	(see appended table)	N
30.2	Parts of non-metallic material resistant to ignition and spread of fire		P
	This requirement does not apply to:		N
	parts having a mass not exceeding 0,5 g, provided the cumulative effect is unlikely to propagate flames that originate inside the appliance by propagating flames from one part to another, or		N
	decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		N
	Compliance checked by the test of 30.2.1, and in addition:		P
	- for attended appliances, 30.2.2 applies		N
	- for unattended appliances, 30.2.3 applies		P
	For appliances for remote operation, 30.2.3 applies		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	For base material of printed circuit boards, 30.2.4 applies		N
	For appliances incorporating a programmer or a timer, 30.2.3 is applicable. (IEC 60335-2-7)		P
	For other appliances, 30.2.2 is applicable (IEC 60335-2-7)		N
30.2.1	Parts of non-metallic material subjected to the glow-wire test of IEC 60695-2-11 at 550 °C		P
	However, test not carried out if the material is Classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 550 °C, or		N
	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 need to meet the requirements in ISO 9772 for material Classified HBF		N
30.2.2	Appliances operated while attended, parts of non-metallic material supporting current-carrying connections, and		N
	parts of non-metallic material within a distance of 3mm of such connections,		N
	subjected to the glow-wire test of IEC 60695-2-11		N
	The test severity is:		N
	- 750 °C, for connections carrying a current exceeding 0,5 A during normal operation		N
	- 650 °C, for other connections		N
	Glow-wire applied to an interposed shielding material, if relevant		N
	The glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index (GWFI) according to IEC 60695-2-12 of at least:		N
	- 750 °C, for connections carrying a current exceeding 0,5 A during normal operation		N
	- 650 °C, for other connections		N
	The glow-wire test is also not carried out on small parts. These parts are to:		N
	- comprise material having a glow-wire flammability index (GWFI) of at least 750 °C, or 650 °C as appropriate, or		N
	- comply with the needle-flame test (NFT) of Annex E, or		N
	- comprise material Classified as V-0 or V-1 according to IEC 60695-11-10		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Glow-wire 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		P
	The tests are not applicable to conditions as specified		P
	Not applicable (IEC 60335-2-4)		P
30.2.3.1	Parts of non-metallic material supporting connections carrying a current exceeding 0,2 A during normal operation, and		P
	parts of non-metallic material, other than small parts, within a distance of 3 mm,		N
	subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850 °C		P
	Glow-wire applied to an interposed shielding material, if relevant		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 850 °C		N
30.2.3.2	Parts of non-metallic material supporting connections, and		P
	parts of non-metallic material within a distance of 3mm,		P
	subjected to glow-wire test of IEC 60695-2-11		P
	The test severity is:		P
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		P
	- 650 °C, for other connections		N
	Glow-wire applied to an interposed shielding material, if relevant		P
	However, the glow-wire test of 750 °C or 650 °C as appropriate, is not carried out on parts of material fulfilling both or either of the following Classifications:		N
	- a glow-wire ignition temperature according to IEC 60695-2-13 of at least:		N
	• 775 °C, for connections carrying a current exceeding 0,2 A during normal operation		N
	• 675 °C, for other connections		N
	- a glow-wire flammability index according to IEC 60695-2-12 of at least:		N
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	- 650 °C, for other connections		N
	The glow-wire test is also not carried out on small parts. These parts are to:		N
	- comprise material having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N
	- comprise material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N
	- comply with the needle-flame test of Annex E, or		N
	- comprise material Classified as V-0 or V-1 according to IEC 60695-11-10		N
	The consequential needle-flame test of Annex E applied to non-metallic parts that encroach within the vertical cylinder placed above the centre of the connection zone and on top of the non-metallic parts supporting current-carrying connections, and parts of non-metallic material within a distance of 3 mm of such connections if these parts are those:		N
	- parts that withstood the glow-wire test of IEC 60695-2-11 of 750 °C or 650 °C as appropriate, but produce a flame that persist longer than 2 s, or		N
	- parts that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N
	- small parts, that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N
	- small parts for which the needle-flame test of Annex E was applied, or		N
	- small parts for which a material Classification of V-0 or V-1 was applied		N
	However, the consequential needle-flame test is not carried out on non-metallic parts, including small parts, within the cylinder that are:		N
	- parts having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N
	- parts comprising material Classified as V-0 or V-1 according to IEC 60695-11-10, or		N
	- parts shielded by a flame barrier that meets the needle-flame test of Annex E or that comprises material Classified as V-0 or V-1 according to IEC 60695-11-10		N
30.2.4	Base material of printed circuit boards subjected to the needle-flame test of Annex E		N
	Test not applicable to conditions as specified		N
31	RESISTANCE TO RUSTING		P



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Relevant ferrous parts adequately protected against rusting		P
	Tests specified in part 2 when necessary		P
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		P
	Appliance does not emit harmful radiation or present a toxic or similar hazard due to their operation in normal use		P
	Compliance is checked by the limits or tests specified in part 2, if relevant		P
A	ANNEX A (INFORMATIVE) ROUTINE TESTS		N
	Description of routine tests to be carried out by the manufacturer		N
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES THAT ARE RECHARGED IN THE APPLIANCE		N
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		N
	Three forms of construction covered:		N
	a) Appliance supplied directly from the supply mains or a renewable energy source, the battery charging circuitry and other supply unit circuitry incorporated within the appliance		N
	b) The part of the appliance incorporating the battery is supplied from the supply mains or a renewable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the part of the appliance containing the battery		N
	c) The part of the appliance incorporating the battery is supplied from the supply mains or a renewable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the detachable supply unit		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



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	-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.B.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
	The positive terminal indicated by symbol IEC 60417-5005 and the negative terminal by symbol IEC 60417-5006		N
	Appliances intending to be supplied from a detachable supply unit marked with symbol IEC 60417-6181 and its type reference along with symbol ISO 7000-0790 (2004-01), or		N
	use only with <model designation> supply unit :		N
7.6	Symbols 60417-5005 and IEC 60417-5006		N
7.12	The instructions give information regarding charging		N
	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
	For appliances intending to be supplied from a detachable supply unit for the purposes of recharging the battery, the type reference of the detachable supply unit is stated along with the following:		N
	WARNING: For the purposes of recharging the battery, only use the detachable supply unit provided with this appliance		N
	If the symbol for detachable supply unit is used, its meaning is explained		N
7.15	Markings placed on the part of the appliance connected to the supply mains		N
	The type reference of the detachable supply unit is placed in close proximity to the symbol		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
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 stated in the instructions or 24 h.....:		N
11.8	Temperature rise of the battery surface does not exceed the limit in the battery manufacturer's specification; measured (K); limit (K)		N
	If no limit specified, the temperature rise does not exceed 20 K; measured (K)		N
19.1	Appliances subjected to tests of 19.B.101, 19.B.102 and 19.B.103		N
19.10	Not applicable		N
19.B.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N
19.B.102	For appliances having batteries that can be removed without the aid of a tool, short-circuit of the terminals of the battery, the battery being fully charged,		N
19.B.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N
19.13	The battery does not rupture or ignite		N
21.B.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength		N
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-31, the number of falls being:		N
	- 100, if the mass of the part does not exceed 250 g (g)		N
	- 50, if the mass of the part exceeds 250 g.....:		N
	The height of the fall is 500 mm		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 in class III appliances or class III constructions operating at safety extra-low voltage not containing live parts		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
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		N
	Tests, as described, carried out when doubt with regard to the temperature Classification of the insulation of a motor winding		N
	Test conditions as specified		N
	The value of p in Table C.1 is 2 000. (IEC 60335-2-4)		N
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS		P
	Applicable to appliances having motors that incorporate thermal motor protectors necessary for compliance with the standard		P
	Test conditions as specified		P
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		N
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		N
7	Severities		N
	The duration of application of the test flame is 30 s ± 1 s		N
9	Test procedure		N
9.1	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1		N
9.2	The first paragraph does not apply		N
	If possible, the flame is applied at least 10 mm from a corner		N
9.3	The test is carried out on one specimen		N
	If the specimen does not withstand the test, the test may be repeated on two additional specimens, both withstanding the test		N
11	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		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
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	Terms and definitions		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 3 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 11 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 are applicable		N
4.14.7	Only insulation resistance and voltage proof are checked		N
	No visible damage		N
4.17	Passive flammability test		N
	This subclause is applicable		N
4.18	Active flammability test		N
	This subclause is applicable		N
G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	The following modifications to this standard are applicable for safety isolating transformers:		N
7	Marking and instructions		N
7.1	Transformers for specific use marked with:		N
	-name, trademark or identification mark of the manufacturer or responsible vendor		N
	-model or type reference		N
17	Overload protection of transformers and associated circuits		N
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N
22	Construction		N
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N
29	Clearances, creepage distances and solid insulation		N
29.1, 29.2, 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		N
	For insulated winding wires complying with subclause 19.12.3 of IEC 61558-1 there are no requirements for clearances or creepage distances		N
	For windings providing reinforced insulation, the distance specified in item 2c of table 13 of IEC 61558-1 is not assessed		N
	For safety isolating transformers subjected to periodic voltages with a frequency exceeding 30 kHz, the clearances, creepage distances and solid insulation values specified in IEC 60664-4 are applicable, if greater than the values specified in items 2a, 2c and 3 in table 13 of IEC 61558-1		N
H	ANNEX H (NORMATIVE) SWITCHES		N
	Switches comply with the following clauses of IEC 61058-1, as modified below:		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, a switch that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N
13	Mechanism		N
	The tests may be carried out on a separate sample		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
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 declared according to 7.1.4 is 10 000, unless		N
	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		N
	switches operated by hand that are interlocked so that they cannot be operated under load,		N
	are not subjected to the tests		N
	However, switches without this interlock are subjected to the test of 17.2.4.4 for 100 cycles of operation		N
	Subclauses 17.2.2 and 17.2.5.2 not applicable		N
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1		N
	The temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1 (K)		N
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		N
	Clause 20 is applicable to clearances across full disconnection and micro-disconnection		N
	It is also applicable to 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
8	Protection against access to live parts		N
8.1	Metal parts of the motor are considered to be bare live parts		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
11	Heating		N
11.3	The temperature rise of the body of the motor is determined instead of the temperature rise of the windings		N
11.8	The temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		N
16	Leakage current and electric strength		N
16.3	Insulation between live parts of the motor and its other metal parts is not subjected to the test		N
19	Abnormal operation		N
19.1	The tests of 19.7 to 19.9 are not carried out		N
19.1.101	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
22.1.101	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		N
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N
5.7	Conditioning of the test specimens		N
	When production samples are used, three samples of the printed circuit board are tested		N
5.7.1	Cold		N
	The test is carried out at -25 °C		N
5.7.3	Rapid change of temperature		N
	Severity 1 is specified		N
5.9	Additional tests		N



IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	This subclause is not applicable		N
K	ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES		P
	The information on overvoltage categories is extracted from IEC 60664-1		P
	Overvoltage category is a numeral defining a transient overvoltage condition		P
	Equipment of overvoltage category IV is for use at the origin of the installation		N
	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		P
	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		P
	Information for the determination of clearances and creepage distances		P
M	ANNEX M (NORMATIVE) POLLUTION DEGREE		P
	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 macroenvironment		P
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		P
	Minimum clearances specified where pollution may be present in the microenvironment		N
	Degrees of pollution in the microenvironment		N
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		N
	- 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		P
	- 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		P
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		P
7	Test apparatus		P
7.3	Test solutions		P
	Test solution A is used		P
10	Determination of proof tracking index (PTI)		P
10.1	Procedure		P
	The proof voltage is 100V, 175V, 400V or 600V ...	250V	P
	The test is carried out on five specimens		P
	In case of doubt, additional test with proof voltage reduced by 25V, the number of drops increased to 100		P
10.2	Report		N
	The report states 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		P
	Description of tests for determination of resistance to heat and fire		P
P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES		N
	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



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	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
5.7	The ambient temperature for the tests of clauses 11 and 13 is 40 +3/0 °C		N
7.1	The appliance marked with the letters WDaE		N
7.12	The instructions state that the appliance is to be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA		N
	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
11.8	The values of Table 3 are reduced by 15 K		N
13.2	The leakage current for Class I appliances not exceeding 0,5 mA		N
15.3	The value of t is 37 °C		N
16.2	The leakage current for Class I appliances not exceeding 0,5 mA (mA):		N
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		N
Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS		N
	Description of tests for appliances incorporating electronic circuits		N
R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION		N
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 validated in accordance with the requirements of this annex		N
R.1	Programmable electronic circuits using software		N
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 constructed so that the software does not impair compliance with the requirements of this standard		N
R.2	Requirements for the architecture		N
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 use measures to control and avoid software-related faults/errors in safety-related data and safety-related segments of the software		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
R.2.1.1	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.2 have one of the following structures:		N
	- single channel with periodic self-test and monitoring		N
	- dual channel (homogenous) with comparison		N
	- dual channel (diverse) with comparison		N
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 have one of the following structures:		N
	- single channel with functional test		N
	- single channel with periodic self-test		N
	- dual channel without comparison		N
R.2.2	Measures to control faults/errors		N
R.2.2.1	When redundant memory with comparison is provided on two areas of the same component, the data in one area is stored in a different format from that in the other area		N
R.2.2.2	Programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.2 and that use dual channel structures with comparison, have additional fault/error detection means for any fault/errors not detected by the comparison		N
R.2.2.3	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, means are provided for the recognition and control of errors in transmissions to external safety-related data paths		N
R.2.2.4	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the programmable electronic circuits incorporate measures to address the fault/errors in safety-related segments and data indicated in table R.1 and R.2 as appropriate		N
R.2.2.5	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in Table R.1 or Table R.2, detection of a fault/error shall occur before compliance with clause 19, 20.103 and 20.104 is impaired. (IEC 60335-2-4)		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in Table R.1 or Table R.2, detection of a fault/error shall occur before compliance with clauses 19, 20.104, 20.105 and 22.101 is impaired (IEC 60335-2-7)		N
R.2.2.6	The software is referenced to relevant parts of the operating sequence and the associated hardware functions		N
R.2.2.7	Labels used for memory locations are unique		N
R.2.2.8	The software is protected from user alteration of safety-related segments and data		N
R.2.2.9	The software and safety-related hardware under its control shall be initialized and shall terminate before compliance with clause 19, 20.103 and 20.104 is impaired. (IEC 60335-2-4)		N
	The software and safety-related hardware under its control shall be initialized and shall terminate before compliance with clauses 19, 20.104, 20.105 and 22.101 is impaired. (IEC 60335-2-7)		N
R.3	Measures to avoid errors		N
R.3.1	General		N
	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the following measures to avoid systematic fault in the software are applied		N
	Software that incorporates measures used to control the fault/error conditions specified in table R.2 is inherently acceptable for software required to control the fault/error conditions specified in table R.1		N
R.3.2	Specification		N
R.3.2.1	Software safety requirements:	Software Id:	N
	The specification of the software safety requirements includes the descriptions listed		N
R.3.2.2	Software architecture		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
R.3.2.2.1	The specification of the software architecture includes the aspects listed - techniques and measures to control software faults/errors (refer to R.2.2); - interactions between hardware and software; - partitioning into modules and their allocation to the specified safety functions; - hierarchy and call structure of the modules (control flow); - interrupt handling; - data flow and restrictions on data access; - architecture and storage of data; - time-based dependencies of sequences and data	Document ref. No:	N
R.3.2.2.2	The architecture specification is validated against the specification of the software safety requirements by static analysis		N
R.3.2.3	Module design and coding		N
R.3.2.3.1	Based on the architecture design, software is suitably refined into modules		N
	Software module design and coding is implemented in a way that is traceable to the software architecture and requirements		N
R.3.2.3.2	Software code is structured		N
R.3.2.3.3	Coded software is validated against the module specification by static analysis		N
	The module specification is validated against the architecture specification by static analysis		N
R.3.3.3	Software validation		N
	The software is validated with reference to the requirements of the software safety requirements specification		N
	Compliance is checked by simulation of:		N
	- input signals present during normal operation		N
	- anticipated occurrences		N
	- undesired conditions requiring system action		N

TABLE R.1 – GENERAL FAULT/ERROR CONDITIONS

Component ₁₎	Fault/error	Acceptable measures ^{2) 3)}	Definitions	Document reference for applied measure	Document reference for applied test	Verdict
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Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7						
Clause	Requirement - Test		Result - Remark			Verdict
1 CPU						N
1.1 Registers	Stuck at	Functional test, or periodic self-test using either: - static memory test, or - word protection with single bit redundancy	H.2.16.5 H.2.16.6 H.2.19.6 H.2.19.8.2			
1.2 VOID						N
1.3 Programme counter	Stuck at	Functional test, or Periodic self-test, or Independent time-slot monitoring, or Logical monitoring of the programme sequence	H.2.16.5 H.2.16.6 H.2.18.10.4 H.2.18.10.2			N
2 Interrupt handling and execution	No interrupt or too frequent interrupt	Functional test, or time-slot monitoring	H.2.16.5 H.2.18.10.4			N
3 Clock	Wrong frequency (for quartz synchronized clock: harmonics/sub-harmonics only)	Frequency monitoring, or time slot monitoring	H.2.18.10.1 H.2.18.10.4			N
4. Memory						N
4.1 Invariable memory	All single bit faults	Periodic modified checksum, or multiple checksum, or word protection with single bit redundancy	H.2.19.3.1 H.2.19.3.2 H.2.19.8.2			
4.2 Variable memory	DC fault	Periodic static memory test, or word protection with single bit redundancy	H.2.19.6 H.2.19.8.2			N
4.3 Addressing (relevant to variable and invariable memory)	Stuck at	Word protection with single bit redundancy including the address	H.2.19.8.2			N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7						
Clause	Requirement - Test			Result - Remark		Verdict
5 Internal data path	Stuck at DC fault	Word protection with single bit redundancy Comparison of redundant CPUs by either: - reciprocal comparison - independent hardware comparator	H.2.19.8.2 H.2.18.15 H.2.18.3			N
5.1 VOID						N
5.2 Addressing	Wrong address	Word protection with single bit redundancy including the address	H.2.19.8.2			N
6 External communication	Hamming distance 3	Word protection with multi-bit redundancy, or CRC – single work, or Transfer redundancy, or Protocol test	H.2.19.8.1 H.2.19.4.1 H.2.18.2.2 H.2.18.14			N
6.1 VOID						N
6.2 VOID						N
6.3 Timing	Wrong point in time Wrong sequence	Time-slot monitoring, or scheduled transmission Time-slot and logical monitoring, or Comparison of redundant communication channels by either: - reciprocal comparison - independent hardware comparator Logical monitoring, or time-slot monitoring, or Scheduled transmission (same options as for wrong point in time)	H.2.18.10.4 H.2.18.18 H.2.18.10.3 H.2.18.15 H.2.18.3 H.2.18.10.2 H.2.18.10.4 H.2.18.18			N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7						
Clause	Requirement - Test			Result - Remark		Verdict
7 Input/output periphery	Fault conditions specified in 19.11.2	Plausibility check Comparison of redundant communication channels by either: - reciprocal comparison - independent hardware comparator	H.2.18.13 H.2.18.15 H.2.18.3			N
7.1 VOID						N
7.2 Analog I/O 7.2.1 A/D and D/A- converter	Fault conditions specified in 19.11.2	Plausibility check	H.2.18.13			N
7.2.2 Analog multiplexer	Wrong addressing	Plausibility check	H.2.18.13			N
8 VOID						N
9 Custom chips ⁴⁾ e.g. ASIC, GAL, Gate array	Any output outside the static and dynamic functional specification	Periodic self-test	H.2.16.6			N
NOTE A Stuck-at fault model denotes a fault model representing an open circuit or a non-varying signal level. A DC fault model denotes a stuck-at fault model incorporating short circuit between signal lines.						
¹⁾ For fault/error assessment, some components are divided into their sub-functions. ²⁾ For each sub-function in the table, the Table R.2 measure will cover the software fault/error. ³⁾ Where more than one measure is given for a sub-function, these are alternatives. ⁴⁾ To be divided as necessary by the manufacturer into sub-functions.						

S	ANNEX S (NORMATIVE) BATTERY OPERATED APPLIANCES POWERED BY BATTERIES THAT ARE NON-RECHARGEABLE OR NOT RECHARGED IN THE APPLIANCE			N
	The following modifications to this standard are applicable for battery-operated appliances where the batteries are either non-rechargeable (primary batteries), or			N
	rechargeable batteries (secondary batteries) that are not recharged in the appliance			N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
5.8.1	If the supply terminals for the connection of the battery have no indication of polarity, the more unfavourable polarity is applied		N
5.S.101	Appliances intended for use with a battery box are tested with the battery box supplied with the appliance or with the battery box recommended in the instructions		N
5.S.102	Appliances are tested as motor-operated appliances.		N
7.1	Appliances marked with the battery voltage (V) and the polarity of the terminals, unless :		N
	the polarity is irrelevant		N
	Appliances also marked with:		N
	– name, trade mark or identification mark of the manufacturer or responsible vendor :		N
	– model or type reference :		N
	– IP number according to degree of protection against ingress of water, other than IPX0 :		N
	– type reference of battery or batteries :		N
	If relevant, the positive terminal is indicated by the symbol IEC 60417-5005 and the negative terminal by the symbol IEC 60417-5006		N
	If appliances use more than one battery, they are marked to indicate correct polarity connection of the batteries		N
7.6	Additional symbols		N
7.12	The instructions contain the following, as applicable:		N
	– the types of batteries that may be used :		N
	– how to remove and insert the batteries		N
	– non-rechargeable batteries are not to be recharged		N
	– rechargeable batteries are to be removed from the appliance before being charged		N
	– different types of batteries or new and used batteries are not to be mixed		N
	– batteries are to be inserted with the correct polarity		N
	– exhausted batteries are to be removed from the appliance and safely disposed of		N
	– if the appliance is to be stored unused for a long period, the batteries are removed		N
	– the supply terminals are not to be short-circuited		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
11.5	Appliances are supplied with the most unfavourable supply voltage between		N
	– 0,55 and 1,0 times the battery voltage, if the appliance can be used with non-rechargeable batteries		N
	– 0,75 and 1,0 times battery voltage, if the appliance is designed for use with rechargeable batteries only		N
	The values specified in Table S.101 for the internal resistance per cell of the battery is taken into account		N
19.1	The tests are carried out with the battery fully charged unless otherwise specified		N
19.13	The battery does not rupture or ignite		N
19.S.101	Appliances are supplied with the voltage specified in 11.5. The supply terminals having an indication of polarity are connected to the opposite polarity, unless		N
	such a connection is unlikely to occur due to the construction of the appliance		N
19.S.102	For appliances with provision for multiple batteries, one or more of the batteries are reversed and the appliance is operated, if reversal of batteries is allowed by the construction		N
25.5	The flexible leads or flexible cord used to connect an external battery or battery box in is connected to the appliance by a type X attachment		N
25.13	This requirement is not applicable to the flexible leads or flexible cord connecting external batteries or a battery box with an appliance		N
25.S.101	Appliances have suitable means for connection of the battery. If the type of battery is marked on the appliance, the means of connection is suitable for this type of battery		N
26.5	Terminal devices in an appliance for the connection of the flexible leads or flexible cord connecting an external battery or battery box are so located or shielded that there is no risk of accidental connection between supply terminals		N
30.2.3.2	There is no battery in the area of the vertical cylinder used for the consequential needle flame test, unless		N
	the battery is shielded by a barrier that meets the needle flame test of Annex E, or		N
	that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		N



IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
AA	ANNEX AA (NORMATIVE)		N
	RINSING AGENT (IEC 60335-2-4)		N
	Any commercially available rinsing agent may be used, but if there is any doubt with regards to the test result, the composition of the rinsing agent shall be as follows:		N
	Plurafac LF 221 15% Cumene sulfonate (40% solution) 11,5% Citric acid (anhydrous) 3,0% Deionized water 70,5%		N
	The rinsing agent has the following properties: - Viscosity, 17 mPa*s; - pH, 2,2 (1% in water).		N
	DETERGENT AND RINSING AGENT (IEC 60335-2-7)		N
AA.1	Detergent: composition, reference		N
AA.2	-Rinsing agent described annex AA		N
	-Commercially rinsing agent reference:		N
BB	ANNEX BB (NORMATIVE) AGEING TEST FOR ELASTOMERIC PARTS (IEC 60335-2-7)		N
	Test carried out by measuring hardness and mass before and after immersion in a solution of detergent at elevated temperature		N
	Test is carried out on at least three samples of each part as specified in ISO 1817, with the following modifications :		N
4	Tests liquids		N
	Liquid is obtained by dissolving 5 g of detergent per litre of distilled water		N
5	Test pieces		N
5.4	Conditioning		N
	Temperature : 23°C± 2°C		N
	Relative humidity : (50± 5)%		N
6	Immersion in the test liquid		N
6.1	Temperature		N
	Solution heated within 1h with test pieces immersed to 75 ₊₀ ⁵ °C and maintained at this value		N
	Solution renewed every 24h		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
6.2	duration		N
	Immersion during periods as specified		N
7	Procedure		N
7.2	Change in mass		N
	Increase in mass of the test pieces, not exceeding 10 % of the value determined before immersion		N
7.6	Change in hardness		N
	Micro-test for hardness applies		N
	Hardness of the test pieces has not been changed by more than 8 IRHD		N
	Surface not sticky and no crack visible to the naked eye or any other deterioration		N
CC	ANNEX CC (NORMATIVE) DETERGENT FREE ELECTROLYSER WASHING MACHINES (IEC 60335-2-7)		N
	Washing machines for household and similar use that incorporate an electrolyte process employing an electrolyte instead of detergent		N
3.1.9	Electrolyte specified in the instructions, amount, reference		N
7.12	Instructions for appliances intended to be filled with electrolyte by the user shall contain details of the electrolyte,		N
	And the substance of the following: In order to avoid hazards, use only the electrolyte specified		N
7.12.1	Installation instructions shall state that the appliance shall be installed so that there is a distance of at least 200 mm between the appliance enclosure and external heat sources, such as appliances containing heating elements.		N
15.2	Appliances are operated under the clause of cl. 11 but without clothes load.		N
	When the maximum water level is reached, the inlet valve is held open and the filling is continued for 15 min after first evidence of overflow or until the inflow is automatically stopped by other means.		N
19.201	Appliances shall be constructed so that foaming does not affect electrical insulation.		N
	Test carried out immediately after 15.2		N
	Test carried out immediately after 15.2		N
	After the test the appliance shall withstand the electric strength test of 16.3		N



IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
22.6	A coloured solution from the electrolysed portion of the wash water is used instead of coloured water		N
22.17	Spacers intended to prevent the electrolyser aperture being blocked by walls shall be fixed so that it is not possible to remove them from the outside of the appliance by hand or by means of screwdriver or a spanner.		N
22.201	Appliances fitted with an electrolyser, consisting of cathodic and anodic chambers separated by an electrolytic separator, shall be constructed so that the electrolyser is always open to the atmosphere through an aperture of at least 5 mm in diameter, or 20 mm ² in area with a width of at least 3 mm.		N
	The aperture shall be located so that it is unlikely to be obstructed in normal use.		N
22.202	During normal use of the appliance, the chemical reaction in the electrolyser shall not produce hydrogen gas that is released in hazardous amounts into areas		N
	-where electrical components that produce arcs and sparks during normal operation or abnormal operation are mounted, unless		N
	These components have been tested and found at least to comply with IEC 60079-15 for group IIC gases, or		N
	-that contain surfaces with a temperature exceeding 460°C during normal operation or abnormal operation and that may be exposed to the released hydrogen gas		N
	Compliance is checked by inspection, by measuring the temperature of the relevant surfaces during normal operation or abnormal operation, and by measuring the concentration of hydrogen gas (shall not exceed 50% of the LFL of hydrogen)		N
22.203	During normal use of the appliance, the chemical reaction in the electrolyser shall not produce wash water that causes corrosion due to the PH value of the wash water.		N
	Compliance is checked by the salt mist test of IEC 60068-2-52, severity 2 being applicable.		N
	After the test, the appliance shall not have deteriorated to such an extent that compliance with this standard, in particular with cl. 8 and 27 is impaired. The coating shall not be broken and shall not have loosened the surface.		N
29.2	Pollution degree 3, and the insulation with a CTI not less than 250,		N



IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	Unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance due to :		N
	- condensation produced by the appliance		N
	- chemicals, such as electrolyte or fabric conditioner		N
32	The ozone concentration produced by the chemical reactions in the electrolyser not be excessive.		N
	Compliance is checked by test as described		N
	The percentage of ozone shall not exceed 5×10^{-6}		N
BB	Instead of the solution containing detergent, a solution of the electrolysed portion of the wash water obtained under the conditions of cl. 11 is used.		N
DD	ANNEX DD (INFORMATIVE) WASHING MACHINES INCORPORATING A POWER DRIVEN WRINGER (IEC 60335-2-7)		N
7.1	The safety release mechanism of power-driven wringers shall be marked to indicate its method of operation, unless		N
	Its operating means to be continuously actuated by the user.		N
7.12	The instructions shall draw attention to the potential hazards involved when operating the wringer,		N
	And shall state that : -the wringer must be disengaged or switched off when not in use; -the appliance must not be operated by children		N
11.7	Appliance is operated for 3 cycles (washing following by wringing), with a rest period of 4 min between cycles. Duration of each wringing: 8 min. The wringer is loaded by passing a board through the rollers once a minute, the roller pressure being adjusted to the maximum value. The board is approximately 20 mm thick and 80 cm long, its width being at least equal to three-quarters of the effective length of the rollers. The board is uniformly tapered at each end down to a thickness of approximately 3 mm, over a distance of 20 cm.		N
19.7	Moving parts of a wringer are locked even if a trip bar prevents rotation of the roller		N
20.201	Power-driven wringers constructed so that the pressure between the rollers has to be maintained by the user, unless a readily accessible safety release or other means of protection is incorporated		N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7			
Clause	Requirement - Test	Result - Remark	Verdict
	The release mechanism shall operate easily without violent ejection of any part and shall release pressure on the rollers immediately. The rollers shall separate either by at least 45 mm at both ends or by at least 25 mm at one end and 75 mm at the other		N
	The safety release shall be operable by a person standing in any normal working position relative to the wringer, even if the fingers of both hands are trapped between the rollers.		N
	Power-driven wringers shall be constructed to prevent fingers being squeezed between a roller and the frame		N
	Power-driven wringers shall be controlled by an easily accessible switch		N



WALTEK



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7

10.1	TABLE: Power input deviation					P
Input deviation of/at:	P rated (W)	P measured (W)	dP	Required dP	Remark	
230V, 50Hz	360	345.3	-14.7%	60W	Model XPB36-800S assembled with washing motor XPD-90 and spinning motor XTD-30	
230V, 60Hz	360	343.1	-16.9%	60W	Model XPB36-800S assembled with washing motor XPD-90 and spinning motor XTD-30	
230V, 50Hz	440	470.4	+6.9%	+15%	Model XPB58-800S assembled with washing motor XPD-120 and spinning motor XTD-45	
230V, 60Hz	440	468.9	+6.6%	+15%	Model XPB58-800S assembled with washing motor XPD-120 and spinning motor XTD-45	
230V, 50Hz	660	750.0	+13.6%	+15%	Model XPB80-800S assembled with washing motor XPD-150 and spinning motor XTD-60	
230V, 60Hz	660	738.0	+11.8%	+15%	Model XPB80-800S assembled with washing motor XPD-150 and spinning motor XTD-60	

10.2	TABLE: Current deviation						N
Input deviation of/at:	Model:	I rated (A)	I measured (A)	dP	Required dP	Remark	
--	--	--	--	--	--	--	

11.8-1	TABLE: Heating test, thermocouples. Model XPB36-800S assembled with washing motor XPD-90 and spinning motor XTD-30.					P
	t1 (°C):	21.7				—
	t2 (°C):	21.8				—
	Test voltage (V)	1.06 x 240V =254.4V				—
Thermocouple locations		dT (K)		Max. dT (K)		
Supply cord		11.0		50		
Internal wire		34.1		50		
Fuse holder		35.1		Cl.30		
Handle		9.8		60		
Drum		33.1		Cl.30		
Wash timer		6.2		T85-25=60		
Knob		7.7		60		
Main motor winding		54.2		Class 155, 115		
Spin motor winding		63.2		Class 155, 115		
X2 capacitor		17.4		T85-25=60		



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7

Motor running capacitor	24.2			T70-25=45	
Wire connector	26.3			T150-25=125	
Control panel	8.8			60	
Enclosure	8.5			60	
Test corner	9.0			65	
Temperature rise dT of winding:	R1 (Ω)	R2 (Ω)	dT (K)	required dT (K)	insulation class
Washing motor primary winding	53.4	65.3	57.0	115	Class 155
Washing motor secondary winding	53.0	65.0	57.9	115	Class 155
Spinning motor primary winding	157.6	199.6	68.2	115	Class 155
Spinning motor secondary winding	155.4	199.1	71.9	115	Class 155

11.8-2	TABLE: Heating test, thermocouples. Model XPB58-800S assembled with washing motor XPD-120 and spinning motor XTD-45.				P
	t1 (°C):	21.6			—
	t2 (°C):	24.4			—
	Test voltage (V)	1.06 x 240V =254.4V			—
Thermocouple locations		dT (K)		Max. dT (K)	
Supply cord		17.4		50	
Internal wire		17.4		50	
Fuse holder		33.1		Cl.30	
Handle		5.6		60	
Drum		20.5		Cl.30	
Wash timer		3.4		T85-25=60	
Knob		5.4		60	
Wash motor winding		109.0		Class 155, 115	
Spin motor winding		92.7		Class 155, 115	
X2 capacitor		15.8		T85-25=60	
Motor running capacitor		4.5		T70-25=45	
Wire connector		30.8		T150-25=125	
Control panel		3.4		60	
Enclosure		5.1		60	
Test corner		8.5		65	
Temperature rise dT of winding:	R1 (Ω)	R2 (Ω)	dT (K)	required dT (K)	insulation class
Washing motor primary winding	27.5	39.8	111.7	115	Class 155
Washing motor secondary winding	27.1	39.4	113.4	115	Class 155



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7

Spinning motor primary winding	62.0	86.7	99.2	115	Class 155
Spinning motor secondary winding	61.5	86.1	99.6	115	Class 155

11.8-3	TABLE: Heating test, thermocouples. Model XPB80-800S assembled with washing motor XPD-150 and spinning motor XTD-60.				P
	t1 (°C):	24.4			—
	t2 (°C):	24.4			—
	Test voltage (V)	1.06 x 240V =254.4V			—
Thermocouple locations		dT (K)	Max. dT (K)		
Supply cord		28.0	50		
Internal wire		28.4	50		
Fuse holder		38.0	Cl.30		
Handle		23.0	60		
Drum		41.8	Cl.30		
Wash timer		26.4	T85-25=60		
Knob		13.3	60		
Main motor winding		75.8	Class 155, 115		
Spin motor winding		62.1	Class 155, 115		
X2 capacitor		21.3	T85-25=60		
Motor running capacitor		28.9	T70-25=45		
Wire connector		26.1	T150-25=125		
Control panel		16.5	60		
Enclosure		33.2	60		
Test corner		10.7	65		
Temperature rise dT of winding:		R1 (Ω)	R2 (Ω)	dT (K)	required dT (K) insulation class
Washing motor primary winding		23.2	31.2	89.3	115 Class 155
Washing motor secondary winding		23.2	31.0	87.0	115 Class 155
Spinning motor primary winding		63.5	81.3	72.6	115 Class 155
Spinning motor secondary winding		53.8	70.2	78.9	115 Class 155

13.2	TABLE: Leakage current			P
	Heating appliances: 1.15 x rated input.....:	--		—
	Motor-operated and combined appliances: 1.06 x rated voltage	Same as 11.8		—
Leakage current between:		I (mA)	Max. allowed I (mA)	
Model XPB36-800S assembled with washing motor XPD-90 and spinning motor XTD-30.				



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7

Live part and plastic enclosure/ switch knob	0.01	0.35 peak
Live part and earthing part	0.06	3.5
Model XPB58-800S assembled with washing motor XPD-120 and spinning motor XTD-45.		
Live part and plastic enclosure/ switch knob	0.03	0.35 peak
Live part and earthing part	0.07	3.5
Model XPB80-800S assembled with washing motor XPD-150 and spinning motor XTD-60.		
Live part and plastic enclosure/ switch knob	0.01	0.35 peak
Live part and earthing part	0.06	3.5

13.3	TABLE: Electric strength, for all models.		P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)
L/N and earthed metal		1000	No
Basic insulation and accessible plastic parts		1750	No
L/N and accessible plastic parts		3000	No

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

16.2	TABLE: Leakage current		P
Single phase appliances: 1.06 x rated voltage		1.06 x 240V =254.4V	—
Three phase appliances 1.06 x rated voltage divided by $\sqrt{3}$:		--	—
test voltage applied between:		I (mA)	Max. allowed I (mA)
Live part and plastic enclosure/ switch knob		0.01	0.25
Live part and earthing part		0.07	3.5

16.3	TABLE: Electric strength		P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)
L/N and earthed metal		1250	No
Basic insulation and accessible plastic parts		1750	No
L/N and accessible plastic parts		3000	No

17	TABLE: Overload protection. Temperature rise		N
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Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7

Temperature rise of part/at:	dT (K)	Max. dT (K)
--	--	--

19.7	TABLE: abnormal operation. Temperature rise measurements		P
	t1 (°C):	24.5	—
	t2 (°C):	24.8	—
	Test voltage (V)	240	—
Thermocouple locations		dT (K)	Max. dT (K)
XPD-90			
Wash motor winding normally		119.7	190
Wash motor winding when running capacitor open circuit		122.9	190
XPD-120			
Wash motor winding normally		145.4	190
Wash motor winding when running capacitor open circuit		122.5	190
XPD-150			
Wash motor winding normally		143.2	190
Wash motor winding when running capacitor open circuit		124.7	190

Annex D	TABLE: Thermal motor protector test		P
	t1 (°C):	23.1	—
	t2 (°C):	22.0	—
	Test voltage (V)	240	—
Thermocouple locations		dT (K)	Max. dT (K)
XPD-90			
Wash motor winding		122.9	190
XPD-120			
Wash motor winding		145.4	190
XPD-150			
Wash motor winding		167.6	190
XTD-30			
Wash motor winding		102.5	190
XTD-45			
Wash motor winding		109.4	190
XTD-60			



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7

Wash motor winding	112.6	190
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24.1	TABLE: Components					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity	
Plug	Ningbo Qiaopu Electric Co., Ltd.	D03	250V~, 16A	VDE 0620-2-1	VDE 40002872	
Alternative	Various	Various	250V~, 16A	VDE 0620-2-1	VDE approved	
BS plug	Ningbo Ousheng Electric Co., Ltd	OS13	250V~, 13A	BS 1363-1	ASTA 1176	
Alternative	Various	Various	250V~, 13A	BS 1363-1	BS approved	
Alternative	Cixi Lujie Electric Appliances Co., Ltd	LJ01	250V~, 13A	BS 1363	BSI KM 69196	
Alternative	Various	Various	250V~, 13A	BS 1363	BS approved	
Power cord	Ningbo Qiaopu Electric Co., Ltd.	H05VV-F	3G0.75mm ²	EN 50525-2-11	VDE 40035976	
Alternative	Various	H05VV-F	3G0.75mm ²	EN 50525-2-11	VDE approved	
Select switch	Ningbo Sijia Electric Appliance Co., Ltd.	XZK-B	250V~, 5A, 10T55, 1E4	IEC/EN 61058- 1	TUV B 12 05 45304 068	
Internal wire	Huizhou Bin Da Electron Co., Ltd.	1015, 1007	22AWG, T80	--	UL E332295	
Alternative	Various	1015, 1007	22AWG, T80	--	UL approved	
Alternative	Tongxiang Shi Hangfeng Dianlan Youxian Gongsi	60227 IEC 06 (RV)/ 60227 IEC 08(RV-90)	0.5mm ² , 300/500V	GB/T 5023.3 IEC 60227-3	CQC 20110101054 78950	
Alternative	Various	60227 IEC 06 (RV)/ 60227 IEC 08(RV-90)	0.5mm ² , 300/500V	GB/T 5023.3 IEC 60227-3	UL approved	
Alternative	Cixi Shi Faming Dianxian Chang	60227 IEC 08 (RV-90)	0.5mm ² , 300/500V	IEC/EN 60335- 1 IEC/EN 60335- 2-7 IEC/EN 60335- 2-4	Tested with appliance	
Alternative	Cixi Shi Shunfa Xianlan Chang	60227 IEC 08 (RV-90)	0.5mm ² , 300/500V	IEC/EN 60335- 1 IEC/EN 60335- 2-7 IEC/EN 60335- 2-4	Tested with appliance	



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7

Spin timer	Ningbo Sijia Electric Appliance Co., Ltd.	DXT-5*	AC 250V, 3A, 50Hz, T85, 1E4	IEC/EN 60730-2-1	TUV B 11 06 45304 066
Wash timer	Ningbo Sijia Electric Appliance Co., Ltd.	DXT-15SF-*	AC 250V, 5A, 50Hz, T85, 1E4	IEC/EN 60730-2-1	TUV B 11 06 45304 066
Closed-end connector	Heavy Power Co., Ltd.	CE2	T150	IEC/EN 60335-1 IEC/EN 60335-2-7 IEC/EN 60335-2-4	UL E113650 Tested with appliance
Current fuse	Hollyland Co., Ltd.	50F	F5AL, 250V~	GB9364.1 GB9364.2 IEC60127-1 IEC60127-2	CQC 2005010207 153272
Safety switch	Selong Electric Co., Ltd.	KM	250V, 50/60Hz, 16(6)A, T85, 1E4	IEC/EN 60730-1 IEC/EN 60730-2-12	TUV B 11 06 54831 007
X2 capacitor	Cixi Yuandong Electronics Co., Ltd.	MPX	275V, 0.1uF, T85	IEC/EN 60384-14	VDE 40009966
Wash motor (XPB36-800S, XPB25-800S, XPB28-800S, XPB32-800S)	Zhejiang Weikang Motor Co., Ltd.	XPD-90	220-240V, 50/60Hz, Class 155(F), 90W	IEC/EN 60335-1 IEC/EN 60335-2-7 IEC/EN 60335-2-4	Tested with appliance
Spin motor (XPB36-800S, XPB25-800S, XPB28-800S, XPB32-800S)	Zhejiang Weikang Motor Co., Ltd.	XTD-30	220-240V, 50/60 Hz, Class 155(F), 30W	IEC/EN 60335-1 IEC/EN 60335-2-7 IEC/EN 60335-2-4	Tested with appliance
Motor running capacitor	Cixi Riyi Capacitor Factory	CBB65A-S4	AC 450V, 7+3μF, T70, P2	IEC/EN 60252-1	TUV R 50244741
Wash motor (XPB48-800S, XPB52-800S, XPB42-800S, XPB58-800S)	Zhejiang Weikang Motor Co., Ltd.	XPD-120	220-240V, 50/60Hz, Class 155(F), 120W	IEC/EN 60335-1 IEC/EN 60335-2-7 IEC/EN 60335-2-4	Tested with appliance
Spin motor (XPB48-800S, XPB52-800S, XPB42-800S, XPB58-800S)	Zhejiang Weikang Motor Co., Ltd.	XTD-45	220-240V, 50/60Hz, Class 155(F), 45W	IEC/EN 60335-1 IEC/EN 60335-2-7 IEC/EN 60335-2-4	Tested with appliance
Motor running capacitor	Cixi Riyi Capacitor Factory	CBB65A-S4	AC 450V, 50/60Hz, 10+4μF, T70, P2	IEC/EN 60252-1	TUV R 50244741



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7

Wash Motor (XPB60-800S, XPB68-800S, XPB72-800S, XPB78-800S, XPB80-800S)	Zhejiang Weikang Motor Co., Ltd.	XPD-150	220-240V, 50/60Hz, Class 155(F), 150W	IEC/EN 60335- 1 IEC/EN 60335- 2-7 IEC/EN 60335- 2-4	Tested with appliance
Spin motor (XPB60-800S, XPB68-800S, XPB72-800S, XPB78-800S, XPB80-800S)	Zhejiang Weikang Motor Co., Ltd.	XTD-60	220-240V, 50/60Hz, Class 155(F), 60W	IEC/EN 60335- 1 IEC/EN 60335- 2-7 IEC/EN 60335- 2-4	Tested with appliance
Motor running capacitor	Ningbo Zhenhai Longrong Electronic Component Factory	CBB65	AC 450V, 12+5μF, T70, P2	IEC/EN 60252- 1	TUV R 50280410
Alternative	Cixi Riyi Capacitor Factory	CBB65A-S4	AC 450V, 12+5μF, T70, P2	IEC/EN 60252- 1	TUV R 50244741
Enclosure PP	Shanghai Oil & Chemical Industry Co., Ltd.	PA-765(+)	Min. Thick. 2,2 mm	IEC/EN 60335- 1 IEC/EN 60335- 2-7 IEC/EN 60335- 2-4	Tested with appliance
Enclosure ABS	Ningbo Lejin Yongxing Chemical Industry Co., Ltd.	EFR63(b)	Min. Thick. 2,2 mm	IEC/EN 60335- 1 IEC/EN 60335- 2-7 IEC/EN 60335- 2-4	Tested with appliance
Motor protector	Jiangsu Changsheng Electric Appliance Co., Ltd.	BR-A2D *	250V, 6A, T135	IEC/EN 60730- 1	VDE 40015893

28.1	TABLE: Threaded part torque test			P
Threaded part identification	Diameter of thread (mm)	Column number (I. II. Or III)	Applied torque (Nm)	
Screw for fixing enclosure	4.7	II	1.8	
Screw for earthing	4.7	II	1.8	

29.1	TABLE: Clearances					P
	Overvoltage category...	II				--
		Type of insulation:				
Rated impulse voltage (V):	Min. CI (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0,5*	—	—	—	—	N



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7

500	0,5*	—	—	—	—	N
800	0,5*	—	—	—	—	N
1 500	0,5*/**	—	—	—	—	N
2 500	1,5**	>2.0	>2.0	>2.0	—	P
4 000	3,0**	—	—	—	>3.5	P
6 000	5,5**	—	—	—	—	N
8 000	8,0**	—	—	—	—	N
10 000	11,0**	—	—	—	—	N

*) The value is increased to 0,8mm for pollution degree 3

*) If the construction is affected by wear, distortion, movement of the parts or during assembly, the value is increased by 0,5 mm

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V)	Creepage distance (mm) Pollution degree							Type of insulation			
	1	2			3						
		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	<u>4,0</u>	>4.0	—	—	P
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	<u>4,0</u>	—	>4.0	—	P
>125 and ≤250	1,2	2,6	3,6	5,0	6,4	7,2	<u>8,0</u>	—	—	>8.0	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



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7

>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
>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



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7

>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

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

Remark: See table 29.1

29.2	TABLE: Creepage distances, functional insulation								P
Working voltage (V)	Creepage distance (mm) Pollution degree								
	1	2			3				
		Material group			Material group				
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	Verdict / Remark	
≤50	0,2	0,6	0,8	1,1	1,4	1,6	1,8	N	
>50 and ≤125	0,3	0,7	1,0	1,4	1,8	2,0	2,2	N	
>125 and ≤250	0,4	1,0	1,4	2,0	2,5	2,8	3,2	P	
>250 and ≤400	0,8	1,6	2,2	3,2	4,0	4,5	5,0	N	
>400 and ≤500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	N	
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	N	
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	N	
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	N	
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	N	
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	N	
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	N	
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	N	
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	N	
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	N	
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	N	
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	N	
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	N	
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	N	
Remark: see table 29.1									

30.1	TABLE: Ball pressure				P
Part	Test temperature (°C)		Impression diameter (mm)	Allowed impression diameter (mm)	



Reference No.: WTN17F1298697S

IEC 60335-2-4 & IEC 60335-2-7

Enclosure / control panel	75	0.6	2.0
Drum	75	0.9	2.0
Fuse holder	125	0.3	2.0

30.2	TABLE: Glow wire test (GWT)°C and Needle- flame test (NFT)							P
Part	550	650		750		850	Needle- flame test (NFT)	verdict
		te(s)	ti(s)	te(s)	ti(s)			
Enclosure / control panel	x	--	--	--	--	--	--	P
Drum	x	--	--	--	--	--	--	P
Wash timer	--	--	--	0	0	x	--	P
Spin switch	--	--	--	0	0	x	--	P
Select switch	--	--	--	0	0	x	--	P
Safety switch	--	--	--	0	0	x	--	P
Wash motor bobbin	--	--	--	0	0	x	--	P
Spin motor bobbin	--	--	--	0	0	x	--	P
Motor capacitor	--	--	--	0	0	x	--	P
X2 capacitor	--	--	--	0	0	x	--	P
Fuse holder	--	--	--	0	0	x	--	P
Close-end connector	--	--	--	0	0	x	--	P
Wire connector	--	--	--	0	0	x	--	P
Remark: Ti = the time between glow wire touched the material and the material ignite Te= the time between glow wire touched the material and the flame extinguished;								

===== End of Report =====



IEC 60335-2-4 & IEC 60335-2-7 – Attachment			
Clause	Requirement + Test	Result - Remark	Verdict
Group/CENELEC Common Differences to IEC 60335-1:2010 (5th Edition)			
6.1	Delete “class 0” and “class 01”		N
7.10	Add:		P
	Devices used to start/stop operational functions of the appliance, if any, shall be distinguished from other manual devices by means of shape, or size, or surface texture, or position, etc.		P
	A tactile feedback or		N
	An audible and visual feedback		N
	NOTE Z1 The sound of the motor or sound of an actuator switching ON/OFF is regarded as audible feedback. The stopping of the typical function (e.g. stopping of the vibration on the body of the appliance or of a part of it) is regarded as tactile means.		P
	NOTE Z2 Devices used to start/stop operational functions mean devices that are operated by the user to start/stop the intended function of the appliance.		N
	A selector switch with an off-position clearly identifiable is allowed.		P
	An ON/OFF switch, if any, is considered a suitable device to stop operational functions. A plug is not considered a suitable device to stop operational functions, as it can be difficult to be reached by vulnerable persons.		N
7.12	The instructions shall include the substance of the following:		P
	This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.		P
7.12.Z1	The specific instructions related to the safe operation of this appliance (as given in 7.12 of this standard) shall be collated together in the front section of the user instructions. The height of the characters, measured on the capital letters, shall be at least 3mm		P
	These instructions shall also be available in an alternative format, e.g. on a website		P
7.14	Added:		P



IEC 60335-2-4 & IEC 60335-2-7 – Attachment			
Clause	Requirement + Test	Result - Remark	Verdict
	For the evaluation of legibility and clarity of safety warnings guidance can be found in IEC 62079		P
8.1.1	Replace the 3 rd paragraph by the following:		N
	Test probe B and probe 18 of EN 61032 are applied with a force not exceeding 1N, the appliance being in every possible position.....		N
8.2	Replace “test probe B of EN 61032” by “test probe of EN 61032”		N
	Replace “test probe B of EN 61032” by “test probe B and probe 18 of EN 61032 are”		N
11.8	Delete the sentence “The temperature rise of the..... “ of the first paragraph.		P
15.1.2	Appliances with an automatic cord reel are tested with the cord in the most unfavourable position in such a way that the reeling of the wet cord may affect electrical insulation during operation. The cord shall not be dried before reeling		N
20	Replace Note 1 by the following requirement: For appliances having dangerous movable parts, due to their main function, e.g. the needle of a sewing machine, tools of kitchen machines of the blade of an electrical knife, full protection is not possible for performing their intended use.		N
20.2	Replaced the 1 st paragraph of compliance by: -a test probe that is similar to test probe B of EN 61032 but having a circular stop face with a diameter of 50 mm, instead of the non-circular face, applied with a force of 5N with the accessories and detachable cover removed and - test probe 18 of EN 61032, applied with a force of 2.5N on the appliance in a fully assembled situation.		N
24.1	Plugs and socket-outlets and other connecting devices of interconnection cords shall not be interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 6906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1, if direct supply to these parts from the supply mains could give rise to a hazard		N
24.1.3	Add NOTE Z1 For this test a thermostat or timer that is operating the relay or contactor is considered to be a switch		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 EN 41003.		N



IEC 60335-2-4 & IEC 60335-2-7 – Attachment			
Clause	Requirement + Test	Result - Remark	Verdict
24.Z1	For motor running capacitors (IEC 60252-1 type P2) with a metallic enclosure having an overpressure fuse the flame testing of internal plastic parts supporting current carrying connections as required in 30.2.2 and 30.2.3.1 is not necessary.		N
25.6	Add Supply cords of single-phase portable appliances having a rated current not exceeding 16A shall be fitted with a plug complying with the following standard sheets of IEC/TR60083		N
26	Add after the second sentence in the first paragraph:		N
	Conductors connected by soldering are not considered to be positioned or fixed so that reliance is not placed upon the soldering alone to maintain them in position unless they are held in place near the terminals independently of the solder.		N
29	Modification: Replace NOTE 5 by: Attention is drawn on the fact that for appliances intended for use at altitudes exceeding 2000 m, the altitude correction factors, relevant to the intended altitude, for clearances specified in Table A.2 of EN 60664-1:2007 may need to be taken into account.		N
29.3.Z1	Appliance shall be constructed so that if there is a possibility of damaging the insulation during installation, the insulation shall withstand the scratch and penetration test of 21.2.		N
Annex ZB	Deleted 7.1 and 29.3		N
Annex ZF	Table ZF.1 add EN 60335-2-97, drives for rolling shutters, awnings, blinds and similar equipment		N
Annex ZG	Add the following:		N
7.12.ZG	The instructions for appliances incorporating UVC emitters shall include the substance of the following:		N
	WARNING-This appliance contains a UV emitter. Do not stare at the light source.		N
32	Add the following:		N
	For appliances incorporating UV emitters the manufacturer's shall deliver a declaration providing evidence that the plastic material exposed to the radiation is UV resistant		N
	NOTE Examples of appliances that may incorporate UVC emitters are range hoods, air cleaners and finger nail hardeners		N
EN 60335-1: 2012/A11: 2014			



IEC 60335-2-4 & IEC 60335-2-7 – Attachment			
Clause	Requirement + Test	Result - Remark	Verdict
7	MARKING AND INSTRUCTIONS (EN 60335-1/A11)		P
7.1	(Replacement): In NOTE Z1, replace "IEC 82079-1" by "EN 82079-1".		N
ZF	ANNEX ZF (INFORMATIVE) CRITERIA APPLIED FOR THE ALLOCATION OF PRODUCTS COVERED BY STANDARDS IN THE EN 60335 SERIES UNDER LVD OR MD(EN 60335-1/A11)		N
	(Replacement): In Table ZF.1 – List of standards under CLC/TC 61, replace line of EN 60335-2-38		N
ANNEX	EMF		P
	The test product also complies with the requirements of EN62233:2008		--
	Limit.....100%	Measured Max: 1.264%	P

===== End of Attachment =====

WALTEK



Photo Documentation

Reference No.: WTN17F1298697S

Model: XPB25-800S, XPB28-800S, XPB32-800S, XPB36-800S

Appearance a

CAUTION: Do not connect to the hot water supply.



Photo 1



Photo 2



Photo Documentation

Reference No.: WTN17F1298697S



Photo 3



Photo 4



Photo Documentation

Reference No.: WTN17F1298697S



Photo 5



Photo 6



Photo Documentation

Reference No.: WTN17F1298697S



Photo 7



Photo 8



Photo Documentation

Reference No.: WTN17F1298697S



Photo 9



Photo 10



Photo Documentation

Reference No.: WTN17F1298697S



Photo 11

Wash motor:
XPD-90



Photo 12



Photo Documentation

Reference No.: WTN17F1298697S

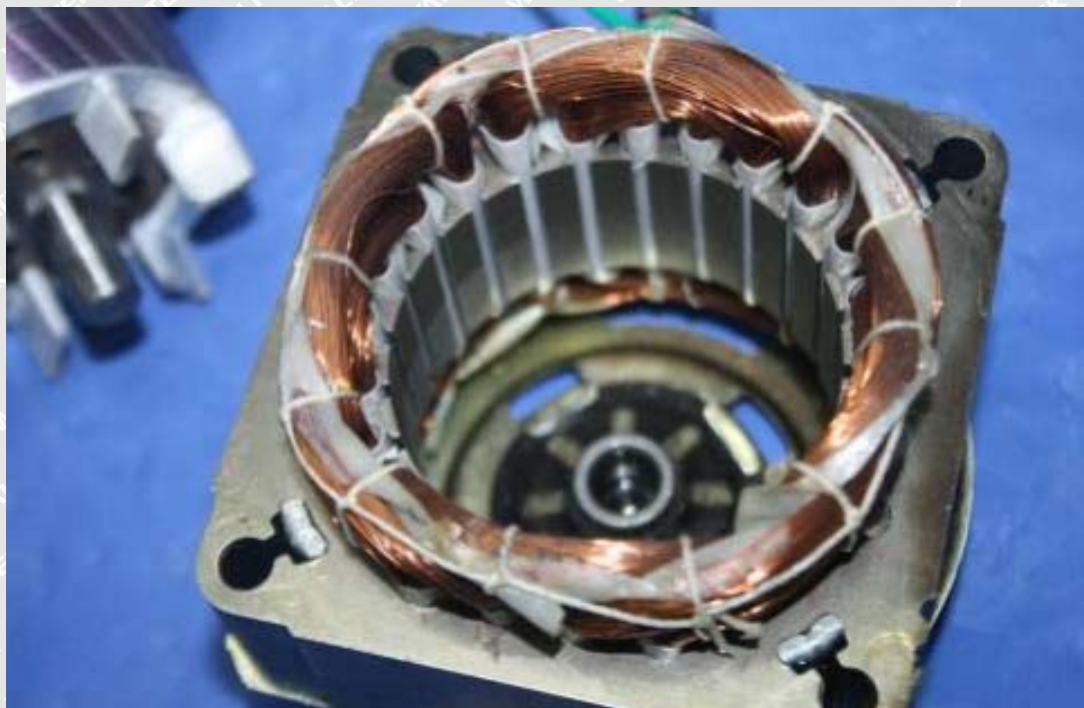


Photo 13

Spin motor:
XTD-30



Photo 14



Photo Documentation

Reference No.: WTN17F1298697S

Model: XPB42-800S

Appearance b



Photo 15



Photo 16



Photo Documentation

Reference No.: WTN17F1298697S



Photo 17

CAUTION: Do not connect to the hot water supply.



Photo 18



Photo Documentation

Reference No.: WTN17F1298697S



Photo 19



Photo 20



Photo Documentation

Reference No.: WTN17F1298697S

Model: XPB48-800S

Appearance c

CAUTION: Do not connect to the hot water supply.



Photo 21



Photo 22



Photo Documentation

Reference No.: WTN17F1298697S



Photo 23



Photo 24



Photo Documentation

Reference No.: WTN17F1298697S



Photo 25



Photo 26



Photo Documentation

Reference No.: WTN17F1298697S



Photo 27

Model: XPB52-800S

Appearance d

CAUTION: Do not connect to the hot water supply.



Photo 28



Photo Documentation

Reference No.: WTN17F1298697S



Photo 29



Photo 30



Photo Documentation

Reference No.: WTN17F1298697S



Photo 31



Photo 32

Photo Documentation

Reference No.: WTN17F1298697S



Photo 33

Model: XPB58-800S

CAUTION: Do not connect to the hot water supply.

Appearance e



Photo 34



Photo Documentation

Reference No.: WTN17F1298697S



Photo 35



Photo 36

Photo Documentation

Reference No.: WTN17F1298697S



Photo 37



Photo 38

Photo Documentation

Reference No.: WTN17F1298697S



Photo 39

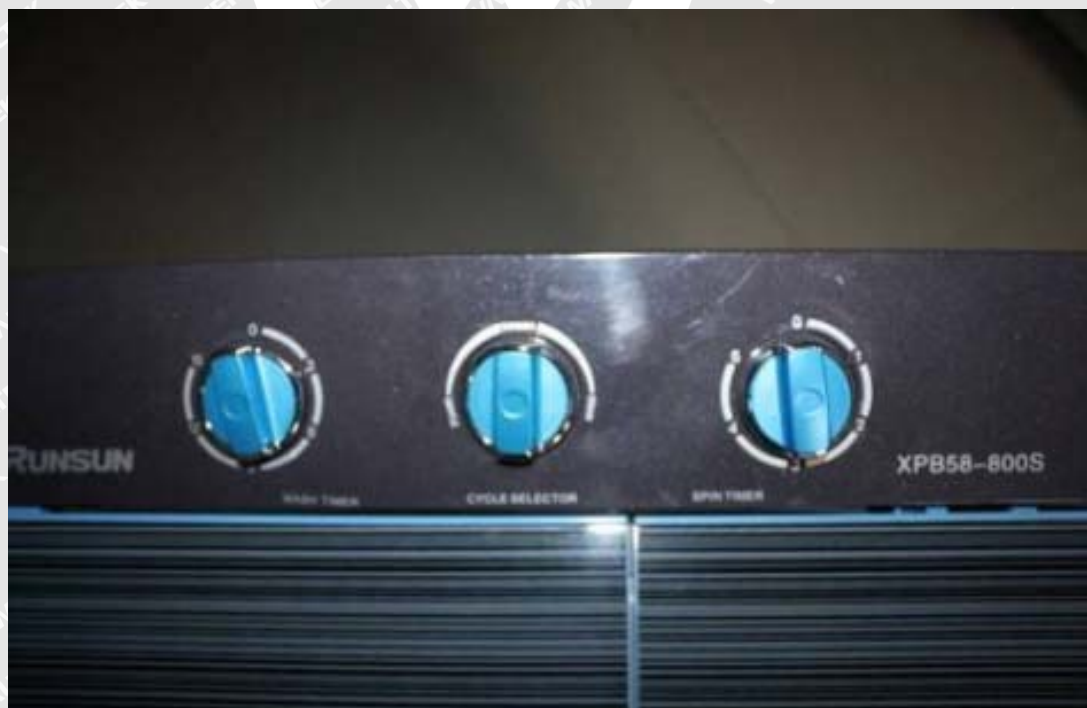


Photo 40

Photo Documentation

Reference No.: WTN17F1298697S



Wash motor:
XPD-120



Photo 41

Spin motor:
XTD-45



Photo 42



Photo Documentation

Reference No.: WTN17F1298697S

Model: XPB60-800S, XPB68-800S, XPB72-800S

CAUTION: Do not connect to the hot water supply.

Appearance f



Photo 43



Photo 44



Photo Documentation

Reference No.: WTN17F1298697S



Photo 45



Photo 46



Photo Documentation

Reference No.: WTN17F1298697S



Photo 47



Photo 48



Photo Documentation

Reference No.: WTN17F1298697S



Photo 49

Model: XPB78-800S

CAUTION: Do not connect to the hot water supply.

Appearance g



Photo 50



Photo Documentation

Reference No.: WTN17F1298697S



Photo 51

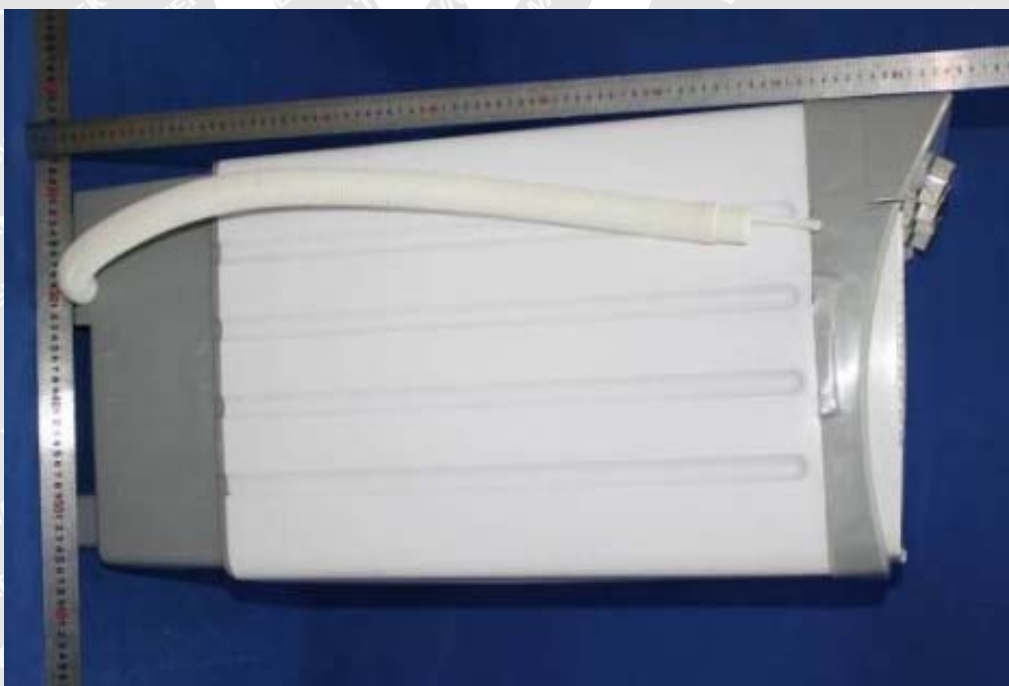


Photo 52



Photo Documentation

Reference No.: WTN17F1298697S



Photo 53



Photo 54



Photo Documentation

Reference No.: WTN17F1298697S



Photo 55



Photo 56



Photo Documentation

Reference No.: WTN17F1298697S



Photo 57



Photo 58



Photo Documentation

Reference No.: WTN17F1298697S

Model: XPB80-800S

CAUTION: Do not
connect to the hot
water supply.

Appearance h



Photo 59



Photo 60



Photo Documentation

Reference No.: WTN17F1298697S



Photo 61



Photo 62



Photo Documentation

Reference No.: WTN17F1298697S



Photo 63



Photo 64



Photo Documentation

Reference No.: WTN17F1298697S



Photo 65



Photo 66

Photo Documentation

Reference No.: WTN17F1298697S



Wire connector and terminal block for all models.



Photo 67

Terminal block and fuse holder for all models.

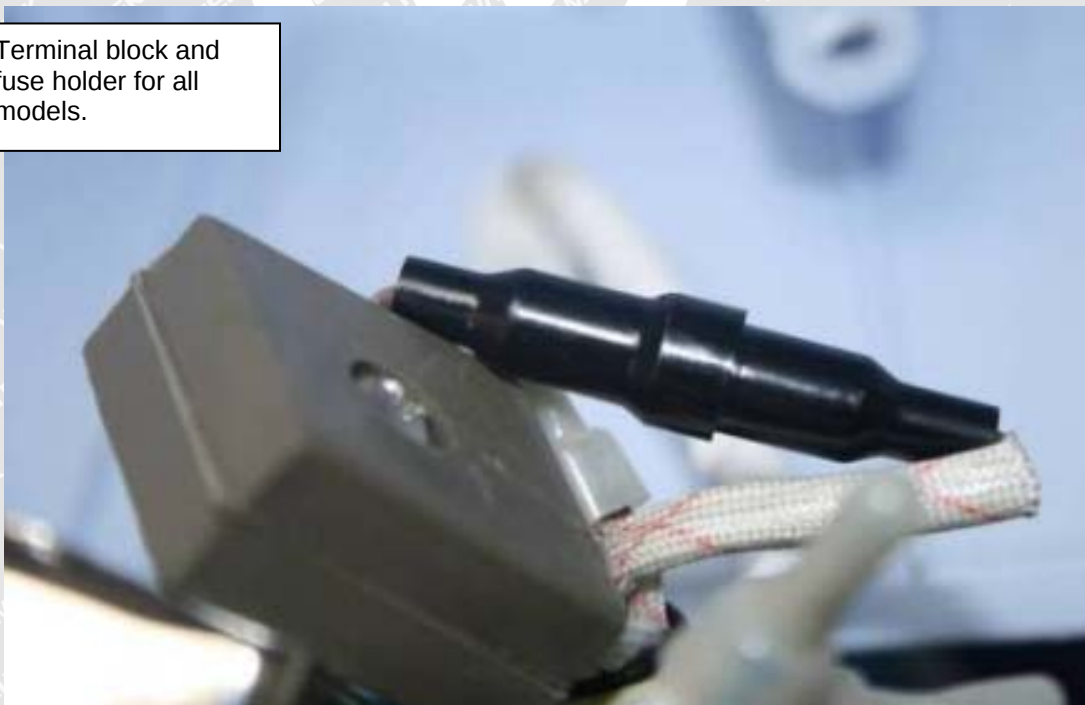


Photo 68



Photo Documentation

Reference No.: WTN17F1298697S

Alternative rear
cover for all
models.



Photo 69

Alternative rear
cover for all
models.



Photo 70

===== End of Photo =====