


Prüfbericht-Nr.: Test Report No.:	15085503 008	Auftrags-Nr.: Order No.:	244230173	Seite 1 von 115 Page 1 of 115
Kunden-Referenz-Nr.: Client Reference No.:	2061587	Auftragsdatum: Order date:	15.04.2020	
Auftraggeber: Client:	Bestway (Hong Kong) International Ltd. Suite 713, 7/Floor, East Wing, Tsim Sha Tsui Centre, 66 Mody Road, Kowloon, Hong Kong			
Prüfgegenstand: Test item:	Filter Pump with transformer			
Bezeichnung / Typ-Nr.: Identification / Type No.:	#58381, #58383, #58386, #58389			
Auftrags-Inhalt: Order content:	GS approval			
Prüfgrundlage: Test specification:	EN 60335-1: 2012+A11+A13+A14+A1+A2 EN 60335-2-41: 2003+A1+A2 EN 62233: 2008 AfPS GS 2019:01 PAK			
Wareneingangsdatum: Date of receipt:	20.04.2020			
Prüfmuster-Nr.: Test sample No.:	A002812041			
Prüfzeitraum: Testing period:	22.04.2020			
Ort der Prüfung: Place of testing:	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			

geprüft von / tested by:	kontrolliert von / reviewed by:
29-05-2020 Du Juan/PE	29-05-2020 Una Wei/Reviewer
Datum Date	Datum Date
Name / Stellung Name / Position	Name / Stellung Name / Position
Unterschrift Signature	Unterschrift Signature



Sonstiges / Other:
This report is based on report 15085503 001-007. License holder's name and address have been changed. The standards are upgraded from EN 60335-1: 2012+A11+A13 and AfPS GS 2014:01 to EN 60335-1: 2012+A11+A13+A14+A1+A2 and AfPS GS 2019:01 PAK. Sample construction verification found constructions and components are the same as before. No test seems to be necessary. Foreseeable use was considered. The risk has been covered by the applied standards and EK1 242-04.
Attachment 1: PAHs risk assessment report (2 pages) Attachment 2: 2PfG requirements (5 pages)

Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged
<p>* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet</p> <p>Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested</p>	

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.



TEST REPORT IEC 60335-2-41 Safety of household and similar electrical appliances Part-2-41: Particular requirements for pumps	
Report Number.:	15085503 008
Date of issue.....:	See cover page
Total number of pages	See cover page
Applicant's name.....:	Bestway (Hong Kong) International Ltd.
Address	<i>Suite 713, 7/Floor, East Wing, Tsim Sha Tsui Centre, 66 Mody Road, Kowloon, Hong Kong</i>
Test specification:	
Standard	IEC 60335-2-41:2002 (Third Edition) + A1:2004 + A2:2009 IEC 60335-1:2010 (Fifth Edition)
Test procedure	GS approval
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC60335_2_41I
Test Report Form(s) Originator	VDE
Master TRF	Dated 2013-04
Copyright © 2013 Worldwide System for Conformity Testing and Certification of Electrotechnical Equipment and Components (IECEE), Geneva, Switzerland. All rights reserved. This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context. If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed. This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.	
Test item description	Filter pump with transformer
Trade Mark	Bestway
Manufacturer	Same as applicant
Model/Type reference.....:	#58381; #58383; #58386; #58389
Ratings	220-240V~, 50Hz, class II, #58381:23W; #58383:40W; #58386:40W; #58389:110W, IPX7 for #58381, #58383, #58386; IPX5 for #58389 For pump part of models #58381; #58383; #58386: 12V~, 50Hz, IPX7, class III; For pump part of models #58389: 12V~, 50Hz, IPX5, class III

Testing procedure and testing location:		
<input checked="" type="checkbox"/>	Testing Laboratory:	TÜV Rheinland (Shanghai) Co., Ltd.
Testing location/ address		No.177, 178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai CHINA
<input type="checkbox"/>	Associated CB Testing Laboratory:	
Tested by (name + signature).....:		See cover page
Approved by (name + signature)		See cover page
<input type="checkbox"/>	Testing procedure: TMP	
Testing location/ address		
Tested by (name + signature).....:		
Approved by (name + signature)		
<input type="checkbox"/>	Testing procedure: WMT	
Testing location/ address		
Tested by (name + signature).....:		
Witnessed by (name + signature) Testing location/ address		
.....		
Approved by (name + signature)		
<input type="checkbox"/>	Testing procedure: SMT	
Testing location/ address		
Tested by (name + signature).....:		
Approved by (name + signature)		
Supervised by (name + signature).....:		

List of Attachments (including a total number of pages in each attachment): See cover page	
Summary of testing:	
Tests performed (name of test and test clause): For 15085503 001: All relevant tests were performed on the models #58381, #58383, #58386 and #58389. Test of clause 15.1 was performed on the pump unit and transformed part separately on the models #58386 and #58389 For each model of transformer, three samples were subjected to the test of Clause 17 and Annex G. For 15085503 002: Test of clause 15.1 performed on the pump together with transformer for models #58386 and #58389 For 15085503 003: Construction check was performed on #58389 For 15085503 005: Annex D was performed on #58389 with motor protector 17AM. Clause 30 was performed on alternate epoxy resin. For 15085503 006: Construction check was performed on #58381. For 15085503 007: Sample verification was performed on #58381. For 15085503 008: Sample verification was performed on #58381.	Testing location: TÜV Rheinland (Shanghai) Co., Ltd. No.177, 178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai CHINA
Summary of compliance with National Differences List of countries addressed: EN Group Differences <input checked="" type="checkbox"/> The product fulfils the requirements of EN 60335-1: 2012+A11+A13; EN 60335-2-41: 2003+A1+A2; EN 62233: 2008	
















Copy of marking plate:



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

 	FILTER PUMP \ FILTERPUMPE \ FILTERPOMP \ POMPE DE FILTRATION Pump with transformer \ Pumpe mit Transformator \ Pomp met transformator \ Pompe avec transformateur	  	 IMPORTANT  READ OWNER'S MANUAL MAX. WATER TEMPERATURE 35°C
	MODEL \ MODELL \ MODEL \ MODÈLE #58381 220-240V~50Hz, 23W Hmin 0.19m, IPX7 Pump unit: \ Pumpeneinheit: \ Pompunit: \ Unité de pompage : 12V~50Hz, IPX7		 WICHTIG  BENUTZERHANDBUCH LESEN MAX. WASSRTEMPERATUR 35°C
	Protection class: III \ Schutzklasse: III \ Beschermingsklasse: III \ Classe de protection : III		 BELANGRIJK  LEES DE GEBRUIKERSHANDLEIDING MAX. WATERTEMPERATUUR 35°C
	Bestway (Hong Kong) International Ltd. Suite 713, 7/Floor, East Wing, Tsim Sha Tsui Centre, 66 Mody Road, Kowloon, Hong Kong Bestway (Europe) S.r.l. Via Resistenza, 5, 20098 San Giuliano Milanese (Milano), Italy Made in China / Hergestellt in China / Fabriqué en Chine		 IMPORTANT  LISEZ LA NOTICE D'UTILISATION TEMPÉRATURE DE L'EAU MAXIMALE 35 °C




303021213807

 	FILTER PUMP \ FILTERPUMPE \ FILTERPOMP \ POMPE DE FILTRATION Pump with transformer \ Pumpe mit Transformator \ Pomp met transformator \ Pompe avec transformateur	  	 
	MODEL \ MODELL \ MODEL \ MODÈLE #58383 220-240V~50Hz, 40W Hmin 0.19m, IPX7 Pump unit: \ Pumpeneinheit: \ Pompunit: \ Unité de pompage : 12V~50Hz, IPX7 Protection class: III \ Schutzklasse: III \ Beschermingsklasse: III \ Classe de protection : III		 WICHTIG  BENUTZERHANDBUCH LESEN MAX. WASSRTEMPERATUR 35°C
	 IMPORTANT  READ OWNER'S MANUAL MAX. WATER TEMPERATURE 35°C		 IMPORTANT  LISEZ LA NOTICE D'UTILISATION TEMPÉRATURE DE L'EAU MAXIMALE 35 °C
	Bestway (Hong Kong) International Ltd. Suite 713, 7/Floor, East Wing, Tsim Sha Tsui Centre, 66 Mody Road, Kowloon, Hong Kong Bestway (Europe) S.r.l. Via Resistenza, 5, 20098 San Giuliano Milanese (Milano), Italy Made in China / Hergestellt in China / Fabriqué en Chine		 BELANGRIJK  LEES DE GEBRUIKERSHANDLEIDING MAX. WATERTEMPERATUUR 35°C

303021213807



FLOWCLEAR™

FILTER PUMP \ FILTERPUMPE \
 FILTERPOMP \ POMPE DE FILTRATION
 Pump with transformer \ Pumpe mit Transformator \
 Pomp met transformator \ Pompe avec transformateur
 MODEL \ MODELL \ MODEL \ MODÈLE #58386
 220-240V~50Hz, 40W
 Hmin 0.19m, IPX7










Pump unit: \ Pumpeneinheit: \ Pompunit: \ Unité de pompage : 12V~50Hz, IPX7
 Protection class: III \ Schutzklasse: III \ Beschermingsklasse: III \ Classe de protection : III

<p> IMPORTANT  READ OWNER'S MANUAL MAX. WATER TEMPERATURE 35°C</p>	<p> BELANGRIJK  LEES DE GEBRUIKERSHANDLEIDING MAX. WATERTEMPERATUUR 35°C</p>
<p> WICHTIG  BENUTZERHANDBUCH LESEN MAX. WASSRTEMPERATUR 35°C</p>	<p> IMPORTANT  LISEZ LA NOTICE D'UTILISATION TEMPÉRATURE DE L'EAU MAXIMALE 35 °C</p>

Bestway (Hong Kong) International Ltd.
 Suite 713, 7/Floor, East Wing, Tsim Sha Tsui Centre, 66 Mody Road, Kowloon, Hong Kong
Bestway (Europe) S.r.l.
Via Resistenza, 5, 20098 San Giuliano Milanese (Milano), Italy
 Made in China / Hergestellt in China / Fabriqué en Chine

30302121A00



CZJUTAI® AC ADAPTOR/ADAPTATEUR

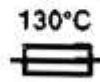
MODEL/MODELL: JT-12V2500-IPX7

PRI/EINGANG: 220-240V~50Hz

SEC/AUSGANG: 12V~2500mA Max: 30VA



IPX7



CHANGZHOU JUTAI ELECTRONIC CO., LTD.

CZJUTAI® AC ADAPTOR/ADAPTATEUR

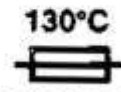
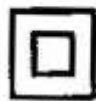
MODEL/MODELL: JT-12V5000-IPX7

PRI/EINGANG: 220-240V~50Hz

SEC/AUSGANG: 12V~5000mA Max: 60VA



IPX7



CHANGZHOU JUTAI ELECTRONIC CO., LTD.

CZJUTAI® AC ADAPTOR/ADAPTATEUR

MODEL/MODELL: JT-12V12500-IPX7

PRI/EINGANG: 220-240V~50Hz

SEC/AUSGANG: 12V~12500mA Max: 150VA



IPX7



CHANGZHOU JUTAI ELECTRONIC CO., LTD.

Test item particulars:

Supply connection	:	Fixed power cord
Nature of supply	:	a.c.
Class of protection against electric shock.....	:	II
Degree of protection against moisture.....	:	IPX7 for #58381 #58383, #58386;
		IPX5 for #58389
Type of cord attachment.....	:	Type Y for #58389;
		Type Z for #58381; #58383; #58386
Portable appliances	:	<input checked="" type="checkbox"/> for #58381; #58383; #58386
Fixed appliances.....	:	<input checked="" type="checkbox"/> for #58389
Built-in appliances	:	<input type="checkbox"/>
Indoor use.....	:	<input type="checkbox"/>
Outdoor use.....	:	<input checked="" type="checkbox"/>
Submersible pumps	:	<input type="checkbox"/>
Maximum operating depth.....	:	
Vertical wet pit pumps	:	<input type="checkbox"/>
Sludge pumps	:	<input type="checkbox"/>
Pumps for cleaning and other maintenance of swimming pools.....	:	<input checked="" type="checkbox"/>
Pumps for outdoor fountains, garden ponds and similar places.....	:	<input type="checkbox"/>
Shower-boost pumps	:	<input type="checkbox"/>
Table fountain pumps.....	:	<input type="checkbox"/>
Switch	:	<input type="checkbox"/>
Thermostat	:	<input type="checkbox"/>
without an OFF position	:	<input type="checkbox"/>
Self-resetting thermal cut-out.....	:	<input type="checkbox"/>
Non-self-resetting thermal cut-out.....	:	<input type="checkbox"/>
Voltage-maintained non-self-resetting thermal cut-out.....	:	<input type="checkbox"/>
Contact opening > 3 mm in each pole	:	<input type="checkbox"/>
Thermal link	:	<input checked="" type="checkbox"/> in transformer
Electronic circuit	:	<input type="checkbox"/>
with software class	:	A / No
Protective electronic circuit.....	:	<input type="checkbox"/>
with software class	:	B / C / No
Programmer, timer, switching devices.....	:	<input type="checkbox"/>
Remote operation.....	:	<input type="checkbox"/>
Appliances - with supply cord	:	<input type="checkbox"/>
- with supply cord fitted with a plug	:	<input checked="" type="checkbox"/>
Motor with capacitor in auxiliary winding.....	:	<input type="checkbox"/>
Series motors incorporated.....	:	<input type="checkbox"/>
Three-phase motor.....	:	<input type="checkbox"/>
with protective device	:	<input type="checkbox"/>
Used in vehicles or on board ships or aircraft, additional requirements may be necessary	:	<input type="checkbox"/>
Additional requirements are specified by the national health authorities.....	:	<input type="checkbox"/>
the national authorities responsible for the protection of labour	:	<input type="checkbox"/>
the national water supply authorities	:	<input type="checkbox"/>
similar authorities.	:	<input checked="" type="checkbox"/> EK1 242
.....	:	<input type="checkbox"/>
.....	:	<input type="checkbox"/>

Possible test case verdicts:

- test case does not apply to the test object.....: N/A
- test object does meet the requirement: P (Pass)
- test object does not meet the requirement: F (Fail)

Testing

Date of receipt of test item: 2015-08-21 for 15085503 001

2016-03-08 for 15085503 002

2016-07-21 for 15085503 003

2018-10-11 for 15085503 005

2018-11-20 for 15085503 006

2019-01-30 for 15085503 007

2020-04-20 for 15085503 008

Date (s) of performance of tests: 2015-08-24 to 2015-08-31 for 15085503 001

2016-03-25 for 15085503 002

2016-08-01 for 15085503 003

2018-10-12 to 2018-10-15 for 15085503 005

2018-11-22 for 15085503 006

2019-02-21 for 15085503 007

2020-04-22 for 15085503 008**General remarks:**

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

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

"(See Enclosure #)" refers to additional information appended to the report.

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

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

This TRF includes an appendix EMF containing the IEC/EN 62233 requirements (see below).

IEC 62233:2005 (1. Edition)

EN 62233:2008 (incl. Corr.1:2008)

EN60335-1/A13+A11+A14+A1+A2 have been taken into account.

Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided: ☐ Yes ☒ Not applicable

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies).....:	GOLEADER INDUSTRIES (JINHUA) CO., LTD. No. 618 WENXI STREET, JINPAN DEVELOPMENT NEW ZONE, JINHUA, 321025 ZHEJIANG, P.R. China.
<p>General product information:</p> <p>For 15085503 001 issued on 2015-09-22: The appliance is filter pump with transformer used to filter water for inflatable swimming pools. The transformer must be put more than 3.5m away outside the pool. The pump is supplied by safety insolate transformer as specified. It is connected with transformer by interconnection cord which is non-detachable. The transformers and motors were sealed by epoxy resin. Model differences: All the models incorporate different motors. -The models #58383 and #58386 have the same shape and transformer. -The construction of model #58381 is similar as #58383 and #58386, only the size is different. -For #58389, a connection box is applied between the transformer and pump motor.</p> <p>For 15085503 002 issued on 2016-04-20: -The degree of protection against moisture IPX4 is changed to IPX7 for #58381, #58383, #58386, and IPX5 for #58389. - The degree of protection against moisture IPX4 is changed to IPX7 for transformers for all the models.</p> <p>For 15085503 003 issued on 2016-08-11 The factory has been changed. The manufacture name of motor and enclosure has been changed, see table 24.1</p> <p>For 15085503 004 issued on 2017-10-11: Alternative BS plug and fuse in BS plug are added.</p> <p>For 15085503 005 issued on 2018-11-20: Alternative motor protector for #58389 and epoxy resin were added. Table 24.1 updated.</p> <p>For 15085503 006 issued on 2018-12-05: The two bobbins for motor WB-145 are changed from separated to integrated. Details refer to photo document.</p> <p>For 15085503 007 dated on 2019-03-18: The report was written due to 5 years expiry of certificate and the standard is updated from EN 60335-1:2012+A11 to EN 60335-1:2012+A11+A13. Sample verification found construction and components identical with original one.</p> <p>For 15085503 008: The standard is upgraded from EN 60335-1: 2012+A11+A13 and AfPS GS 2014:01 to EN 60335-1: 2012+A11+A13+A14+A1+A2 and AfPS GS 2019:01 PAK. License holder's name and address have been changed from Bestway Inflatables & Material Corp, No. 3065 Cao An Road, Shanghai 201812, P.R. China to Bestway (HongKong) International Ltd, Suite 713, 7/Floor, East Wing, Tsim Sha Tsui Centre, 66 Mody Road, Kowloon, Hong Kong</p>	

IEC 60335-2-41			
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
5.7	Temperature of liquid maintained between 0 °C and – 5 °C of temperature marked on pump (IEC 60335-2-41)		P
5.101	Pumps tested as portable appliances, unless (IEC 60335-2-41)	for #58381; #58383; #58386	P
	they intended to be fixed (IEC 60335-2-41)	for #58389 pump part	P
5.102	Stationary pumps having a three-phase motor which does not incorporate a protective device installed with an appropriate device, in accordance with instructions (IEC 60335-2-41)		N/A
6	CLASSIFICATION		P
6.1	Protection against electric shock: Class 0, 0I, I, II, III.....:	Class II for the whole appliance	P
	Submersible pumps for use in swimming pools when persons in the pool be of class III with a rated voltage < 12 V (IEC 60335-2-41)		N/A
	Other submersible pumps for use in water and other conducting liquids be class I or class III. However (IEC 60335-2-41)		N/A
	aquarium pumps may be class II (IEC 60335-2-41)		N/A
	Table fountain pumps for indoor use be class II as long as their rated power input ≤ 25 W (IEC 60335-2-41/A1)		N/A
	Portable pumps for cleaning and other maintenance of swimming pools be of class I or class III (IEC 60335-2-41)	Class III construction for #58381; #58383; #58386 pump part	P
	Other pumps be class I, class II or class III (IEC 60335-2-41)	Class III construction for #58389 pump part	P
6.2	Submersible pumps be IPX8 (IEC 60335-2-41)		N/A
	Portable pumps for cleaning and other maintenance of swimming pools at least IP X7 (IEC 60335-2-41)	IPX7 for #58381; #58383; #58386	P
	Shower-boost pumps intended for installation outside of zones 1 and 2, as specified in IEC 60364-7-701, be at least IPX2 (IEC 60335-2-41/A1)		N/A
	Other pumps at least IPX4 (IEC 60335-2-41)	IPX5 for #58389	P
6.2	Protection against harmful ingress of water		P
7	MARKING AND INSTRUCTIONS		P
7.1	Rated voltage or voltage range (V).....:	220-240V	P
	Symbol for nature of supply, or.....:	~	P

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated frequency (Hz)	50Hz	P
	Rated power input (W), or	See marking label	P
	Rated current (A)		N/A
	Manufacturer's or responsible vendor's name, trademark or identification mark	See marking label	P
	Model or type reference.....	See marking label	P
	Symbol IEC 60417-5172, for class II appliances		P
	IP number, other than IPX0	IPX7 for #58381, #58383, #58386; IPX5 for #58389	P
	Symbol IEC 60417-5180, for class III appliances, unless		N/A
	the appliance is operated by batteries only		N/A
	Symbol IEC 60417-5036, for the enclosure of electrically-operated water valves in external hose-sets for connection of an appliance to the water mains, if the working voltage exceeds extra-low voltage		N/A
	Pumps with rated power input exceeding 50 W marked with (IEC 60335-2-41):		P
	- minimum total head in meters (m), if > 0 m (IEC 60335-2-41).....	0,19m	P
	- maximum operating depth in metres (m), with a minimum of 1 m (for submersible pumps) (IEC 60335-2-41).....		N/A
	- direction of rotation (three-phase motor only) (IEC 60335-2-41)		N/A
	Pumps marked with maximum liquid temperature (°C) which not less than 35 °C (IEC 60335-2-41)	35 °C	P
	If temperature exceeds 35 °C, they marked with maximum period of operation, unless (IEC 60335-2-41)		N/A
	they intended for continuous operation (IEC 60335-2-41)		N/A
7.2	Warning for stationary appliances for multiple supply		N/A
	Warning placed in vicinity of terminal cover		N/A
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen		P
	Different rated values marked with the values separated by an oblique stroke		N/A
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Requirement met if frequent changes are not required and the rated voltage to which the appliance is to be adjusted is determined from a wiring diagram		N/A
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/A
	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/A
7.6	Correct symbols used (IEC 60335-2-41)		P
	Symbol for nature of supply placed next to rated voltage		P
	Symbol for class II appliances placed unlikely to be confused with other marking		P
	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/A
	correct mode of connection is obvious		N/A
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		N/A
	- marking of terminals exclusively for the neutral conductor (letter N)		N/A
	- marking of protective earthing terminals (symbol IEC 60417-5019)		N/A
	- marking not placed on removable parts		N/A
7.9	Marking or placing of switches which may cause a hazard	No switches	N/A
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means		N/A
	This applies also to switches which are part of a control	No such control	N/A
	If figures are used, the off position indicated by the figure 0		N/A
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N/A
7.11	Indication for direction of adjustment of controls		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
7.12	Instructions for safe use provided		P
	Details concerning precautions during user maintenance		P
	The instructions state that:		N/A
	- 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	Replaced by EN 60335-1	N/A
	- children being supervised not to play with the appliance		N/A
	For a part of class III construction supplied from a detachable power supply unit, the instructions state that the appliance is only to be used with the unit provided		N/A
	Instructions for class III appliances state that it must only be supplied at SELV, unless		N/A
	it is a battery-operated appliance, the battery being charged outside the appliance		N/A
	Instructions for use of class I portable pumps for cleaning and other maintenance of swimming pools include substance of following (IEC 60335-2-41):		N/A
	- the pump must not be used when people are staying in the water (IEC 60335-2-41);		N/A
	- the pump must supplied through a residual current device (RCD) with a rated residual operating current ≤ 30 mA (IEC 60335-2-41)		N/A
	The instructions for use for pumps marked with a temperature exceeding 35 °C state maximum period of operation and minimum rest period, unless (IEC 60335-2-41)		N/A
	pump is intended for continuous operation at this temperature (IEC 60335-2-41)		N/A
7.12.1	Sufficient details for installation supplied		P
	For an appliance intended to be permanently connected to the water mains and not connected by a hose-set, this is stated		N/A
	Installation instruction provide information on requirements specified for electrical installation and include reference to national wiring rules (IEC 60335-2-41)		P
	If reference made to zones, corresponding be included (IEC 60335-2-41)		P
	Installation instructions state substance of following (IEC 60335-2-41):		P

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	- the maximum total head, in meters (for pumps with rated power input > 50 W) (IEC 60335-2-41);	For #58389 Hmax: 1,5m	P
	- pollution of the liquid could occur due to leakage of lubricants (for submersible pumps and vertical wet pit pumps containing lubricants) (IEC 60335-2-41)		N/A
	- additional information for installation of stationary pump having a three-phase motor not incorporating a protective device as specified (IEC 60335-2-41)		N/A
	Instructions for installation state that pumps for outdoor fountains, garden ponds and similar places have to be supplied through a RCD (operating current ≤ 30 mA) (IEC 60335-2-41)		N/A
	Installation instructions for class I pumps for swimming pools shall state that the pump is to be supplied by an isolating transformer or supplied through a RCD (operating current ≤ 30 mA) (IEC 60335-2-41)		N/A
	Installation instructions for class III pumps intended to be installed in zone 0 of a swimming pool state that the transformer is located outside zone 1 (IEC 60335-2-41)		N/A
	Installation instructions for class II pumps intended to be fixed in zone 1 of a swimming pool, or fixed close to a garden pond or similar place, state that the pump is to be located where flooding cannot occur (IEC 60335-2-41)		N/A
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules		N/A
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions state that the fixed wiring must be protected		N/A
7.12.4	Instructions for built-in appliances:		N/A
	- dimensions of space		N/A
	- dimensions and position of supporting and fixing		N/A
	- minimum distances between parts and surrounding structure		N/A
	- minimum dimensions of ventilating openings and arrangement		N/A
	- connection to supply mains and interconnection of separate components		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless		N/A
	a switch complying with 24.3		N/A
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N/A
	Replacement cord instructions, type Y attachment	for #58389	P
	Replacement cord instructions, type Z attachment	for #58381; #58383; #58386	P
7.12.6	Caution in the instructions for appliances incorporating a non-self-resetting thermal cut-out that is reset by disconnection of the supply mains, if this cut-out is required to comply with the standard		N/A
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed		P
7.12.8	Instructions for appliances connected to the water mains:		N/A
	- max. inlet water pressure (Pa)		N/A
	- min. inlet water pressure, if necessary (Pa).....		N/A
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		N/A
7.13	Instructions and other texts in an official language	English and German	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/A
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		N/A
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		P
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading		N/A
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		N/A
8	PROTECTION AGAINST ACCESS TO LIVE PARTS		P

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
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/A
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap		N/A
	Use of test probe B of IEC 61032, with a force not exceeding 1 N: no contact with live parts		P
	Use of test probe B of IEC 61032 through openings, with a force of 20 N: no contact with live parts		P
8.1.2	Use of test probe 13 of IEC 61032, with a force not exceeding 1 N, through openings in class 0 appliances and class II appliances/constructions: no contact with live parts		P
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		N/A
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032, with a force not exceeding 1 N: no contact with live parts of visible glowing heating elements		N/A
8.1.4	Accessible part not considered live if:		P
	- safety extra-low a.c. voltage: peak value not exceeding 42,4 V		P
	- safety extra-low d.c. voltage: not exceeding 42,4 V		N/A
	- or separated from live parts by protective impedance		N/A
	If protective impedance: d.c. current not exceeding 2 mA, and		N/A
	a.c. peak value not exceeding 0,7 mA		N/A
	- for peak values over 42,4 V up to and including 450 V, capacitance not exceeding 0,1 μ F		N/A
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μ C		N/A
	- for peak values over 15kV, the energy in the discharge not exceeding 350 mJ		N/A
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		P
	- built-in appliances		N/A
	- fixed appliances		P

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	- appliances delivered in separate units		N/A
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only		P
	Only possible to touch parts separated from live parts by double or reinforced insulation		P
9	STARTING OF MOTOR-OPERATED APPLIANCES		N/A
	Requirements and tests are specified in part 2 when necessary		N/A
10	POWER INPUT AND CURRENT		N/A
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1 ...:	(see appended table)	P
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N/A
	the rated power input is related to the arithmetic mean value		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/A
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N/A
	the rated current is related to the arithmetic mean value of the range		N/A
11	HEATING		P
11.1	No excessive temperatures in normal use		P
11.2	The appliance is held, placed or fixed in position as described		P
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		P
	the windings are non-uniform or it is difficult to make the necessary connections		N/A
11.4	Heating appliances operated under normal operation at 1,15 times rated power input (W)		N/A
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0,94 and 1,06 times rated voltage (V)	1.06 times rated voltage applied which is more unfavourable	P

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0,94 and 1,06 times rated voltage (V)		N/A
11.7	Pumps operated with liquid maintained at temperature marked on pump (IEC 60335-2-41/A1)		P
	They operated until steady conditions established unless (IEC 60335-2-41/A1)		P
	they marked with a maximum period of operation. In this case, they operated for marked period followed by the rest period specified in instructions, test carried out for three cycles of operation (IEC 60335-2-41/A1)		N/A
	Shower-boost pumps also supplied with cold water operated with cold water at 15 °C ± 2 °C (IEC 60335-2-41/A1)		N/A
	Pumps, other than shower-boost pumps, marked with a maximum period of operation are also operated with liquid maintained at 35 °C until steady conditions established (IEC 60335-2-41/A1)		N/A
11.8	Temperature rises monitored continuously and not exceeding the values in table 3	(see appended table)	P
	If the temperature rise of a motor winding exceeds the value of table 3, or		N/A
	if there is doubt with regard to classification of insulation,		N/A
	tests of annex C are carried out		N/A
	Sealing compound does not flow out		P
	Protective devices do not operate, except		P
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		N/A
	Pumps marked with liquid temperature > 35 °C, temperature rise of external enclosure not measured (IEC 60335-2-41)		N/A
13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		P
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1,15 times the rated power input (W)		N/A
	Motor-operated appliances and combined appliances supplied at 1,06 times the rated voltage (V)		P

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Protective impedance and radio interference filters disconnected before carrying out the tests		N/A
13.2	For class 0, class II and class III appliances, leakage current measured by means of the circuit described in figure 4 of IEC 60990		P
	For other appliances, a low impedance ammeter may be used		N/A
	Leakage current measurements	(see appended table)	P
13.3	The appliance is disconnected from the supply		P
	Electric strength tests according to table 4.....	(see appended table)	P
	No breakdown during the tests		P
14	TRANSIENT OVERVOLTAGES		N/A
	Appliances withstand the transient over-voltages to which they may be subjected		N/A
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6	(see appended table)	N/A
	No flashover during the test, unless		N/A
	of functional insulation if the appliance complies with clause 19 with the clearance short-circuited		N/A
15	MOISTURE RESISTANCE		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.....	IPX7 for models #58381; #58383; #58386; IPX5 for model #58389. IPX7 marked for all transformers	P
	Water valves containing live parts in external hoses for connection of an appliance to the water mains tested as specified for IPX7 appliances		N/A
	Shower-boost pumps subjected to appropriate test of IEC 60529 both at rest and in operation while supplied at rated voltage (IEC 60335-2-41/A1)		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N/A
	Built-in appliances installed according to the instructions		N/A
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		P
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		N/A
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N/A
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube, and		N/A
	for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube		N/A
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N/A
	Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support, the pivot axis of the oscillating tube located at the level of the underside of the support, and		N/A
	for IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Detachable parts subjected to the relevant treatment with the main part		P
	However, if a part has to be removed for user maintenance and a tool is needed, this part is not removed		P
	IPX4 pumps tested as specified (IEC 60335-2-41)		N/A
	Submersible pumps immersed for 24 h in water as specified (IEC 60335-2-41)		N/A
	Water pressure on enclosure (IEC 60335-2-41):		N/A
	- 1,5 times pressure occurring at maximum operation depth, when this depth ≤ 10 m (IEC 60335-2-41)		N/A
	- 1,3 times pressure occurring at maximum operating depth, or (IEC 60335-2-41/A1)		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	- 5 m, if higher (IEC 60335-2-41/A1)		N/A
15.2	Spillage of liquid does not affect the electrical insulation		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A
	Detachable parts are removed		N/A
	Overfilling test with additional amount of water, over a period of 1 min (l).....:		N/A
	The appliance withstands the electric strength test of 16.3		N/A
	No trace of water on insulation that can result in a reduction of clearances or creepage distances below values specified in clause 29		N/A
15.3	Appliances proof against humid conditions		P
	Checked by test Cab: Damp heat steady state in IEC 60068-2-78		P
	Detachable parts removed and subjected, if necessary, to the humidity test with the main part		P
	Humidity test for 48 h in a humidity cabinet		P
	Reassembly of those parts that may have been removed		P
	The appliance withstands the tests of clause 16		P
	Humidity test for 48 h in a humidity cabinet (not for submersible pumps) (IEC 60335-2-41)		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/A
	Tests carried out at room temperature and not connected to the supply		P
16.2	Single-phase appliances: test voltage 1,06 times rated voltage (V)		P
	Three-phase appliances: test voltage 1,06 times rated voltage divided by $\sqrt{3}$ (V)		N/A
	Leakage current measurements	(see appended table)	P
	Limit values doubled if:		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	- all controls have an off position in all poles, or		N/A
	- the appliance has no control other than a thermal cut-out, or		N/A
	- . all thermostats, temperature limiters and energy regulators do not have an off position, or		N/A
	- the appliance has radio interference filters		N/A
	With the radio interference filters disconnected, the leakage current do not exceed limits specified.....:	(see appended table)	N/A
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		P
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use	(see appended table)	P
	Appliance supplied with 1,06 or 0,94 times rated voltage under the most unfavourable short-circuit or overload likely to occur in normal use (V).....:		P
	Basic insulation is not short-circuited		N/A
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		P
	Temperature of the winding not exceeding the value specified in table 8		N/A
	However, limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		P
18	ENDURANCE		N/A
	Requirements and tests are specified in part 2 when necessary		N/A
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/A
	Appliances incorporating heating elements subjected to the tests of 19.2 and 19.3, and		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	if the appliance also has a control that limit the temperature during clause 11 it is subjected to the test of 19.4, and		N/A
	if applicable, to the test of 19.5		N/A
	Appliances incorporating PTC heating elements are also subjected to the test of 19.6		N/A
	Appliances incorporating motors subjected to the tests of 19.7 to 19.10, as applicable		P
	Appliances incorporating electronic circuits subjected to the tests of 19.11 and 19.12, as applicable		N/A
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		N/A
	Appliances incorporating voltage selector switches subjected to the test of 19.15		N/A
	Unless otherwise specified, the tests are continued until a non-self-resetting thermal cut-out operates, or		N/A
	until steady conditions are established		P
	If a heating element or intentionally weak part becomes open-circuited, the relevant test is repeated on a second sample		N/A
	Pumps also subjected to tests of clause 19.101 and 19.102 (IEC 60335-2-41)		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)		N/A
19.3	Test of 19.2 repeated; test voltage (V), power input of 1,24 times rated power input (W)		N/A
19.4	Test conditions as in clause 11, any control limiting the temperature during tests of clause 11 short-circuited		N/A
19.5	Test of 19.4 repeated on class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the sheath		N/A
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N/A
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N/A
	The working voltage of the PTC heating element is increased by 5 % and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1,5 times working voltage or until the PTC heating element ruptures (V).....:		N/A
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque, or		P
	locking moving parts of other appliances		P
	Locked rotor, capacitors open-circuited one at a time		N/A
	Test repeated with capacitors short-circuited one at a time, unless		N/A
	capacitor is of class P2 of IEC 60252-1		N/A
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed.....:		N/A
	Other appliances supplied with rated voltage for a period as specified.....:	until steady conditions are established	P
	Winding temperatures not exceeding values specified in table 8.....:	(see appended table)	P
19.8	Multi-phase motors operated at rated voltage with one phase disconnected		N/A
19.10	Series motor operated at 1,3 times rated voltage for 1 min (V).....:		N/A
	During the test, parts not being ejected from the appliance		N/A
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/A
	they comply with the conditions specified in 19.11.1		N/A
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8, unless		N/A
	restarting does not result in a hazard		N/A
	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/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	If the safety of the appliance under any of the fault conditions depends on the operation of a miniature fuse-link complying with IEC 60127, the test of 19.12 is carried out		N/A
	During and after each test the following is checked:		N/A
	-the temperature of the windings do not exceed the values specified in table 8		N/A
	- the appliance complies with the conditions specified in 19.13		N/A
	-any current flowing through protective impedance not exceeding the limits specified in 8.1.4		N/A
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided both of the following conditions are met:		N/A
	- the base material of the printed circuit board withstands the test of annex E		N/A
	- any loosened conductor does not reduce clearance or creepage distances between live parts and accessible metal parts below the values specified in clause 29		N/A
19.11.1	Fault conditions a) to g) in 19.11.2 are not applied to circuits or parts of circuits meeting both of the following conditions:		N/A
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		N/A
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction of other parts of the appliance does not rely on the correct functioning of the electronic circuit		N/A
19.11.2	Fault conditions applied one at a time, the appliance operating under conditions specified in clause 11, but supplied at rated voltage, duration of the tests as specified:		N/A
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in clause 29		N/A
	b) open circuit at the terminals of any component		N/A
	c) short circuit of capacitors, unless		N/A
	they comply with IEC 60384-14		N/A
	d) short circuit of any two terminals of an electronic component, other than integrated circuits		N/A
	This fault condition is not applied between the two circuits of an optocoupler		N/A
	e) failure of triacs in the diode mode		N/A
	f) failure of microprocessors and integrated circuits		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	g) failure of an electronic power switching device		N/A
	Each low power circuit is short-circuited by connecting the low-power point to the pole of the supply source from which the measurements were made		N/A
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/A
19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or		N/A
	a device that can be placed in the stand-by mode,		N/A
	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/A
	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/A
	appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena.		N/A
	Surge protective devices disconnected, unless		N/A
	They incorporate spark gaps		N/A
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		N/A
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3		N/A
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/A
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/A
	Earthed heating elements in class I appliances disconnected		N/A
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		N/A
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/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	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/A
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		N/A
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60 s the power supply is reduced to a level such that the appliance ceases to respond or parts controlled by the programmable component cease to operate		N/A
	The appliance continues to operate normally, or		N/A
	requires a manual operation to restart		N/A
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A).....:		N/A
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Temperature rises not exceeding the values shown in table 9	(see appended table)	P
	Compliance with clause 8 not impaired		P
	If the appliance can still be operated it complies with 20.2		P
	Insulation, other than of class III appliances or class III constructions that do not contain live parts, withstands the electric strength test of 16.3, the test voltage as specified in table 4:		P
	- basic insulation (V)		N/A
	- supplementary insulation (V)		N/A
	- 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/A
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	- do not become operational, or		N/A
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N/A
	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/A
	- the lid or door does not move automatically to an open position when the interlock is released, and		N/A
	-the appliance does not start after the cycle in which the interlock was released		N/A
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/A
	For a relay or contactor with more than one contact, all contacts are short-circuited at the same time		N/A
	A relay or contactor operating only to ensure the appliance is energized for normal use is not short-circuited		N/A
	If more than one relay or contactor operates in clause 11, they are short-circuited in turn		N/A
19.15	For appliances with a mains voltage selector switch, the switch is set to the lowest rated voltage position and the highest value of rated voltage is applied		N/A
19.101	Pump supplied at rated voltage and operated at approximately half at maximum total head for 5 min (IEC 60335-2-41),		P
	after which inlet is removed from liquid and operation continued for 7 h (IEC 60335-2-41)		P
	Pumps operated again for 5 min at approximately half maximum total head (IEC 60335-2-41)		P
	If the pump becomes inoperable during test, it is disconnected from supply and filled with water (IEC 60335-2-41)		P
19.102	Pumps marked with maximum period of operation supplied at rated voltage and operated under normal operation until steady conditions established		N/A
20	STABILITY AND MECHANICAL HAZARDS		P
20.1	Appliances having adequate stability		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

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		N/A
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		N/A
	Submersible pumps not subjected to test (IEC 60335-2-41)		N/A
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
	Enclosures that can be opened by overriding an interlock are considered to be detachable parts		P
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard by unexpected closure		P
	Not possible to touch dangerous moving parts with the test probe described		P
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	(see appended table)	N/A
	Pumps, other than shower-boost pumps, impact energy is increased to 1,0 J (IEC 60335-2-41/A1)		P
	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 doubt, supplementary or reinforced insulation subjected to the electric strength test of 16.3		N/A
	If necessary, repetition of groups of three blows on a new sample		N/A
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		P
	Test not applicable if the thickness of supplementary insulation is at least 1 mm and reinforced insulation at least 2 mm		P
	The insulation is tested as specified, and does withstand the electric strength test of 16.3		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
22	CONSTRUCTION		P
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled		N/A
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
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided, or		N/A
	- an appliance inlet		N/A
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected class 01 and class I appliances, connected to the phase conductor		N/A
22.3	Appliance provided with pins: no undue strain on socket-outlets		N/A
	Applied torque not exceeding 0,25 Nm		N/A
	Pull force of 50 N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1 mm		N/A
	Each pin subjected to a torque of 0,4 Nm; the pins are not rotating, unless		N/A
	rotating does not impair compliance with this standard		N/A
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		N/A
22.5	No risk of electric shock when touching the pins of the plug, for appliances having a capacitor with rated capacitance exceeding 0,1 μ F, the appliance being disconnected from the supply at the instant of voltage peak		N/A
	Voltage not exceeding 34 V (V).....:		N/A
22.6	Electrical insulation not affected by condensing water or leaking liquid		P
	Electrical insulation of class II appliances not affected if a hose ruptures or seal leaks		N/A
	In case of doubt, test as described		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Class II pumps seal is removed from shaft. Pump is supplied at rated voltage and operated for 10 min with maximum head (IEC 60335-2-41)		N/A
	If static pressure can occur, test repeated at a pressure corresponding to maximum total head (IEC 60335-2-41)		N/A
	Pump withstand electric strength test of clause 16.3 (IEC 60335-2-41)		N/A
	Shower-boost pumps with separate enclosure have a drain hole in enclosure positioned so that water can drain out without impairing electrical insulation, unless water cannot accumulate within enclosure in normal use (IEC 60335-2-41/A1)		N/A
	Hole be at least 5 mm in diameter or (IEC 60335-2-41/A1)		N/A
	20 mm ² in area with a width of least 3 mm (IEC 60335-2-41/A1)		N/A
22.7	Adequate safeguards against the risk of excessive pressure in appliances containing liquid or gases or having steam-producing devices		N/A
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use		N/A
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances, unless		P
	the substance has adequate insulating properties		N/A
22.10	Not possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance, if:		N/A
	- a non-self-resetting thermal cut-out is required by the standard, and		N/A
	- a voltage maintained non-self-resetting thermal cut-out is used to meet it		N/A
	Non-self-resetting thermal motor protectors have a trip-free action, unless		N/A
	they are voltage maintained		N/A
	Reset buttons of non-self-resetting controls so located or protected that accidental resetting is unlikely		N/A
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts		P

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		N/A
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		N/A
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N/A
22.13	Unlikely that handles, when gripped as in normal use, make the operator's hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		P
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P
	No exposed pointed ends of self-tapping screws or other fasteners, likely to be touched by the user in normal use or during user maintenance		P
22.15	Storage hooks and the like for flexible cords smooth and well rounded		N/A
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands and no undue wear of contacts		N/A
	Cord reel tested with 6000 operations, as specified		N/A
	Electric strength test of 16.3, voltage of 1000 V applied		N/A
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		N/A
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		N/A
	constructed to prevent inappropriate replacement		N/A
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless		P
	material used is non-corrosive, non-hygrosopic and non-combustible		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless		P
	impregnated		N/A
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N/A
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
22.24	Bare heating elements, except in class III appliances or class III constructions that do not contain live parts, adequately supported		N/A
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N/A
22.25	Sagging heating conductors, except in class III appliances or class III constructions that do not contain live parts, cannot come into contact with accessible metal parts		N/A
22.26	For class III constructions the insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation		P
22.27	Parts connected by protective impedance separated by double or reinforced insulation		N/A
22.28	Metal parts of class II appliances conductively connected to gas pipes or in contact with water, separated from live parts by double or reinforced insulation		N/A
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation		N/A
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

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Neither clearances nor creepage distances between live parts and accessible parts reduced below values for supplementary insulation if wires, screws etc. become loose		P
22.32	Supplementary and reinforced insulation constructed or protected against pollution so that clearances or creepage distances are not reduced below the values in clause 29		P
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2		N/A
	Ceramic material not tightly sintered, similar materials or beads alone not used as supplementary or reinforced insulation		N/A
	Insulating material in which heating conductors are embedded is considered to be basic insulation, not reinforced insulation		N/A
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N/A
22.33	Conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts are not in direct contact with live parts		P
	Electrodes not used for heating liquids		N/A
	For class II constructions, conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts, not in direct contact with basic or reinforced insulation, unless		N/A
	the reinforced insulation consists of at least 3 layers		N/A
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation, unless		N/A
	the reinforced insulation consists of at least 3 layers		N/A
	An air layer not used as basic or supplementary insulation in a double insulation system if likely to be bridged by leaking liquid		N/A
22.34	Shafts of operating knobs, handles, levers etc. not live, unless		N/A
	the shaft is not accessible when the part is removed		N/A
22.35	For other than class III constructions, handles, levers and knobs, held or actuated in normal use, not becoming live in the event of a failure of basic insulation		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of a failure of basic insulation, are either adequately covered by insulation material or their accessible parts are separated from their shafts or fixings by supplementary insulation		N/A
	This requirement does not apply to handles, levers and knobs on stationary appliances, other than those of electrical components, provided they are reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N/A
	Insulating material covering metal handles, levers and knobs withstand the electric strength test of 16.3 for supplementary insulation		N/A
22.36	For appliances other than class III, handles continuously held in the hand in normal use so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless		N/A
	they are separated from live parts by double or reinforced insulation		N/A
22.37	Capacitors in class II appliances not connected to accessible metal parts and their casings, if of metal, separated from accessible metal parts by supplementary insulation, unless		N/A
	the capacitors comply with 22.42		N/A
22.38	Capacitors not connected between the contacts of a thermal cut-out		N/A
22.39	Lamp holders used only for the connection of lamps		N/A
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/A
	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/A
	Requirement not applicable to submersible pumps and vertical wet pit pumps (IEC 60335-2-41)		N/A
22.41	No components, other than lamps, containing mercury		P

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
22.42	Protective impedance consisting of at least two separate components		N/A
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N/A
	Resistors checked by the test of 14.1 a) in IEC 60065		N/A
	Capacitors checked by the tests for class Y capacitors in IEC 60384-14		N/A
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N/A
22.44	Appliances not having an enclosure that is shaped or decorated like a toy		P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.3 due to deformation as a result of an external force applied to the enclosure		P
22.46	For programmable protective electronic circuits used to ensure compliance with the standard, the software contains measures to control the fault/error conditions in table R.1		N/A
	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/A
	These requirements are not applicable to software used for functional purpose or compliance with clause 11		N/A
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use		N/A
	No leakage from any part, including any inlet water hose		N/A
22.48	Appliances connected to the water mains constructed to prevent backsiphonage of non-potable water		N/A
22.49	For remote operation, the duration of operation is to be set before the appliance can be started, unless		N/A
	the appliance switches off automatically or can operate continuously without hazard		N/A
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation		N/A
22.51	There is a control on the appliance manually adjusted to the setting for remote operation before the appliance can be operated in this mode		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	There is a visual indication showing that the appliance is adjusted for remote operation		N/A
	These requirements not necessary on appliances that can operate as follows, without giving rise to a hazard:		N/A
	- continuously, or		N/A
	- automatically, or		N/A
	- remotely		N/A
22.52	Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold		N/A
22.101	Pumps withstand the static pressure occurring in normal use (IEC 60335-2-41)		P
	Pump filled with water, ensuring that all air is removed. Pressure raised hydraulically to 1,2 times pressure occurring at maximum total head and maintained for 1 min (submersible pumps and vertical wet pit pumps not subjected to this test) (IEC 60335-2-41)		P
	No trace of water on insulation that could result in a reduction of clearances and creepage distances below values specified in clause 29 (IEC 60335-2-41)		P
22.102	Material of pump not be affected by liquid for which pump is intended if a hazard could result (IEC 60335-2-41)		P
22.103	Submersible pumps and vertical wet pit pumps so constructed that pollution of liquid by lubricants prevented as far as possible (IEC 60335-2-41)		N/A
22.104	Submersible pumps and vertical wet pit pumps having a mass > 3 kg so constructed that means for hoisting can be attached (IEC 60335-2-41)		N/A
22.105	Class I submersible pumps with plastic enclosure so constructed that leakage of liquid into motor does not result in a hazard (IEC 60335-2-41)		N/A
	After specified test accumulating water come in contact with earthed metal before it reaches live parts (IEC 60335-2-41)		N/A
22.106	Shower-boost pumps constructed so that they can be permanently connected to water supply (IEC 60335-2-41/A1)		N/A
	Shower-boost pumps for wall mounting constructed so that they can be securely fixed independently of connection to water supply (IEC 60335-2-41/A1)		N/A
23	INTERNAL WIRING		P
23.1	Wireways smooth and free from sharp edges		P

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	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/A
	Beads inside flexible metal conduits contained within an insulating sleeve		N/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N/A
	Flexible metallic tubes not causing damage to insulation of conductors		N/A
	Open-coil springs not used		N/A
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N/A
	No damage after 10 000 flexings for conductors flexed during normal use, or		N/A
	100 flexings for conductors flexed during user maintenance		N/A
	Electric strength test of 16.3, 1000 V between live parts and accessible metal parts		N/A
	Not more than 10 % of the strands of any conductor broken, and		N/A
	not more than 30 % for wiring supplying circuits that consume no more than 15 W		N/A
23.4	Bare internal wiring sufficiently rigid and fixed		N/A
23.5	The insulation of internal wiring subjected to the supply mains voltage withstanding the electrical stress likely to occur in normal use		P
	Basic insulation electrically equivalent to the basic insulation of cords complying with IEC 60227 or IEC 60245, or		P
	no breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by clamping at both ends, or		N/A
	be such that it can only be removed by breaking or cutting		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
23.7	The colour combination green/yellow only used for earthing conductors		N/A
23.8	Aluminium wires not used for internal wiring		N/A
23.9	Stranded conductors not consolidated by soldering where they are subjected to contact pressure, unless		P
	the contact pressure is provided by spring terminals		N/A
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52)		N/A
24	COMPONENTS		P
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components	(see appended table)	P
	If components have not been tested and found to comply with relevant IEC standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		P
	For components mentioned in 24.1.1 to 24.1.9 no additional tests specified in the relevant component standard are necessary other than those specified in 24.1.1 to 24.1.9		P
	Components not tested and found to comply with relevant IEC standard and components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		P
	Lampholders and starterholders that have not being tested and found to comply with the relevant IEC standard, tested as a part of the appliance and additionally according to the gauging and interchangeability requirements of the relevant IEC standard		N/A
	No additional tests specified for nationally standardized plugs such as those detailed in IEC/TR 60083 or connectors complying with the standard sheets of IEC 60320-1 and IEC 60309		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/A
	If the capacitors have to be tested, they are tested according to annex F		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
24.1.2	Safety isolating transformers complying with IEC 61558-2-6		N/A
	If they have to be tested, they are tested according to annex G		P
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000		N/A
	Level switches subjected to 50 000 cycles of operation (IEC 60335-2-41)		N/A
	If they have to be tested, they are tested according to annex H		N/A
	If the switch operates a relay or contactor, the complete switching system is subjected to the test		N/A
	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/A
24.1.4	Automatic controls complying with IEC 60730-1 with the relevant part 2. The number of cycles of operation being at least:		P
	- thermostats:..... 10 000		N/A
	- temperature limiters:..... 1 000		N/A
	- self-resetting thermal cut-outs:..... 300		N/A
	- voltage maintained non-self-resetting thermal cut-outs: 1 000		N/A
	- other non-self-resetting thermal cut-outs: 30		N/A
	- timers:..... 3 000		N/A
	- energy regulators:.....10 000		N/A
	The number of cycles for controls operating during clause 11 need not be declared, if the appliance meets the requirements of this standard when they are short-circuited		N/A
	Thermal motor protectors are tested in combination with their motor under the conditions specified in annex D		P
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection declared for subclause 6.5.2 of IEC 60730-2-8 is IPX7		N/A
24.1.5	Appliance couplers complying with IEC 60320-1		N/A
	However, for appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Interconnection couplers complying with IEC 60320-2-2		N/A
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		N/A
24.1.7	For remote operation of the appliance via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151		N/A
24.1.8	The relevant standard for thermal links is IEC 60691		P
	Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of clause 19		N/A
24.1.9	Contactors and relays, other than motor starting relays, tested as part of the appliance		N/A
	They are also tested in accordance with clause 17 of IEC 60730-1, the number of cycles of operations in 24.1.4 selected according to the contactor or relay function in the appliance		N/A
24.2	Appliances not fitted with:		P
	- switches or automatic controls in flexible cords		P
	- devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	- thermal cut-outs that can be reset by soldering, unless		P
	the solder has a melting point of at least 230 °C		N/A
	Level switches incorporated in interconnection cords (IEC 60335-2-41)		N/A
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and have a contact separation in all poles, providing full disconnection under overvoltage category III conditions		N/A
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N/A
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance, and used accordingly		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load		N/A
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42 V		N/A
	In addition, the motors comply with the requirements of annex I		N/A
24.7	Detachable hose-sets for connection of appliances to the water mains comply with IEC 61770		N/A
	They are supplied with the appliance		N/A
	Appliances intended to be permanently connected to the water mains not connected by a detachable hose-set		N/A
24.8	Motor running capacitors in appliances for which 30.2.3 is applicable and that are permanently connected in series with a motor winding, not causing a hazard in event of a failure		N/A
	One or more of the following conditions are to be met:		N/A
	- the capacitors are of class P2 according to IEC 60252-1		N/A
	- the capacitors are housed within a metallic or ceramic enclosure		N/A
	- the distance of separation of the outer surface to adjacent non-metallic parts exceeds 50 mm		N/A
	- adjacent non-metallic parts within 50 mm withstand the needle-flame test of annex E		N/A
	- adjacent non-metallic parts within 50 mm classified as at least V-1 according to IEC 60695-11-10		N/A
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		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,		P
	-an appliance inlet having at least the same degree of protection against moisture as required for the appliance, or		N/A
	- pins for insertion into socket-outlets		N/A
	Submersible pumps, other than class III, provided with a supply cord fitted with a plug (IEC 60335-2-41)		N/A
25.2	Appliance not provided with more than one means of connection to the supply mains		P

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		N/A
25.3	Appliance intended to be permanently connected to fixed wiring provided with one of the following means for connection to the supply mains:		N/A
	- a set of terminals allowing the connection of a flexible cord		N/A
	- a fitted supply cord		N/A
	- a set of supply leads accommodated in a suitable compartment		N/A
	- a set of terminals for the connection of cables of fixed wiring, cross-sectional areas specified in 26.6, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A
	- a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate types of cable or conduit, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A
	For a fixed appliance constructed so that parts can be removed to facilitate easy installation, this requirement is met if it is possible to connect the fixed wiring without difficulty after a part of the appliance has been fixed to its support		N/A
	Submersible pumps, other than class III pumps, provided with a flexible cord (IEC 60335-2-41)		N/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimension according to table 10 (mm)		N/A
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in clause 29		N/A
25.5	Method for assembling the supply cord to the appliance:		P
	- type X attachment (not allowed for submersible pumps) (IEC 60335-2-41)		N/A
	- type Y attachment	for #58389, cord replaced together with transformer	P
	- type Z attachment for pumps having a rated power input ≤ 100 W (IEC 60335-2-41)	for #58381; #58383; #58386	P
	- type Z attachment pumps for garden ponds (IEC 60335-2-41)		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A
	For multi-phase appliances supplied with a supply cord and that are intended to be permanently connected to fixed wiring, the supply cord is assembled to the appliance by type Y attachment		N/A
25.6	Plugs fitted with only one flexible cord		P
25.7	Pumps intended for outdoor use and pumps intended for use in swimming pools, other than class III pumps, supply cord be (IEC 60335-2-41):		P
	- polychloroprene sheathed or equivalent synthetic elastomer and not lighter than heavy polychloroprene sheathed cord (code designation 60245 IEC 66). However (IEC 60335-2-41),		N/A
	- fixed pumps having a rated power input ≤ 1 kW and portable pumps having a mass ≤ 5 kg fitted with ordinary polychloroprene sheathed cord (code designation 60245 IEC 57) (IEC 60335-2-41)		P
	Pumps intended for indoor use, except table fountain pumps, aquarium pumps, shower-boost pumps and class III pumps, supply cord be (IEC 60335-2-41/A1):		N/A
	- polychloroprene sheathed or equivalent synthetic elastomer and not be lighter than ordinary polychloroprene sheathed cord (code designation 60245 IEC 57) (IEC 60335-2-41)		N/A
	Supply cords, other than for class III appliances, being one of the following types:		N/A
	- rubber sheathed (at least 60245 IEC 53)		N/A
	- polychloroprene sheathed (at least 60245 IEC 57)		N/A
	- cross-linked polyvinyl chloride sheathed (at least 60245 IEC 88)		N/A
	- polyvinyl chloride sheathed. Not used if they are likely to touch metal parts having a temperature rise exceeding 75 K during the test of clause 11		N/A
	- light polyvinyl chloride sheathed cord (60227 IEC 52), for appliances not exceeding 3 kg		N/A
	- ordinary polyvinyl chloride sheathed cord (60227 IEC 53), for other appliances		N/A
	- heat resistant polyvinyl chloride sheathed. Not used for type X attachment other than specially prepared cords		N/A
	- heat-resistant light polyvinyl chloride sheathed cord (60227 IEC 56), for appliances not exceeding 3 kg		N/A
	- heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), for other appliances		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Supply cords for class III appliances adequately insulated		N/A
	Test with 500 V for 2 min for supply cords of class III appliances that contain live parts		N/A
25.8	Nominal cross-sectional area of supply cords not less than table 11; rated current (A); cross-sectional area (mm ²).....:	Max. current<6A 2x0,75-1,0 mm ²	P
	Supply cord of submersible pumps intended for outdoor use, other than class III pumps, have a length \geq 10 m (IEC 60335-2-41)		N/A
	Supply cord of submersible pumps, other than class III pumps, aquarium pumps and table fountain pumps, have a length of at least 3 m in excess of the maximum operating depth marked on the pump (IEC 60335-2-41/A2)		N/A
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		N/A
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/A
25.12	Insulation of the supply cord not damaged when moulding the cord to part of the enclosure		P
25.13	Inlet openings so constructed as to prevent damage to the supply cord		P
	If the enclosure at the inlet opening is not of insulating material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		P
	If unsheathed supply cord, a similar additional bushing or lining is required, unless the appliance is		N/A
	class 0, or		N/A
	a class III appliance not containing live parts		N/A
25.14	Supply cords moved while in operation adequately protected against excessive flexing		N/A
	Portable pumps are subjected to the test. (IEC 60335-2-41/A1):		N/A
	Flexing test (only for portable pumps, except table fountain pumps and aquarium pumps) (IEC 60335-2-41/A1):		N/A
	- applied force (N)		N/A
	- number of flexings		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	The test does not result in:		N/A
	-short-circuit between the conductors, such that the current exceeds a value of twice the rated current		N/A
	-breakage of more than 10 % of the strands of any conductor		N/A
	- separation of the conductor from its terminal		N/A
	- loosening of any cord guard		N/A
	- damage to the cord or the cord guard		N/A
	- broken strands piercing the insulation and becoming accessible		N/A
25.15	For appliances with supply cord and appliances to be permanently connected to fixed wiring by a flexible cord, conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		P
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		P
	Pull and torque test of supply cord, values shown in table 12: mass (kg); pull (N); torque (not on automatic cord reel) (Nm).....:	100N;0,35Nm	P
	Cord not damaged and max. 2 mm displacement of the cord		P
25.16	Cord anchorages for type X attachments constructed and located so that:		N/A
	- replacement of the cord is easily possible		N/A
	- it is clear how the relief from strain and the prevention of twisting are obtained		N/A
	- they are suitable for different types of supply cord		N/A
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless		N/A
	they are separated from accessible metal parts by supplementary insulation		N/A
	- the cord is not clamped by a metal screw which bears directly on the cord		N/A
	- at least one part of the cord anchorage securely fixed to the appliance, unless		N/A
	it is part of a specially prepared cord		N/A
	- screws which have to be operated when replacing the cord do not fix any other component, unless		N/A
	the appliance becomes inoperative or incomplete or the parts cannot be removed without a tool		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N/A
	- for class 0, 0I and I appliances they are of insulating material or are provided with an insulating lining, unless		N/A
	failure of the insulation of the cord does not make accessible metal parts live		N/A
	- for class II appliances they are of insulating material, or		N/A
	if of metal, they are insulated from accessible metal parts by supplementary insulation		N/A
	After the test of 25.15, under the conditions specified, the conductors have not moved by more than 1 mm in the terminals		N/A
25.17	Adequate cord anchorages for type Y and Z attachment, test with the cord supplied with the appliance		P
25.18	Cord anchorages only accessible with the aid of a tool, or		P
	Constructed so that the cord can only be fitted with the aid of a tool		P
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N/A
	Tying the cord into a knot or tying the cord with string not used		N/A
25.20	The insulated conductors of the supply cord for type Y and Z attachment additionally insulated from accessible metal parts		P
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed:		N/A
	- to permit checking of conductors with respect to correct positioning and connection before fitting any cover		N/A
	- so there is no risk of damage to the conductors or their insulation when fitting the cover		N/A
	- for portable appliances, so that the uninsulated end of a conductor, if it becomes free from the terminal, prevented from contact with accessible metal parts		N/A
	2 N test to the conductor for portable appliances; no contact with accessible metal parts		N/A
25.22	Appliance inlets:		N/A
	-live parts not accessible during insertion or removal		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Requirement not applicable to appliance inlets complying with IEC 60320-1		N/A
	- connector can be inserted without difficulty		N/A
	- the appliance is not supported by the connector		N/A
	- not for cold conditions if temp. rise of external metal parts exceeds 75 K during clause 11, unless		N/A
	the supply cord is unlikely to touch such metal parts		N/A
25.23	Interconnection cords comply with the requirements for the supply cord, except that:		P
	- the cross-sectional area of the conductors is determined on the basis of the maximum current during clause 11	For #58389, current: 10,9A, 2x1,5mm ² ; For the other models, current<6A, 2x 0,75-1,0mm ²	P
	- the thickness of the insulation may be reduced		N/A
	If necessary, electric strength test of 16.3		N/A
25.24	Interconnection cords not detachable without the aid of a tool if compliance with this standard is impaired when they are disconnected		P
25.25	Dimensions of pins that are inserted into socket-outlets compatible with the dimensions of the relevant socket-outlet.		N/A
	Dimensions of pins and engagement face in accordance with the dimensions of the relevant plug in IEC/TR 60083		N/A
26	TERMINALS FOR EXTERNAL CONDUCTORS		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/A
	Earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection		N/A
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/A
	the connections are soldered		N/A
	Screws and nuts not used to fix any other component, except		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N/A
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone, unless		N/A
	barriers provided so that neither clearances nor creepage distances between live parts and other metal parts reduced below the values for supplementary insulation if the conductor becomes free at the soldered joint		N/A
26.3	Terminals for type X attachment and for connection of cables of fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure but without damaging the conductor		N/A
	Terminals fixed so that when the clamping means is tightened or loosened:		N/A
	- the terminal does not become loose		N/A
	- internal wiring is not subjected to stress		N/A
	- neither clearances nor creepage distances are reduced below the values in clause 29		N/A
	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/A
	No deep or sharp indentations of the conductors		N/A
26.4	Terminals for type X attachment, except those having a specially prepared cord and those for the connection of cables of fixed wiring, no special preparation of conductors such as by soldering, use of cable lugs, eyelets or similar, and		N/A
	so constructed or placed that conductors prevented from slipping out when clamping screws or nuts are tightened		N/A
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		N/A
	Stranded conductor test, 8 mm insulation removed		N/A
	No contact between live parts and accessible metal parts and,		N/A
	for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
26.6	Terminals for type X attachment and for connection of cables of fixed wiring suitable for connection of conductors with cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm ²).....:		N/A
	If a specially prepared cord is used, terminals need only be suitable for that cord		N/A
26.7	Terminals for type X attachment, except in class III appliances not containing live parts, accessible after removal of a cover or part of the enclosure		N/A
26.8	Terminals for the connection of fixed wiring, including the earthing terminal, located close to each other		N/A
26.9	Terminals of the pillar type constructed and located as specified		P
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless		N/A
	conductors ends fitted with means suitable for screw terminals		N/A
	Pull test of 5 N to the connection		N/A
26.11	For type Y and Z attachment, soldered, welded, crimped or similar connections may be used		P
	For class II appliances, the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		P
	If soldering, welding or crimping alone used, barriers provided so that clearances and creepage distances between live parts and other metal parts are not reduced below the values for supplementary insulation if the conductor becomes free		N/A
27	PROVISION FOR EARTHING		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		N/A
	Earthing terminals and earthing contacts not connected to the neutral terminal		N/A
	Class 0, II and III appliances have no provision for earthing		P
	Safety extra-low voltage circuits not earthed, unless		N/A
	protective extra-low voltage circuits		N/A
27.2	Clamping means of earthing terminals adequately secured against accidental loosening		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Terminals for the connection of external equipotential bonding conductors allow connection of conductors of 2,5 to 6 mm ² , and		N/A
	do not provide earthing continuity between different parts of the appliance, and		N/A
	conductors cannot be loosened without the aid of a tool		N/A
27.3	For a detachable part having an earth connection and being plugged into another part of the appliance, the earth connection is made before and separated after current-carrying connections when removing the part		N/A
	For appliances with supply cords, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		N/A
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		N/A
	Parts providing earthing continuity, other than parts of a metal frame or enclosure, have adequate resistance to corrosion		N/A
	If of steel, these parts provided with an electroplated coating with a thickness at least 5 µm		N/A
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		N/A
	In the body of the earthing terminal is a part of a frame or enclosure of aluminium or aluminium alloys, precautions taken to avoid risk of corrosion		N/A
27.5	Low resistance of connection between earthing terminal and earthed metal parts		N/A
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided the clearances of basic insulation are based on the rated voltage of the appliance		N/A
	Resistance not exceeding 0,1 Ω at the specified low-resistance test (Ω).....:		N/A
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand-held appliances.		N/A
	They may be used to provide earthing continuity in other appliances if at least two tracks are used with independent soldering points and the appliance complies with 27.5 for each circuit		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
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/A
	Screws of insulating material not used for any electrical connections or connections providing earthing continuity		P
	Screws used for electrical connections or connections providing earthing continuity screwed into metal	No such screw	N/A
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N/A
	For type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw impairs basic insulation		N/A
	For screws and nuts; torque-test as specified in table 14.....:	(see appended table)	N/A
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure is not transmitted through non-ceramic insulating material liable to shrink or distort, unless		P
	there is resiliency in the metallic parts to compensate for shrinkage or distortion of the insulating material		N/A
	This requirement does not apply to electrical connections in circuits of appliances for which:		P
	- 30.2.2 is applicable and that carry a current not exceeding 0,5 A		N/A
	- 30.2.3 is applicable and that carry a current not exceeding 0,2 A		P
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N/A
	Thread-cutting (self-tapping) screws and thread rolling screws only used for electrical connections if they generate a full form standard machine screw thread		N/A
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Thread-cutting, thread rolling and space threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection:		N/A
	- in normal use,		N/A
	- during user maintenance,		N/A
	- when replacing a supply cord having a type X attachment, or		N/A
	- during installation		N/A
	At least two screws being used for each connection providing earthing continuity, unless		N/A
	the screw forms a thread having a length of at least half the diameter of the screw		N/A
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		N/A
	This requirement does not apply to screws in the earthing circuit if at least two screws are used, or		N/A
	if an alternative earthing circuit is provided		N/A
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if the connections are subjected to torsion		N/A
29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		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/A
	The microenvironment is pollution degree 1 under type 1 protection		N/A
	For type 2 protection, the spacing between the conductors before the protection is applied is not less than the values specified in Table 1 of IEC 60664-3		N/A
	These values apply to functional, basic, supplementary and reinforced insulation.....:		N/A
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless	(see appended table)	P
	for basic insulation and functional insulation they comply with the impulse voltage test of clause 14		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	However, if the distances are affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1500 V and above are increased by 0,5 mm and the impulse voltage test is not applicable		P
	Impulse voltage test is not applicable:		N/A
	- when the microenvironment is pollution degree 3, or		N/A
	- for basic insulation of class 0 and class 01 appliances		N/A
	Appliances are in overvoltage category II		P
	A force of 2 N is applied to bare conductors, other than heating elements		N/A
	A force of 30 N is applied to accessible surfaces		P
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		P
	The values of table 16 or the impulse voltage test of clause 14 are applicable.....:	(see appended table)	P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1,0 mm if the microenvironment is pollution degree 1		N/A
	Lacquered conductors of windings considered to be bare conductors		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
	- table 16 based on the rated impulse voltage	(see appended table)	P
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N/A
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		N/A
	If values of table 16 are largest, the impulse voltage test of clause 14 may be applied instead, unless		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	the microenvironment is pollution degree 3, or		N/A
	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		N/A
	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/A
29.1.5	Appliances having higher working voltages than rated voltage, clearances for basic insulation are the largest values determined from:		N/A
	- table 16 based on the rated impulse voltage		N/A
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N/A
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		N/A
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1 or clause 4 of IEC 60664-4, the clearances of supplementary insulation are not less than those specified for basic insulation		N/A
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1, the clearances of reinforced insulation dimensioned as specified in Table F.7a are to withstand 160% of the withstand voltage required for basic insulation		N/A
	If clearances for basic insulation are selected from clause 4 of IEC 60664-4, the clearances of reinforced insulation are twice the value required for basic insulation		N/A
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N/A
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation are based on the working voltage used as the rated voltage in table 15		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
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		P
	- precautions taken to protect the insulation; pollution degree 1		N/A
	- insulation subjected to conductive pollution; pollution degree 3		N/A
	A force of 2 N is applied to bare conductors, other than heating elements		N/A
	A force of 30 N is applied to accessible surfaces		P
	In a double insulation system, the working voltage for both the basic and supplementary insulation is taken as the working voltage across the complete double insulation system		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/A
	Except for pollution degree 1, corresponding creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14		N/A
29.2.2	Creepage distances of supplementary insulation at least those specified for basic insulation in table 17, or	(see appended table)	P
	Table 2 of IEC 60664-4, as applicable		N/A
29.2.3	Creepage distances of reinforced insulation at least double those specified for basic insulation in table 17, or	(see appended table)	P
	Table 2 of IEC 60664-4, as applicable		N/A
29.2.4	Creepage distances of functional insulation not less than specified in table 18	(see appended table)	P
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 18		N/A
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
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/A
	- by an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3, and		N/A
	- for accessible parts of reinforced insulation consisting of a single layer, by measurement in accordance with 29.3.4, or		N/A
	- as specified in subclause 6.3 of IEC 60664-4 for insulation that is subjected to any periodic voltage having a frequency exceeding 30 kHz		N/A
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/A
	Supplementary insulation consist of at least 2 layers		N/A
	Reinforced insulation consist of at least 3 layers		N/A
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		N/A
	the electric strength test of 16.3		N/A
	If the temperature rise during the tests of clause 19 does not exceed the value specified in table 3, the test of IEC 60068-2-2 is not carried out		N/A
29.3.4	Thickness of accessible parts of reinforced insulation consisting of a single layer not less than specified in table 19.....:		N/A
30	RESISTANCE TO HEAT AND FIRE		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

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	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)	P
30.2	Parts of non-metallic material resistant to ignition and spread of fire		P
	This requirement does not apply to:		N/A
	parts having a mass not exceeding 0,5 g, provided the cumulative effect is unlikely to propagate flames that originate inside the appliance by propagating flames from one part to another, or		N/A
	decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		N/A
	Compliance checked by the test of 30.2.1, and in addition:		P
	- for attended appliances, 30.2.2 applies		N/A
	- for unattended appliances, 30.2.3 applies		P
	For appliances for remote operation, 30.2.3 applies		N/A
	For base material of printed circuit boards, 30.2.4 applies		N/A
	Clause 30.2.3 is not applicable to submersible pumps, if their live parts are completely contained within an enclosure of metal or porcelain and the instructions state that the pump shall be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA. (IEC 60335-2-41/A2)		N/A
30.2.1	Parts of non-metallic material subjected to the glow-wire test of IEC 60695-2-11 at 550 °C		P
	However, test not carried out if the material is classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 550 °C, or		N/A
	the material is classified at least HB40 according to IEC 60695-11-10		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Parts for which the glow-wire test cannot be carried out need to meet the requirements in ISO 9772 for material classified HBF		N/A
30.2.2	Appliances operated while attended, parts of non-metallic material supporting current-carrying connections, and		N/A
	parts of non-metallic material within a distance of 3 mm of such connections,		N/A
	subjected to the glow-wire test of IEC 60695-2-11		N/A
	The test severity is:		N/A
	- 750 °C, for connections carrying a current exceeding 0,5 A during normal operation		N/A
	- 650 °C, for other connections		N/A
	Glow-wire applied to an interposed shielding material, if relevant		N/A
	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:		N/A
	- 750 °C, for connections carrying a current exceeding 0,5 A during normal operation		N/A
	- 650 °C, for other connections		N/A
	The glow-wire test is also not carried out on small parts. These parts are to:		N/A
	- comprise material having a glow-wire flammability index of at least 750 °C, or 650 °C as appropriate, or		N/A
	- comply with the needle-flame test of annex E, or		N/A
	- comprise material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
	Glow-wire test not applicable to conditions as specified		N/A
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	The tests are not applicable to conditions as specified		N/A
30.2.3.1	Parts of non-metallic material supporting connections carrying a current exceeding 0,2 A during normal operation, and		P
	parts of non-metallic material, other than small parts, within a distance of 3 mm,		P
	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

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	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		P
30.2.3.2	Parts of non-metallic material supporting connections, and		P
	parts of non-metallic material within a distance of 3 mm,		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/A
	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
	- a glow-wire ignition temperature according to IEC 60695-2-13 of at least:		N/A
	- 775 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	- 675 °C, for other connections		N/A
	- a glow-wire flammability index according to IEC 60695-2-12 of at least:		N/A
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	- 650 °C, for other connections		N/A
	The glow-wire test is also not carried out on small parts. These parts are to:		P
	- comprise material having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- comprise material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- comply with the needle-flame test of annex E, or		P
	- comprise material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
	The consequential needle-flame test of annex E applied to non-metallic parts that encroach within the vertical cylinder placed above the centre of the connection zone and on top of the non-metallic parts supporting current-carrying connections, and parts of non-metallic material within a distance of 3 mm of such connections if these parts are those:		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	- parts that withstood the glow-wire test of IEC 60695-2-11 of 750 °C or 650 °C as appropriate, but produce a flame that persist longer than 2 s, or		N/A
	- parts that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- small parts, that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- small parts for which the needle-flame test of annex E was applied, or		N/A
	- small parts for which a material classification of V-0 or V-1 was applied		N/A
	However, the consequential needle-flame test is not carried out on non-metallic parts, including small parts, within the cylinder that are:		N/A
	- parts having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- parts comprising material classified as V-0 or V-1 according to IEC 60695-11-10, or		N/A
	- parts shielded by a flame barrier that meets the needle-flame test of annex E or that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
30.2.4	Base material of printed circuit boards subjected to the needle-flame test of annex E		N/A
	Test not applicable to conditions as specified		N/A
31	RESISTANCE TO RUSTING		P
	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		P
	Description of routine tests to be carried out by the manufacturer		P
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
C	ANNEX C (NORMATIVE) AGEING TEST ON MOTORS		N/A
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS		P
	Applicable to appliances having motors that incorporate thermal motor protectors necessary for compliance with the standard	Model #58389 with motor protector 17AM: 61,9°C	P
	Test conditions as specified		P
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		P
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		P
7	Severities		P
	The duration of application of the test flame is 30 s ± 1 s		P
9	Test procedure		P
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		P
9.2	The first paragraph does not apply		P
	If possible, the flame is applied at least 10 mm from a corner		P
9.3	The test is carried out on one specimen		P
	If the specimen does not withstand the test, the test may be repeated on two additional specimens, both withstanding the test		P
11	Evaluation of test results		P
	The duration of burning not exceeding 30 s		P
	However, for printed circuit boards, the duration of burning not exceeding 15 s		N/A
F	ANNEX F (NORMATIVE) CAPACITORS		N/A
G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		P
	The following modifications to this standard are applicable for safety isolating transformers:		P
7	Marking and instructions		P
7.1	Transformers for specific use marked with:		P
	- name, trademark or identification mark of the manufacturer or responsible vendor		P

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	- model or type reference		P
17	Overload protection of transformers and associated circuits		P
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		P
22	Construction		P
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		P
29	Clearances, creepage distances and solid insulation		P
29.1, 29.2, 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply	Refer to table 29.1	P
	For insulated winding wires complying with subclause 19.12.3 of IEC 61558-1 there are no requirements for clearances or creepage distances		N/A
	For windings providing reinforced insulation, the distance specified in item 2c of table 13 of IEC 61558-1 is not assessed		N/A
	For safety isolating transformers subjected to periodic voltages with a frequency exceeding 30 kHz, the clearances, creepage distances and solid insulation values specified in IEC 60664-4 are applicable, if greater than the values specified in items 2a, 2c and 3 in table 13 of IEC 61558-1		N/A
H	ANNEX H (NORMATIVE) SWITCHES		N/A
	Switches comply with the following clauses of IEC 61058-1, as modified below:		N/A
	The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N/A
	Before being tested, switches are operated 20 times without load		N/A
8	Marking and documentation		N/A
	Switches are not required to be marked		N/A
	However, a switch that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N/A
13	Mechanism		N/A
	The tests may be carried out on a separate sample		N/A
15	Insulation resistance and dielectric strength		N/A
15.1	Not applicable		N/A
15.2	Not applicable		N/A
15.3	Applicable for full disconnection and micro-disconnection		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
17	Endurance		N/A
	Compliance is checked on three separate appliances or switches		N/A
	For 17.2.4.4, the number of cycles declared according to 7.1.4 is 10 000, unless		N/A
	otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335.....:		N/A
	Switches for operation under no load and which can be operated only by a tool, and		N/A
	switches operated by hand that are interlocked so that they cannot be operated under load,		N/A
	are not subjected to the tests		N/A
	However, switches without this interlock are subjected to the test of 17.2.4.4 for 100 cycles of operation		N/A
	Subclauses 17.2.2 and 17.2.5.2 not applicable		N/A
	The ambient temperature during the test is that occurring in the appliance during the test of clause 11 in IEC 60335-1		N/A
	The temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1 (K)		N/A
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		N/A
	This clause is applicable to clearances and creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in table 24		N/A
I	ANNEX I (NORMATIVE) MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		N/A
J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		N/A
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/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		N/A
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		P
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N/A
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		N/A
L	ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		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		P
	Degrees of pollution in the microenvironment		P
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		P
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		N/A
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		P
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N/A
N	ANNEX N (NORMATIVE) PROOF TRACKING TEST		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 100 V, 175 V, 400 V or 600 V:	175V	P
	The test is carried out on five specimens		P
	In case of doubt, additional test with proof voltage reduced by 25 V, the number of drops increased to 100		N/A
10.2	Report		P
	The report states if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		N/A
O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF clause 30		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/A
Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS		N/A
R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION		N/A

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict

10.1	TABLE: Power input deviation					P
Input deviation of/at:	P rated (W)	P measured (W)	ΔP	Required ΔP	Remark	
230V #58381	23	27	+17,4%	+20%	P	
230V #58383	40	42	+5,0%	+20%	P	
230V #58386	40	40	0%	+20%	Motor WB-117	
230V #58386	40	43	+7,5%	+20%	Motor WB-117B	
230V #58389	110	116	+5,5%	+20%	P	
Supplementary information:						

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

11.8	TABLE: Heating test (#58381)		P
	Test voltage (V):	254,4V	—
	Ambient (°C).....:	23,1	—
Thermocouple locations		Max. temperature rise measured, Δ T (K)	Max. temperature rise limit, Δ T (K)
Interconnection cord of pump		28,5	50
Plastic enclosure of pump		9,5	75 & see 30.1
Motor surface		19,0	For ref.
Transformer surface		31,0	75 & see 30.1
Supply cord		13,4	50
Water temp.		31,2°C	30-35°C
Supplementary information:			

IEC 60335-2-41					
Clause	Requirement + Test			Result - Remark	Verdict
11.8	TABLE: Heating test, resistance method(#58381)				P
	Test voltage (V)			254,4	—
	Ambient, t1 (°C)			25,0	—
	Ambient, t2 (°C)			23,0	—
Temperature rise of winding		R1 (Ω)	R2 (Ω)	Δ T (K)	Max. Δ T (K)
					Insulation class
Winding of motor		1,680	2,135	72,3	95
Input winding of transformer		78,0	95,0	58,6	95
Output winding of transformer		0,305	0,372	58,4	95
Supplementary information:					

11.8	TABLE: Heating test (#58383)		P
	Test voltage (V):	254,4V	—
	Ambient (°C).....:	25,0	—
Thermocouple locations		Max. temperature rise measured, Δ T (K)	Max. temperature rise limit, Δ T (K)
Interconnection cord of pump		12,6	50
Plastic enclosure of pump		28,6	75 & see 30.1
Motor surface		30,6	For ref.
Transformer surface		30,7	75 & see 30.1
Supply cord		6,4	50
Water temp.		33,6°C	30-35°C
Supplementary information:			

IEC 60335-2-41					
Clause	Requirement + Test			Result - Remark	Verdict
11.8	TABLE: Heating test, resistance method (#58383)				P
	Test voltage (V)			254,4	—
	Ambient, t1 (°C)			23,0	—
	Ambient, t2 (°C)			25,0	—
Temperature rise of winding		R1 (Ω)	R2 (Ω)	Δ T (K)	Max. Δ T (K)
					Insulation class
Winding of motor		0,566	0,669	44,9	95
Input winding of transformer		31,2	38,6	59,1	95
Output winding of transformer		0,123	0,145	45,3	95
Supplementary information:					

11.8	TABLE: Heating test (#58386)(with Motor WB-117)		P
	Test voltage (V):	254,4V	—
	Ambient (°C).....:	25,0	—
Thermocouple locations		Max. temperature rise measured, Δ T (K)	Max. temperature rise limit, Δ T (K)
Interconnection cord of pump		9,4	50
Plastic enclosure of pump		27,8	75 & see 30.1
Motor surface		24,2	For ref.
Transformer surface		18,2	75 & see 30.1
Supply cord		7,1	50
Water temp.		33,6°C	30-35°C
Supplementary information:			

IEC 60335-2-41					
Clause	Requirement + Test			Result - Remark	Verdict
11.8	TABLE: Heating test, resistance method (#58386)(with Motor WB-117)				P
	Test voltage (V)			254,4	—
	Ambient, t1 (°C)			23,0	—
	Ambient, t2 (°C)			25,0	—
Temperature rise of winding		R1 (Ω)	R2 (Ω)	Δ T (K)	Max. Δ T (K)
					Insulation class
Winding of motor		0,862	1,005	40,7	95
Input winding of transformer		30,9	35,6	37,2	95
Output winding of transformer		116,9m	132,8m	33,0	95
Supplementary information:					

11.8	TABLE: Heating test (#58386)(with Motor WB-117B)		P
	Test voltage (V):.....:	254,4V	—
	Ambient (°C).....:	18,0	—
Thermocouple locations		Max. temperature rise measured, Δ T (K)	Max. temperature rise limit, Δ T (K)
Interconnection cord of pump		3,4	50
Plastic enclosure of pump		14,6	75 & see 30.1
Motor surface		40,9	For ref.
Transformer surface		24,8	75 & see 30.1
Supply cord		8,0	50
Water temp.		31,8°C	35°C
Supplementary information:			

IEC 60335-2-41					
Clause	Requirement + Test			Result - Remark	Verdict
11.8	TABLE: Heating test, resistance method(#58386)(with Motor WB-117B)				P
	Test voltage (V)	254,4			—
	Ambient, t1 (°C)	17,0			—
	Ambient, t2 (°C)	18,0			—
Temperature rise of winding		R1 (Ω)	R2 (Ω)	Δ T (K)	Max. Δ T (K)
					Insulation class
Winding of motor		536,0 mΩ	660,0 mΩ	57,2	95
Input winding of transformer		30,1	36,5	50,8	95
Output winding of transformer		115,0 mΩ	135,2 mΩ	43,2	95
Supplementary information:					

11.8	TABLE: Heating test (#58389)		P
	Test voltage (V):	254,4V	—
	Ambient (°C).....:	25,0	—
Thermocouple locations		Max. temperature rise measured, Δ T (K)	Max. temperature rise limit, Δ T (K)
Interconnection cord of pump		30,8	50
Plastic enclosure of pump		20,9	75 & see 30.1
Motor surface		41,5	For ref.
Transformer surface		32,8	75 & see 30.1
Supply cord		8,0	50
Connection in terminal box		34,6	For ref.
Water temp.		32,2°C	30-35°C
Supplementary information:			

IEC 60335-2-41					
Clause	Requirement + Test			Result - Remark	Verdict
11.8	TABLE: Heating test, resistance method (#58389)				P
	Test voltage (V)			254,4	—
	Ambient, t1 (°C)			25,0	—
	Ambient, t2 (°C)			25,0	—
Temperature rise of winding		R1 (Ω)	R2 (Ω)	Δ T (K)	Max. Δ T (K)
Winding of motor		0,099	0,117	46,1	95
Input winding of transformer		8,47	10,22	53,6	95
Output winding of transformer		0,027	0,031	43,3	95
Supplementary information:					

13.2	TABLE: Leakage current			P
	Heating appliances: 1,15 x rated input (W)			—
	Motor-operated and combined appliances: 1,06 x rated voltage (V)	254,4		—
Leakage current between		I (mA)	Max. allowed I (mA)	
L/N to plastic enclosure		0,003/0,002	0,35 peak	
Supplementary information:				
Remark: Max. peak value listed among all models				

13.3	TABLE: Dielectric strength			P
Test voltage applied between:		Test potential applied (V)	Breakdown / flashover (Yes/No)	
L/N to plastic enclosure		3000	No	
Supplementary information:				

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

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict
16.2	TABLE: Leakage current		P
	Single phase appliances: 1,06 x rated voltage (V)	254,4V	—
	Three phase appliances 1,06 x rated voltage divided by $\sqrt{3}$ (V)		—
Leakage current between		I (mA)	Max. allowed I (mA)
L/N to plastic enclosure		0,002	0,25
Supplementary information: Max. value listed among all models			

16.3	TABLE: Dielectric strength		P
Test voltage applied between:		Test potential applied (V)	Breakdown / flashover (Yes/No)
L/N to plastic enclosure		3000	No
Supplementary information:			

17	TABLE: Overload protection		P
Thermocouple locations		Max. temperature rise measured, ΔT (K)	Max. temperature rise limit, ΔT (K)
Plastic enclosure of transformer JT-12V2500-IPX7		89,5°C	175°C
Plastic enclosure of transformer JT-12V5000-IPX7		88,6°C	175°C
Plastic enclosure of transformer JT-12V12500-IPX7		77,7°C	175°C
Supplementary information:			

17	TABLE: Overload protection, resistance method		N/A
	Test voltage (V)		—
	Ambient, t1 (°C)		—
	Ambient, t2 (°C)		—
Temperature of winding	R1 (Ω)	R2 (Ω)	ΔT (K)
			T (°C)
			Max. T (°C)
Supplementary information:			

IEC 60335-2-41							
Clause	Requirement + Test			Result - Remark			Verdict
19	Abnormal operation conditions						P
Operational characteristics		YES/NO		Operational conditions			
Are there electronic circuits to control the appliance operation?		NO					
Are there “off” or “stand-by” position?		NO					
The unintended operation of the appliance results in dangerous malfunction?		NO					
Sub-clause	Operating conditions description	Test results description	PEC description	EMP 19.11.4	Software type required	19.11.3 PEC	Final result
19.2	---	N/A	N.A	N.A	N.A	N.A	N/A
19.3	---	N/A	N.A	N.A	N.A	N.A	N/A
19.4	---	N/A	N.A	N.A	N.A	N.A	N/A
19.5	---	N/A	N.A	N.A	N.A	N.A	N/A
19.6	---	N/A	N.A	N.A	N.A	N.A	N/A
19.7	240V	Motor protector protected	N.A	N.A	N.A	N.A	P
19.8	---	N/A	N.A	N.A	N.A	N.A	N/A
19.9	---	N/A	N.A	N.A	N.A	N.A	N/A
19.10	---	N/A	N.A	N.A	N.A	N.A	N/A
19.11.2	---	N/A	N.A	N.A	N.A	N.A	N/A
19.11.4.8	---	N/A	N.A	N.A	N.A	N.A	N/A
19.101	240V	Motor protector protected	N.A	N.A	N.A	N.A	P
Supplementary information:							

IEC 60335-2-41					
Clause	Requirement + Test			Result - Remark	Verdict
19.7	TABLE: Abnormal operation, locked rotor/moving parts				P
	Test voltage (V)	240			—
	Ambient, t1 (°C)	25°C for WB-122, WB-145; 23°C for WB-117, WB-148B; WB-117B			—
	Ambient, t2 (°C)	25°C for WB-117, WB-145, WB-148B; 23,3°C for WB-122			—
Temperature of winding		R1 (Ω)	R2 (Ω)	Δ T (K)	T (°C) Max. T (°C)
motor WB-145		1,680	2,205	---	106,1 175
motor WB-148B		0,566	0,750	---	109,4 175
motor WB-117		0,862	1,143	---	109,6 175
motor WB-117B		0,536	0,786	---	143,1 175
motor WB-122		0,099	0,131	---	108,9 175
Supplementary information:					

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

19.13	TABLE: Abnormal operation, temperature rises			N/A
Thermocouple locations		Max. temperature rise measured, ΔT (K)	Max. temperature rise limit, ΔT (K)	
Supplementary information:				

21.1	TABLE: Impact resistance			P
Impacts per surface	Surface tested	Impact energy (Nm)	Comments	
3	Plastic enclosure	1,0	P	
Supplementary information:				

IEC 60335-2-41					
Clause	Requirement + Test			Result - Remark	Verdict

24.1	TABLE: Critical components information				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
Power plug	Wuxi Zhonghui Wire & Cable Co., Ltd.	ZH-4	250VAC IP44 16A	DIN VDE 0620-1	VDE 40022080
BS plug	Wuxi Zhonghui Wire & Cable Co., Ltd	ZH-61A	250VAC 50Hz; 13A	BS 1363	ASTA 970
Fuse in BS plug	Dongguan Cooper Electronics Co., Limited	TDC180	AC240V,2/3/5/7/10 /13A	BS 1362	ASTA 658
Power cord	Wuxi Zhonghui Wire & Cable Co., Ltd.	H05RN-F	2×0,75-1,0mm ²	DIN EN 50525	VDE 40020334
	Zhenjiang Zhongjia Electric Co., Ltd.	H05RN-F	2×0,75-1,0mm ²	DIN EN 50525	VDE 40030173
Interconnection cord* (>3,5 meter)	Wuxi Zhonghui Wire & Cable Co., Ltd.	H05RN-F/ H07RN-F	2×0,75-1,0mm ² / 2×1,5mm ²	DIN EN 50525	VDE 40020334
	Zhenjiang Zhongjia Electric Co., Ltd.	H05RN-F/ H07RN-F	2×0,75-1,0mm ² / 2×1,5mm ²	DIN EN 50525	VDE 40030173
Motor Protector	Sensata Technologies Holland B.V.	17AM	AC 250V; 105° C open	EN 60730-1 EN 60730-2-2	KEMA 2014531.05
	Shengzhou Ganlin Wangshi Thermal Protector Factory	JW-1T JW-2B	AC 250V; 105° C open	EN 60730-1 EN 60730-2-2	VDE 40006013
Motor Protector for #58389	Changzhou Ainuo Electronics technical Co.,Ltd	17AM	AC 250V; 105° C open	EN 60730-1 EN 60730-2-2	VDE 40030705
Epoxy resin	YIXING PULITAI ELECTRONIC MATERIALS CO LTD	WOC	V-0	---	UL E228453
	JINHUA HUISENG ELECTRONIC TECHNOLOGY CO LTD	HS-9002RFA/9002 RFB, HS-5217A/5217B	V-0	---	E355105

IEC 60335-2-41					
Clause	Requirement + Test		Result - Remark		Verdict
Heat shrinkable tube	SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD	RSFR-H	125°C, 600V	---	UL E203950
Terminal block for #58389	Heavy Power Co., Ltd.	PA7	450V; 17,5A	EN 60998-1 EN 60998-2-1	VDE 40019839
Motor for #58381	GOLEADER INDUSTRIES (JINHUA) CO., LTD.	WB-145	Winding resistance: 1,680Ω(25° C); Class B	EN 60335-1 EN 60335-2-41	Test with appliance
Motor for #58383	GOLEADER INDUSTRIES (JINHUA) CO., LTD.	WB-148B	Winding resistance: 0,566Ω(23° C); Class B	EN 60335-1 EN 60335-2-41	Test with appliance
Motor for #58386	GOLEADER INDUSTRIES (JINHUA) CO., LTD.	WB-117	Winding resistance: 0,662Ω(23° C); Class B	EN 60335-1 EN 60335-2-41	Test with appliance
	GOLEADER INDUSTRIES (JINHUA) CO., LTD.	WB-117B	Winding resistance: 0,536Ω(17° C); Class B	EN 60335-1 EN 60335-2-41	Test with appliance
Motor for #58389	GOLEADER INDUSTRIES (JINHUA) CO., LTD.	WB-122	Winding resistance: 0,099Ω(25° C); Class B	EN 60335-1 EN 60335-2-41	Test with appliance
Transformer for #58381	Changzhou Jutai Electronic Co.,Ltd	JT-12V2500-IPX7	Input: AC220-240V, 50Hz, winding:78,0Ω Output:12VAC,2,5 A winding:305,6mΩ (25,0°C, input/output cord not included) IPX7	EN 60335-1 EN 61558-1	Test with appliance
Transformer for #58383; #58386	Changzhou Jutai Electronic Co.,Ltd	JT-12V5000-IPX7	Input: AC220-240V, 50Hz, winding:31,2Ω Output:12VAC,5A, winding:122,6mΩ (25,0°C, input/output cord not included) IPX7	EN 60335-1 EN 61558-1	Test with appliance

IEC 60335-2-41					
Clause	Requirement + Test		Result - Remark		Verdict
Transformer for #58389	Changzhou Jutai Electronic Co.,Ltd	JT-12V12500-IPX7	Input: AC220-240V, 50Hz, winding:8,47Ω Output:12VAC, 12, 5A, winding:26,7mΩ (25,0°C, input/output cord not included) IPX7	EN 60335-1 EN 61558-1	Test with appliance
Thermal link in input winding of transformer	Aupo Electronics Ltd.	A4/A4-F	250V 2A 130°C	EN 60691	VDE 40008720
	Xiamen Set Electronics Co., Ltd.	D4/E4/K4	250V 2A 130°C	EN 60691	VDE 40017055
	Honghu Bluelight Electronic Co., Ltd.	RH 130-2	250V 2A 130°C	EN 60691	VDE 40019233/ TUV R50224985
	The Third Radio Factory of Yangzhong, Jiangsu	WR130	250V 2A 130°C	EN 60691	TUV R50174226
Plastic enclosure of transformer	Changzhou Jutai electronic Co., Ltd.	PC	---	EN 60335-1 EN 60335-2-41	Test with appliance
Plastic enclosure of filter pump	GOLEADER INDUSTRIES (JINHUA) CO., LTD.	PP	---	EN 60335-1 EN 60335-2-41	Test with appliance
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039. 2) *Interconnection cord H05RN-F 2×0,75-1,0mm ² for models #58381, #58386 and #58383; H07RN-F 2×1,5mm ² for model #58389.					

28.1	TABLE: Threaded part torque test			N/A
Threaded part identification		Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
Supplementary information:				

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict

29.1	TABLE: Clearances					P
	Overvoltage category	II				—
		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic (mm)	Supplementary (mm)	Reinforced (mm)	Functional (mm)	Verdict / Remark
330	0,2* / 0,5 / 0,8**					
500	0,2* / 0,5 / 0,8**				3,0	P
800	0,2* / 0,5 / 0,8**					
1 500	0,5 / 0,8** / 1,0***					
2 500	1,5 / 2,0***	7,0	7,0		5,0	P
4 000	3,0 / 3,5***			6,0		P
6 000	5,5 / 6,0***					
8 000	8,0 / 8,5***					
10 000	11,0 / 11,5***					

Supplementary information:

*) For tracks on printed circuit boards if pollution degree 1 and 2

**) For pollution degree 3

***) If the construction is affected by wear, distortion, movement of the parts or during assembly

Remark:

Only the minimum values listed among all models

Basic insulation:

Input winding to transformer core: Cr=8,0mm, Cl=7,0mm

Supplementary insulation:

Output winding to transformer core: Cr=8,0mm, Cl=7,0mm

Reinforced insulation:

Input winding to output winding of transformer: Cr=Cl=6,0mm

Functional insulation:

L to N in transformer: Cr=Cl=5,0mm

Motor input wires: Cr=Cl=3,0mm

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V)	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			Verdict
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb*	B**	S**	R**	
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9		—	—	
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9	—		—	
≤50	0,36	1,2	1,7	2,4	3,0	3,4	3,8	—	—		
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4		—	—	
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4	—		—	
125	0,56	1,5	2,1	3,0	3,8	4,2	4,8	—	—		
250	0,56	1,25	1,8	2,5	3,2	3,6	4,0		—	—	P
250	0,56	1,25	1,8	2,5	3,2	3,6	4,0	—		—	P
250	1,12	2,5	3,6	5,0	6,4	7,2	8,0	—	—		P
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	
400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	
500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	
>630 and ≤800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	
>800 and ≤1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	
>1000 and ≤1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—	
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—		—	
>1250 and ≤1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—		

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V)	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			Verdict
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb*	B**	S**	R**	
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		—	—	
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—		—	
>1600 and ≤2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—		
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0		—	—	
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	—		—	
>2000 and ≤2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	—	—		
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0		—	—	
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—		—	
>2500 and ≤3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	—	—		
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0		—	—	
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—		—	
>3200 and ≤4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	—	—		
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0		—	—	
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—		—	
>4000 and ≤5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	—	—		
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0		—	—	
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—		—	
>5000 and ≤6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	—	—		
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0		—	—	
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—		—	
>6300 and ≤8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	—	—		
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0		—	—	
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—		—	
>8000 and ≤10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	—	—		
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0		—	—	
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—		—	
>10000 and ≤12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	—	—		

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict

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

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict

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

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict

30	TABLE: Resistance to heat and fire																			
Object/ part No.	Manufacturer/ trademark	Type/ model	Ball pressure test °C				Glow wire test (GWT) °C					Glow-wire flammability index (GWFI) °C				Glow- wire ignition temp. (GWIT) °C		Needle- flame test (NFT)	Verdict	
			75	125	cl. 11 +40	cl. 19 +25	550	650		750		850	550	650	750	850	675	775		
								te	ti	te	ti									
Enclosure of pump			X										X							P
Enclosure of transformer			X										X							P
Transformer bobbin															X*	X				P
Terminal box															X*	X*				P
Resin (all type models)															X*	X*				P
Terminal block																			X	P
Supplementary information: Parts of material classified at least HB40 or if relevant HBF 2) Parts of material classified as V-0 or V-1 3) Flame persisting longer than 2 s (= te – ti) need only be reported for unattended appliances 4) Surrounding parts subjected to the needle-flame test of annex E 5) Base material classified as V-0 or if relevant VTM-0 6) The GWIT pre-selection option, the 850 °C GWFI pre-selection option, and the 850 °C GWT are not applicable for attended appliances Remark: * means no flame during the test.																				

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict

List of test equipment used: N/A

A completed list of used test equipment to be provided in the Test Report when a Manufacturer Testing Laboratory according to TMP or WMT procedures has been used.

The list of test equipment is optional for SMTL and RMTL where quality system, verified by the NCB during the assessment, ensures appropriate document control system in place.

Other forms with a different layout but containing corresponding information are also acceptable.

[illegible]

IEC 60335-2-41			
Clause	Requirement + Test	Result - Remark	Verdict

Appendix EMF			P
	TEST: Evaluation of the magnetic fields		P
Applied standards:	IEC 62233:2005, EN 62233:2008 (incl. Corr.1:2008)		P
Method	Used method: 5.5.2 Time domain evaluation		—
Applied Limit	ICNIRP Guidelines		—
Identification of the appliance	Type of apparatus	Exposure level tester Narda ELT4 00 with B field probe 100cm ²	
	Rated Voltage	230V	
	Rated Frequency	50Hz	
Parameters required prior to the test	Laboratory Ambient Temperature	25 °C ± 10 °C	
	Supply Voltage	(Rated Voltage ± 2 %) V	
	Supply Frequency	(Rated Frequency ± 2 %) Hz	
Parameters recorded during the test	Laboratory Ambient Temperature	25°C	
	Supply Voltage	230V	
	Supply Frequency	50Hz	
Operating Mode			
Method 5.5.2			
Measuring Positions	Measuring Distance	Coupling Factor	Measurement Uncertainty
Front side, Right side, Left side, Rear side, Top side	30cm	No	18.1%
Frequency (kHz)	Limit (%)		Measured Maximum Value (%)
0,01 to 400	100		11,19%
Supplementary information:			
The measured maximum value in this table may be weighted with the coupling factor if applicable, and the measurement uncertainty is applied if the measured result is more than 75 % of the limit.			

IEC60335_2_41I - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

**ATTACHMENT TO TEST REPORT IEC 60335-2-41
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES**

Part-2-41: Particular requirements for pumps

Differences according to : EN 60335-2-41:2003 + A1:2004 + A2:2010
EN 60335-1:2012+A11

Attachment Form No. : EU_GD_IEC60335_2_41I

Attachment Originator : VDE

Master Attachment : 2013-04

Copyright © 2013 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.

	CENELEC COMMON MODIFICATIONS		
6.1	Delete "class 0" and "class 01"	Class II	P
7.1	Single-phase appliances to be connected to the supply mains: 230 V covered	AC 220-240V	P
	Multi-phase appliances to be connected to the supply mains: 400 V covered		N/A
7.10	Devices used to start/stop operational functions of the appliance distinguished from other manual devices by means of shape, size, surface texture, position, etc.		N/A
	An indication that the device has been operated is given by:		N/A
	- a tactile feedback, or		N/A
	- an audible and visual feedback		N/A
7.12	The instructions 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		P
	- children shall not play with the appliance		P
	- cleaning and user maintenance shall not be made by children without supervision		P
7.12.Z1	The specific instructions related to the safe operation of this appliance is collated together in the front section of the user instructions		P

IEC60335_2_41I - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	The height of the characters, measured on the capital letters, is at least 3 mm		P
	These instructions are also available in an alternative format, e.g. on a website		P
8.1.1	Also test probe 18 of EN 61032 is applied		P
	The appliance being in every possible position during the test		P
	The force on the probe in the straight position is increased to 10 N when probe 18 is used		P
	When using test probe 18 the appliance is fully assembled as in normal use without any parts removed, and		P
	parts intended to be removed for user maintenance are also not removed		P
8.2	Compliance is checked by applying the test probes of EN 61032		P
	For built-in appliances and fixed appliances, the test probe B and probe 18 of EN 61032 are applied only after installation	For #58389	P
11.8	Footnotes to "External enclosure of motor-operated appliances" to be taken into account		P
15.1.2	Appliances with an automatic cord reel tested with the cord in the most unfavourable position so that the reeling of the wet cord may affect electrical insulation during operation, the cord not being dried before reeling		N/A
20.2	When using the test probe similar to test probe B with a circular stop face, the accessories and detachable covers are removed		P
	Test probe 18 applied with a force of 2,5 N on the appliance fully assembled		P
24.1	Components comply with the safety requirements specified in the relevant standards as far as they reasonably apply		P
	The requirements of clause 29 of this standard apply between live parts of components and accessible parts of the appliance.		P
	The requirements of 30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections inside components		P
	Components that have not been previously tested or do not comply with the standard for the relevant component are tested according to the requirements of 30.2		P

IEC60335_2_41I - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Components that have been previously tested and shown to comply with the resistance to fire requirements in the standard for the relevant component need not be retested provided that:		P
	- the severity specified in the component standard is not less than the severity specified in 30.2, and		P
	- the test report for the component states whether it complied with the standard for the relevant component with or without flame, flames not exceeding 2 s during the test are ignored		P
	Unless components have been previously tested and found to comply with the relevant standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		P
	For components mentioned in 24.1.1 to 24.1.9, no additional tests specified in the relevant standard for the component are necessary other than those specified in 24.1.1 to 24.1.9		P
	Components that have not been separately tested and found to comply with the relevant standard, and		P
	components that are not marked or not used in accordance with their marking,		P
	are tested in accordance with the conditions occurring in the appliance, the number of samples being that required by the relevant standard		P
	Lamp holders and starter holders that have not been previously tested and found to comply with the relevant standard are tested as a part of the appliance and additionally comply with the gauging and interchangeability requirements of the relevant standard under the conditions occurring in the appliance		N/A
	Where the relevant standard specifies these gauging and interchangeability requirements at elevated temperatures, the temperatures measured during the tests of clause 11 are used		N/A
	Plugs and socket-outlets and other connecting devices of interconnection cords are not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1, or		N/A
	with connectors and appliance inlets complying with the standard sheets of IEC 60320-1,		N/A
	if direct supply to these parts from the supply mains gives rise to a hazard		N/A

IEC60335_2_41I - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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/A
	Compliance with clause 8 of this standard is not impaired by connecting the appliance to a device covered by EN 41003		N/A
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/A
25.6	Supply cords of single-phase portable appliances having a rated current not exceeding 16 A, fitted with a plug complying with the following standard sheets of IEC/TR 60083:		P
	- for class I appliances: standard sheet C2b, C3b or C4.....:		N/A
	- for class II appliances: standard sheet C5 or C6		P
25.7	Rubber sheathed cords (60245 IEC 53) are not suitable for appliances intended to be used outdoors or when they are liable to be exposed to significant amount of ultraviolet radiation		P
	Halogen-free thermoplastic compound sheathed supply cords have properties at least those of:		N/A
	- halogen-free thermoplastic compound sheathed cords (H03Z1Z1H2-F or H03Z1Z1-F), for appliances having a mass not exceeding 3 kg		N/A
	- halogen-free thermoplastic compound sheathed cords (H05Z1Z1H2-F or H05Z1Z1-F), for other appliances		N/A
	Cross-linked halogen-free compound sheathed supply cords have properties at least those of cross-linked halogen-free compound sheathed cords (H07ZZ-F)		N/A
26.11	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		P
29.3.Z1	Appliance constructed so that if there is a possibility of damaging the insulation during installation, the insulation withstands the scratch and penetration test of 21.2		N/A

IEC60335_2_41I - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
32	Compliance regarding electromagnetic fields is checked according to EN 62233		P
Annex I, 19.1.101	The appliance is supplied at rated voltage and operated under normal operation with each of the fault conditions specified		N/A
	The duration of the test is as specified in 19.7		N/A
ZA	ANNEX ZA (NORMATIVE) SPECIAL NATIONAL CONDITIONS		P
	Norway		N/A
19.5	The test is also applicable to appliances intended to be permanently connected to fixed wiring		N/A
	Norway		N/A
22.2	The second paragraph of this subclause, dealing with single-phase, permanently connected class I appliances having heating elements, is not applicable due to the supply system		N/A
	All CENELEC countries		P
25.6 and 25.25	Information concerning National plug and socket-outlets is available from the CENELEC website. Normative national requirements concerning plug and socket-outlets are shown in the relevant National standard		P
	Ireland and United Kingdom		N/A
25.8	In the table, the lines for 10 A and 16 A are replaced by:		N/A
	> 10 and ≤ 13 1,25		N/A
	> 13 and ≤ 16 1,5		N/A
ZB	ANNEX ZB (INFORMATIVE) A-DEVIATIONS		P
	Ireland		N/A
25.6	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs complying with I.S. 401:1997, or equivalent, to be fitted to domestic appliances		N/A

IEC60335_2_41I - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	United Kingdom		N/A
25.6	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs to BS 1363 to be fitted to domestic appliances. It also allows plugs to BS 4573 and EN 50075 to be fitted to shavers and toothbrushes		N/A
ZC	ANNEX ZC (NORMATIVE) NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		P
	A list of referenced documents in this standard		P
ZD	ANNEX ZD (INFORMATIVE) IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS		P
	A table with IEC and CENELEC code designations for flexible cords		P
ZE	ANNEX ZE (INFORMATIVE) SPECIFIC ADDITIONAL REQUIREMENTS FOR APPLIANCES AND MACHINES INTENDED FOR COMMERCIAL USE		N/A
ZF	ANNEX ZF (INFORMATIVE) CRITERIA APPLIED FOR THE ALLOCATION OF PRODUCTS COVERED BY STANDARDS IN THE EN 60335 SERIES UNDER LVD OR MD		P
	List of standards under CENELEC/TC61 with the allocation under the LVD (Low Voltage Directive) or the MD (Machinery Directive)	LVD	P
ZG	ANNEX ZG (NORMATIVE) UV APPLIANCES		N/A
	The following modifications to this standard apply to appliances having UV emitters		N/A
	This annex is not applicable to appliances covered by the scopes of IEC 60335-2-27, IEC 60335-2-59 or IEC 60335-2-109		N/A
7.12.ZG	The instructions for appliances incorporating UVC emitters include the substance of the following: WARNING — This appliance contains a UV emitter. Do not stare at the light source		N/A

IEC60335_2_41I - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
32	For appliances incorporating UV emitters the manufacturer delivers a declaration providing evidence that the plastic material exposed to the radiation is UV resistant		N/A
ZZ	ANNEX ZZ (INFORMATIVE) COVERAGE OF ESSENTIAL REQUIREMENTS OF EC DIRECTIVES		P
	Description of the relation between this European standard and the LVD (Low Voltage Directive, 2006/95/EC) and the MD (Machinery Directive, 2006/42/EC)	EN 60335-1/A13:2017 was taken into account. Annex ZZA and Annex ZZB replaced Annex ZZ	P

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	CENELEC COMMON MODIFICATIONS (EN)		
6.1	For a class III construction with a detachable power supply part the appliance is classified according to the detachable power supply part	Class III construction with a non-detachable power supply part, the appliance is classified according to the non- detachable power supply part	N/A
7.1	Symbol IEC 60417-5018, for class II and class III appliances incorporating a functional earth		N/A
	Symbol IEC 60417-5180, for class III appliances, unless		N/A
	the appliance is operated by batteries only, or		N/A
	for appliances powered by rechargeable batteries recharged in the appliance		N/A
7.4	Appliances adjustable for different rated voltages or rated frequencies, the voltage or the frequency setting is clearly discernible		N/A
	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/A
7.6	Correct symbols used		P
7.8	Marking of functional earthing terminals (symbol IEC 60417-5018)		N/A
7.10	A push-push button switch used for start and stop the operation shall not be used for other functions such as changing the motor speed.		N/A
	For hand-held appliances with rated power input 50 W or lower it is acceptable to have a push-push button for different functions including on / off if there is an immediate feedback to the user e.g. by tactile feedback or audible and visible feedback.		N/A
	Where a push button can cycle through various modes during a prolonged push this is allowed as long as the appliance will switch off with a single short push action.		N/A
	Audible feedback is any audible response got immediately after the operation of the switch.		N/A
	The click of a switch can be accepted as an audible feedback provided that it is originated inside the switch that is operated and can be heard at a distance of 77 cm from the switch.		N/A
	The sound of the motor is regarded as an audible feedback.		N/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	Add the following text after the third paragraph of the addition: Constructions with switches that have two different stable positions (meaning that it can be seen or felt when they have been pressed or rotated) are considered to have a tactile feedback		N/A
7.12	For appliances for altitudes exceeding 2000 m, the maximum altitude is stated :		N/A
	The instructions for appliances incorporating a functional earth states that the appliance incorporates an earth connection for functional purposes only		N/A
7.12.1	If different rated voltages or different rated frequencies are marked, the instructions state what action to be taken to adjust the appliance		N/A
7.12.9	Instructions specified in 7.12 and from 7.12.1 to 7.12.8 appear together before any other instructions supplied with the appliance		P
	These instructions may be supplied with the appliance separately from any functional use booklet		N/A
	They may follow the description of the appliance that identifies parts, or follow the drawings/sketches		P
	In addition, instructions are also available in an alternative format such as on a website or on request from the user in a format such as a DVD	On the website	P
7.14	Markings clearly legible and durable:		P
	Signal words WARNING, CAUTION, DANGER in uppercase having a height as specified..... : :		P
	Uppercase letter of the text explaining the signal word not smaller than 1,6 mm : :	>1,6mm	P
	Moulded in, engraved, or stamped markings either raised above or have a depth below the surface of at least 0,25 mm, unless		N/A
	contrasting colours are used		P
	Markings checked by inspection, measurement and rubbing test as specified		P
7.15	The symbol IEC 60417-5018 placed next to the symbol IEC 60417-5172 or IEC 60417-5180		N/A
8.1.1	Also test probe 18 of EN 61032 is applied		P
	The appliance being in every possible position during the test, except that		P

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.3	Instead of test probe B, test probe 18 and test probe 13, for appliances other than those of class II, test probe 41 of IEC 61032 is applied with a force not exceeding 1 N to live parts of visibly glowing heating elements, all poles of which can be disconnected by a single switching action		N/A
	For a single switching action obtained by a switching device, requirements as specified		N/A
	For appliances with a supply cord and without a switching device, the single switching action may be obtained by the withdrawal of the plug		N/A
10.1	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/A
	Otherwise the power input is the arithmetic mean value		P
10.2	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/A
	Otherwise the current is the arithmetic mean value		N/A
11.8	Temperature rises monitored continuously and not exceeding the values in table 3:		P
13.2	The leakage current including Class II construction is measured by means of the circuit described in Figure 4 of IEC 60990:1999		N/A
	For class 0I appliances and class I appliances, except parts of class II construction, C may be replaced by a low impedance ammeter		P
	Leakage current measurements :		P
15.2	Spillage of liquid does not affect the electrical insulation		N/A
	Spillage solution comprising water containing approximately 1 % NaCl and 0,6 % rinsing agent		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	Detachable parts are removed		N/A
	Overfilling test with additional amount of the solution, over a period of 1 min (l)		N/A
	The appliance withstands the electric strength test of 16.3		N/A
	No trace of water on insulation that can result in a reduction of clearances or creepage distances below values specified in clause 29		N/A
16.2	Single-phase appliances: test voltage 1.06 times rated voltage (V)		P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by $\sqrt{3}$ (V)		N/A
	Leakage current measurements including Class II Construction		P
19.1	If the control performs more than one function, only that aspect of the control under consideration is rendered inoperative.		N/A
	Other functions of the control may continue to operate normally.		N/A
19.7	Test repeated with capacitors short-circuited one at a time, unless		N/A
	the capacitor is of class S2 or S3 of IEC 60252-1		N/A
	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/A
19.11.3	If the appliance incorporates a protective electronic circuit that operates to ensure compliance with clause 19, the appliance is tested as specified		N/A
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, at frequency ranges specified		N/A
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/A
	An open circuit test voltage of 2 kV is applicable for the line-to-line coupling mode		N/A
	An open circuit test voltage of 4 kV is applicable for the line-to-earth coupling		N/A
	Earthed heating elements in class I appliances disconnected		N/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
20.2	For appliances having dangerous moving parts, due to their working function, e.g. the needle of a sewing machine, tools of kitchen machines or the blade of an electrical knife, full protection is not possible for performing their intended use		N/A
22.5	No risk of electric shock when touching pins, for appliances having a capacitor with rated capacitance equal to or greater than 0,1µF, the appliance being disconnected from the supply at the instant of voltage peak		P
	Voltage not exceeding 34 V (V)		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/A
	The discharge test is then repeated three times, voltage not exceeding 34 V (V).....		N/A
22.12	Handles, knobs etc. fixed in a reliable manner, if loosening result in a hazard		N/A
	Removing or fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible, if resulting in a hazard		N/A
	A choking hazard does not apply to appliances for commercial use		N/A
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		N/A
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N/A
	If the part is removed and can be contained within the small parts cylinder, it is considered to be a choking hazard		N/A
	Other parts intended to be detached during use, maintenance or cleaning (e.g. batteries, battery covers, lids, attachments, steam nozzles) are not considered as parts providing a similar function as handles, knobs, grips, levers		N/A
22.17	The requirement is not applicable to built-in appliances		N/A
22.32	Ceramic and similar porous material in which heating conductors are embedded is considered to be basic insulation, not reinforced insulation		N/A
22.33	Conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts are not in direct contact with live parts, or		P

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	unearthed metal parts separated from live parts by basic insulation only		N/A
22.35	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		N/A
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/A
22.54	Button cells and batteries designated R1 not accessible without the aid of a tool, unless		N/A
	the cover of their compartment can only be opened after at least two independent movements have been applied simultaneously		N/A
22.55	Devices operated to stop the intended function of the appliance, if any, are distinguished from other manual devices by means of shape, size, surface texture or position		N/A
	The requirement concerning position does not preclude use of a push on push off switch		N/A
	An indication when the device has been operated is given by:		N/A
	– tactile feedback from the actuator or from the appliance, or		N/A
	– reduction in heat output; or		N/A
	– audible and visible feedback		N/A
22.56	Detachable power supply part provided with the part of class III construction	Non-detachable power supply part provided with the part of class III construction.	P
22.57	The properties of non-metallic materials do not degrade from exposure to UV-C radiation, as specified in Annex T		N/A
	This requirement does not apply to glass, ceramics or similar materials		N/A
23.5	A single layer of internal wiring insulation does not provide reinforced insulation		P
24.1	Components comply with the safety requirements specified in the relevant EN standards as far as they reasonably apply		P
	Motors are not required to comply with EN 60034-1, but tested as part of the appliance according to this standard		P

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	Relays are tested as part of the appliance according to this standard		N/A
	Relays may be alternatively tested to EN 60730-1 and the additional requirements in EN 60335-1		N/A
	The requirements of Clause 29 of this standard apply between live parts of components and accessible parts of the appliance		P
	Components may comply with the requirements for clearances and creepage distances for functional insulation as specified in the relevant component standard		P
	The requirements of 30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections inside components		P
	Components that have not been tested and shown to comply with the EN standard for the relevant component are tested according to the requirements of 30.2 of this standard		P
	Components that have been tested and shown to comply with the resistance to fire requirements in the EN standard for the relevant component need not be retested provided that:		P
	- the severity specified in the component standard is not less than the severity specified in 30.2, and		P
	- the test report for the component states the values of t_e and t_i acc. to EN 60695-2-11		P
	If the above two conditions are not satisfied, the component is tested as part of the appliance		P
	Power electronic converter circuits are not required to comply with EN 62477-1, but tested as part of the appliance according to this standard		N/A
	Unless components have been tested and found to comply with the relevant EN standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		P
	For components mentioned in 24.1.1 to 24.1.9, no additional tests specified in the relevant EN standard for the component are necessary other than those specified in 24.1.1 to 24.1.9		P
	Components that have not been tested and found to comply with the relevant EN standard, and		P
	components that are not marked or not used in accordance with their marking,		P

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	are tested in accordance with the conditions occurring in the appliance, the number of samples being that required by the relevant standard		P
	Lamp-holders and starter-holders that have not been tested and found to comply with the relevant EN standard are tested as a part of the appliance and additionally comply with the gauging and interchangeability requirements of the relevant EN standard under the conditions occurring in the appliance		N/A
	Where the relevant EN standard specifies these gauging and interchangeability requirements at elevated temperatures, the temperatures measured during the tests of Clause 11 are used		N/A
	There are no additional tests specified for nationally standardized plugs such as those detailed in IEC/TR 60083 or connectors complying with the standard sheets of EN 60320-1 and EN 60309, unless they are specifically mentioned in the text of this standard		P
	Plugs and socket-outlets and other connecting devices of interconnection cords are not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1, or		N/A
	with connectors and appliance inlets complying with the standard sheets of EN 60320-1, if		N/A
	direct supply to these parts from the supply mains gives rise to a hazard		N/A
	For plugs used in CENELEC countries Annex ZH applies		P
24.1.2	Transformers in associated switch mode power supplies comply with Annex BB of IEC 61558-2-16. Clause 26 of IEC 61558-1 and Annex H of IEC 61558-1 are not applicable.		N/A
24.1.4	Thermal cut-outs of the capillary type comply with the requirements for type 2.K controls in IEC 60730-2-9		N/A
24.1.5	However, for class II appliances classified higher than IPX0, the appliance couplers comply with IEC 60320-2-3		N/A
24.8	The requirement is considered to be met - the capacitors are of class S2 or S3 according to IEC 60252-1.		N/A
24.Z1	Type S2 and S3 capacitors according to EN 60252-1 are not required to undergo the testing as required by 30.2.2 and 30.2.3.1		N/A
25.1	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

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	Plugs and pins for insertion into socket outlets follow the relevant standards sheets in Annex ZH		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/A
	Rubber sheathed cords (60245 IEC 53) are not suitable for appliances intended to be used outdoors, or		N/A
	when they are liable to be exposed to significant amount of ultraviolet radiation		N/A
	- polychloroprene sheathed (at least 60245 IEC 57)		N/A
	- polyvinyl chloride sheathed. Not used if they are likely to touch metal parts having a temperature rise exceeding 75 K during the test of clause 11		N/A
	<ul style="list-style-type: none"> light polyvinyl chloride sheathed cord (60227 IEC 52), for appliances not exceeding 3 kg 		N/A
	<ul style="list-style-type: none"> ordinary polyvinyl chloride sheathed cord (60227 IEC 53), for other appliances 		N/A
	- heat resistant polyvinyl chloride sheathed. Not used for type X attachment other than specially prepared cords		N/A
	<ul style="list-style-type: none"> heat-resistant light polyvinyl chloride sheathed cord (60227 IEC 56), for appliances not exceeding 3 kg 		N/A
	<ul style="list-style-type: none"> heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), for other appliances 		N/A
	- halogen-free, low smoke, thermoplastic insulated and sheathed		N/A
	<ul style="list-style-type: none"> light duty halogen-free low smoke flexible cable (62821 IEC 101) for circular cable and (62821 IEC 101f) for flat cable 		N/A
	<ul style="list-style-type: none"> Ordinary duty halogen-free low smoke flexible cable (62821 IEC 102) for circular cable and (62821 IEC 102f) for flat cable 		N/A
	Supply cords for class III appliances adequately insulated		N/A
	Test with 500 V for 2 min for supply cords of class III appliances that contain live parts		N/A
25.10	In multi-phase appliances, the colour of the neutral conductor of the supply cord is blue		N/A
	Where additional neutral conductors are provided in the supply cord:		N/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	– other colours may be used for these additional neutral conductors;		N/A
	– all of the neutral conductors and line conductors are identified by marking using the alpha numeric notation specified in IEC 60445		N/A
	– the supply cord is fitted to the appliance		N/A
25.13	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/A
25.15	Pull and torque test of supply cord:		P
	- fixed appliances: pull 100 N; torque (not on automatic cord reel) (Nm)		P
	- other appliances: values shown in table 12: mass (kg); pull (N); torque (not on automatic cord reel) (Nm)		N/A
	Cord not damaged and max. 2 mm displacement of the cord		P
25.20	The conductors of the supply cord for type Y and Z attachment insulated from accessible metal parts		P
25.23	for class I or class II appliance with class III construction, the cross sectional areas of the conductors need not comply with 25.8 if specified conditions are met		P
25.25	Instead of IEC/TR 60083, dimensions of the pins and engagement face of plugs of appliances that are inserted into socket-outlets are in accordance with the dimensions of the relevant plug standard		P
	Common plugs and socket-outlets types in CENELEC countries as shown in Annex ZH		P
27.1	Class 0, II and III appliances have no provision for protective earthing		N/A
	Class II appliances and class III appliances can incorporate an earth for functional purposes		N/A
27.2	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.3	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.4	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
27.5	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.6	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
29.1	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/A
	Impulse voltage test is not applicable: to appliances intended for use at altitudes exceeding 2 000 m		N/A
29.3	Compliance checked:		N/A
	- 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/A
	- 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/A
32	Compliance regarding electromagnetic fields is checked according to EN 62233		P
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES THAT ARE RECHARGED IN THE APPLIANCE		N/A
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		N/A
	Three forms of construction covered:		N/A
	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/A
	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/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	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/A
3.1.9	Appliance operated under the following conditions:		N/A
	- the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		N/A
	- the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N/A
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N/A
	- if the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		N/A
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N/A
5.B.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N/A
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage (V) and polarity of the terminals :		N/A
	The positive terminal indicated by symbol IEC 60417-5005 and the negative terminal by symbol IEC 60417-5006		N/A
	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/A
	use only with <model designation> supply unit : :		N/A
7.6	Additional symbols		N/A
7.12	The instructions give information regarding charging		N/A
	Instructions for appliances incorporating batteries intended to be replaced by the user include required information		N/A
	Instructions for appliances containing non user-replaceable batteries state the substance of the following:		N/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	This appliance contains batteries that are only replaceable by skilled persons		N/A
	Instructions for appliances containing non-replaceable batteries shall state the substance of the following:		N/A
	This appliance contains batteries that are non-replaceable		N/A
	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/A
	WARNING: For the purposes of recharging the battery, only use the detachable supply unit provided with this appliance		N/A
	If the symbol for detachable supply unit is used, its meaning is explained		N/A
7.15	Markings placed on the part of the appliance connected to the supply mains		N/A
	The type reference of the detachable supply unit is placed in close proximity to the symbol		N/A
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N/A
	If the appliance can be operated without batteries, double or reinforced insulation required		N/A
11.7	The battery is charged for the period stated in the instructions or 24 h..... :		N/A
11.8	Temperature rise of the battery surface does not exceed the limit in the battery manufacturer's specification; measured (K); limit (K) :		N/A
	If no limit specified, the temperature rise does not exceed 20 K; measured (K) :		N/A
19.1	Appliances subjected to tests of 19.B.101, 19.B.102 and 19.B.103		N/A
19.10	Not applicable		N/A
19.B.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N/A
19.B.102	For appliances having batteries that can be removed without the aid of a tool, short-circuit of the terminals of the battery, the battery being fully charged,		N/A
19.B.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
19.13	The battery does not rupture or ignite		N/A
21.B.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength		N/A
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-31, the number of falls being:		N/A
	- 100, if the mass of the part does not exceed 250 g (g)..... :		N/A
	- 50, if the mass of the part exceeds 250 g..... :		N/A
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N/A
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N/A
25.13	An additional lining or bushing not required for interconnection cords in class III appliances or class III constructions operating at safety extra-low voltage not containing live parts		N/A
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N/A
	For other parts, 30.2.2 applies		N/A
H	ANNEX H (NORMATIVE) SWITCHES		N/A
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		N/A
	Clause 20 is applicable to clearances across full disconnection and micro-disconnection		N/A
	It is also applicable to creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in Table 24		N/A
P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN TROPICAL CLIMATES		N/A
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a tropical climate and that are marked with symbol IEC 60417-6332		N/A
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a tropical climate and that are marked with symbol IEC 60417-6332, if liable to be connected to a supply mains that excludes the protective earthing conductor		N/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
5.7	The ambient temperature for the tests of clauses 11 and 13 is 40 +3/0 °C		N/A
7.1	The appliance marked with symbol IEC 60417-6332		N/A
7.12	The instructions state that the appliance is to be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA		N/A
	The instructions state that the appliance is considered to be suitable for use in countries having a tropical climate, but may also be used in other countries		N/A
	If symbol IEC 60417-6332 is used, its meaning is explained		N/A
S	ANNEX S (NORMATIVE) BATTERY OPERATED APPLIANCES POWERED BY BATTERIES THAT ARE NON-RECHARGEABLE OR NOT RECHARGED IN THE APPLIANCE		N/A
	The following modifications to this standard are applicable for battery-operated appliances where the batteries are either non-rechargeable (primary batteries), or		N/A
	rechargeable batteries (secondary batteries) that are not recharged in the appliance		N/A
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/A
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/A
5.S.102	Appliances are tested as motor-operated appliances.		N/A
7.1	Appliances marked with the battery voltage (V) and the polarity of the terminals, unless :		N/A
	the polarity is irrelevant		N/A
	Appliances also marked with:		N/A
	– name, trade mark or identification mark of the manufacturer or responsible vendor :		N/A
	– model or type reference :		N/A
	– IP number according to degree of protection against ingress of water, other than IPX0... :		N/A
	– type reference of battery or batteries :		N/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	If relevant, the positive terminal is indicated by the symbol IEC 60417-5005 and the negative terminal by the symbol IEC 60417-5006		N/A
	If appliances use more than one battery, they are marked to indicate correct polarity connection of the batteries		N/A
7.6	Additional symbols		N/A
7.12	The instructions contain the following, as applicable:		N/A
	– the types of batteries that may be used ... :		N/A
	– how to remove and insert the batteries		N/A
	– non-rechargeable batteries are not to be recharged		N/A
	– rechargeable batteries are to be removed from the appliance before being charged		N/A
	– different types of batteries or new and used batteries are not to be mixed		N/A
	– batteries are to be inserted with the correct polarity		N/A
	– exhausted batteries are to be removed from the appliance and safely disposed of		N/A
	– if the appliance is to be stored unused for a long period, the batteries are removed		N/A
	– the supply terminals are not to be short-circuited		N/A
11.5	Appliances are supplied with the most unfavourable supply voltage between		N/A
	– 0,55 and 1,0 times the battery voltage, if the appliance can be used with non-rechargeable batteries		N/A
	– 0,75 and 1,0 times battery voltage, if the appliance is designed for use with rechargeable batteries only		N/A
	The values specified in Table S.101 for the internal resistance per cell of the battery is taken into account		N/A
19.1	The tests are carried out with the battery fully charged unless otherwise specified		N/A
19.13	The battery does not rupture or ignite		N/A
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/A
	such a connection is unlikely to occur due to the construction of the appliance		N/A
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/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
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/A
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/A
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/A
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/A
30.2.3.2	There is no battery in the area of the vertical cylinder used for the consequential needle flame test, unless		N/A
	the battery is shielded by a barrier that meets the needle flame test of Annex E, or		N/A
	that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
T	ANNEX T (NORMATIVE) UV-C RADIATION EFFECT ON NON-METALLIC MATERIALS		N/A
	Requirements for non-metallic materials subject to direct or reflected UV-C radiation exposure and whose mechanical and electrical properties are relied upon for compliance with the		N/A
	Does not apply to glass, ceramic and similar materials		N/A
	Tested as specified in ISO 4892-1 and ISO 4892-2, with the following modifications:		N/A
	Modifications to ISO 4892-1:		N/A
5.1.6	The UV-C emitter is a low pressure mercury lamp with a quartz envelope having a continuous spectral irradiance of 10 W/m ² at 254 nm		N/A
	Subclause 5.1.6.1 and Table 1 are not applicable		N/A
5.2.4	The black-panel temperature shall be 63 °C +/- 3 °C		N/A
5.3.1	Humidification of the chamber air is specified in part 2 when necessary		N/A
9	This clause is not applicable		N/A
	Modifications to ISO 4892-2:		N/A
7.1	At least three test specimens are tested		N/A
	Ten samples of internal wiring is tested		N/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict

7.2	The specimens are attached to the specimen holders such that they are not subject to any stress		N/A
7.3	Apparatus prepared as specified		N/A
	The test specimens and, if used, the irradiance-measuring instrument are exposed for 1 000 h		N/A
7.4	If used, a radiometer is mounted and calibrated such that it measures the irradiance at the exposed surface of the test specimen		N/A
7.5	Material properties and test methods for parts providing mechanical support or impact resistance as specified in Table T.1		N/A
	Material properties and test method for electrical insulation of internal wiring as specified in Table T.2		N/A
8	This clause is not applicable		N/A

A	ANNEX ZA (NORMATIVE) SPECIAL NATIONAL CONDITIONS (EN)		N/A
	Denmark, Sweden, Norway and Finland		N/A
7.12.8	The maximum inlet water pressure is at least 1,0 MPa		N/A
	Denmark		N/A
22.47	The maximum inlet water pressure is at least 1,0 MPa		N/A
	Ireland and United Kingdom		P
25.8	In the table, the line >10 A and ≤16 A is replaced with:		N/A
	> 10 and ≤ 13 1,25 (1,0) ^b		N/A
	> 13 and ≤ 16 1,5 (1,0) ^b		N/A
ZB	ANNEX ZB (INFORMATIVE) A-DEVIATIONS		N/A
	Ireland		N/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
25.1 and 25.25	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs complying with I.S. 401:1997, or equivalent, to be fitted to domestic appliances		N/A
	United Kingdom		P
25.1 and 25.25	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs to BS 1363 to be fitted to domestic appliances.		P
	It also allows plugs to BS 4573 and EN 50075 to be fitted to shavers and toothbrushes		P
ZC	ANNEX ZC (NORMATIVE) NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		P
	A list of documents referred to in the text of this standard in such a way that some or all of their content constitutes requirements of this document		P
ZD	ANNEX ZD (INFORMATIVE) IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS		P
	List of IEC and CENELEC code designations for flexible cords		P
ZF	ANNEX ZF (INFORMATIVE) CRITERIA APPLIED FOR THE ALLOCATION OF PRODUCTS COVERED BY STANDARDS IN THE EN 60335 SERIES UNDER LVD OR MD		P
	List of standards under CENELEC/TC61 with the allocation under the LVD (Low Voltage Directive) or the MD (Machinery Directive)	LVD	P
ZH	ANNEX ZH (INFORMATIVE) Common plug and socket-outlet types in CENELEC countries		P
	In general, supply cords of single-phase appliances having a rated current not exceeding 16 A are fitted with a plug complying with the following standard sheets:		P
	- for class I appliances or class II appliances with functional earth, standard sheet EU2, EU3 or EU4:		P
	- for class II appliances, standard sheet EU5, EU6 or EU7		N/A

Differences from EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 to EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	There are exemptions or differences in certain CENELEC countries		N/A
ZI	ANNEX ZI (INFORMATIVE) Information on the application of A11:2014 to EN 60335-1:2012 CENELEC CLC/TC 61(SEC)2096A		P
	Clarification of the application of parts 2 in conjunction with the 2002 or 2012 version of EN 60335-1		P

Annex 1: Information from GS test center

Material list for PAH risk assessment; Only materials accessible without tools

Product designation: #58381, #58383, #58386, #58389

Certificate No.: S 50429527

Test report No.: 15085503 008

For PAH relevant material/components only!

Material / Component #	Location / Function of the material	Name / Description of the material	PAH relevant 1)	Evidence attached. Institute, report no., date	Category	Smell	Rigidity	Colour	Correction of data by test center? 1)	Chem. test needed?	Test result (within the given limits)	Attachement
1.	Pump enclosure /water inlet/ Air purge valve/Filter cap	ABS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	SHATY1811350801 issued by SGS dated on 2018-06-01	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Soft <input type="checkbox"/> Flexible <input checked="" type="checkbox"/> Rigid	<input checked="" type="checkbox"/> Black or dark-colored <input type="checkbox"/> White or light-colored	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> passed <input type="checkbox"/> failed	
2.	O-ring	Rubber	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	SHATY1811350801 issued by SGS dated on 2018-06-01	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Soft <input checked="" type="checkbox"/> Flexible <input type="checkbox"/> Rigid	<input checked="" type="checkbox"/> Black or dark-colored <input type="checkbox"/> White or light-colored	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> passed <input type="checkbox"/> failed	
3.	Filter cartridge	PVC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	SHATY1811350801 issued by SGS dated on 2018-06-01	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Soft <input type="checkbox"/> Flexible <input checked="" type="checkbox"/> Rigid	<input type="checkbox"/> Black or dark-colored <input checked="" type="checkbox"/> White or light-colored	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> passed <input type="checkbox"/> failed	
4.	Hose	LLDPE+EVA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	SHATY1811350801 issued by SGS dated on 2018-06-01	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Soft <input checked="" type="checkbox"/> Flexible <input type="checkbox"/> Rigid	<input type="checkbox"/> Black or dark-colored <input checked="" type="checkbox"/> White or light-colored	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> passed <input type="checkbox"/> failed	
5.	Impeller	POM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	SHATY1811350801 issued by SGS dated on 2018-06-01	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Soft <input type="checkbox"/> Flexible <input checked="" type="checkbox"/> Rigid	<input checked="" type="checkbox"/> Black or dark-colored <input type="checkbox"/> White or light-colored	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> passed <input type="checkbox"/> failed	
6.	Transformer surface	PC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0244122613a 001 issued by TUV R dated on 2019-03-13	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Soft <input type="checkbox"/> Flexible <input checked="" type="checkbox"/> Rigid	<input checked="" type="checkbox"/> Black or dark-colored <input type="checkbox"/> White or light-colored	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> passed <input type="checkbox"/> failed	
7.	Power plug (Zhonghui)	PVC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	SHATY1811350801 issued by SGS dated on 2018-06-01	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Soft <input type="checkbox"/> Flexible <input checked="" type="checkbox"/> Rigid	<input checked="" type="checkbox"/> Black or dark-colored <input type="checkbox"/> White or light-colored	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> passed <input type="checkbox"/> failed	
8.	Power cord (Zhongjia)	H05RN-F	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	SHATY1811350801 issued by SGS dated on 2018-06-01	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Soft <input checked="" type="checkbox"/> Flexible <input type="checkbox"/> Rigid	<input checked="" type="checkbox"/> Black or dark-colored <input type="checkbox"/> White or light-colored	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> passed <input type="checkbox"/> failed	
9.	Power cord (Zhonghui)	H05RN-F	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0244118561c2 001 issued by TUV R dated on 2019-03-25	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Soft <input checked="" type="checkbox"/> Flexible <input type="checkbox"/> Rigid	<input checked="" type="checkbox"/> Black or dark-colored <input type="checkbox"/> White or light-colored	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> passed <input type="checkbox"/> failed	

1) Please fill out the table only if the general risk assessment indicates PAH relevance

2) Applicant data from Annex 1

Risk assessment for the above mentioned product indicates PAH relevance :


Remark: Standard AfPS GS 2014:01 is updated to AfPS GS 2019:01 PAK with no additional tests. Because circulation pumps are not affected by the standard update.

☒ Yes ¹⁾



☐ No

☐ Short statement

Prüfbericht-Nr.: <i>Test Report No.:</i>	Attachment 2 of 15085503 008	Auftrags-Nr.: <i>Order No.:</i>	244230173	Seite 1 von 5 Page 1 of 5
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	2061587	Auftragsdatum: <i>Order date:</i>	15.04.2020	
Auftraggeber: <i>Client:</i>	Bestway (Hong Kong) International Ltd. <i>Suite 713, 7/Floor, East Wing, Tsim Sha Tsui Centre, 66 Mody Road, Kowloon, Hong Kong</i>			
Prüfgegenstand: <i>Test item:</i>	Filter Pump with transformer			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	#58381			
Auftrags-Inhalt: <i>Order content:</i>	Type examination			
Prüfgrundlage: <i>Test specification:</i>	2 PfG 2516:2014-11 Checkliste für die Warenkontrollprüfung <i>Checklist for the Product Control Test</i>			
Wareneingangsdatum: <i>Date of receipt:</i>	20.04.2020			
Prüfmuster-Nr.: <i>Test sample No.:</i>	A002812041			
Prüfzeitraum: <i>Testing period:</i>	22.04.2020			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
29-05-2020 Du Juan/PE		29-05-2020 Una Wei/Reviewer		
Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>
Sonstiges / Other: This report is based on 15085503 001-007. Sample verification found the construction and components are same as before, and no additional tests need to be done. Standard requirement: EN 60335-1: 2012+A11+A13+A14+A1+A2, EN 60335-2-41: 2003+A1+A2.				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend N/T = nicht getestet
Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory N/A = not applicable	4 = sufficient N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

Prüfbericht-Nr.: Attachment 2 of 15085503 008
Test Report No.:

Seite 2 von 5
Page 2 of 5

Produktbeschreibung
Product description

1	Zertifikatsnummer <i>Certificate number</i>	S 50429527
2	Produkt <i>Product</i>	Filter Pump with transformer
3	Produziert am <i>Manufactured at</i>	GOLEADER INDUSTRIES (JINHUA) CO., LTD. No. 618 WENXI STREET, JINPAN DEVELOPMENT NEW ZONE, JINHUA, 321025 ZHEJIANG, P.R. China.
4	Fertigungsstättennummer <i>Factory number</i>	2110873

Prüfbericht-Nr.: Attachment 2 of 15085503 008
Test Report No.:

Seite 3 von 5
Page 3 of 5

Absatz	2 PfG 2516:2014-11	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation

1	Produkt Product		
	Äußere Erscheinung des Musters stimmt mit der Fotodokumentation überein. <i>Outer appearance of the drawn sample is same as in photo documentation.</i>		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
	Interner Aufbau stimmt mit der Fotodokumentation überein. <i>Internal construction of the drawn sample is same as in photo documentation.</i>		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
	Es wurden nur sicherheitsrelevanten Komponenten verbaut, die CDF oder Prüfbericht benannt sind. <i>Only safety relevant components as described in CDF or Test Report have been used in the drawn sample.</i>		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
2	Typenschild Label		
	Das Typenschild entspricht dem zertifizierten. <i>The label is same as the certified one.</i>		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
	Der Ausweisinhaber, Importeur oder Bevollmächtigte ist auf dem Typenschild benannt. <i>The license holder, importer or authorized representative is displayed in the label.</i>		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
	Die Adresse (bei GS zwingend eine aus dem EWR) ist auf dem Typenschild benannt. <i>Complete postal address (for GS it must be a European address) is mentioned in the label.</i>		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
	Bei Fail: in Bedienungsanleitung angegeben <i>If fail: in the user manual</i>		
	Bei Fail: auf der Verpackung angegeben <i>if fail: on packaging</i>		
	Wenn eine CE Markierung notwendig ist, wurde diese auf dem Typenschild in dem richtigen Layout abgebildet. <i>If CE marking is mandatory, it's on the product and apparently complies with the design restrictions.</i>		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
	Wenn ein TÜV Rheinland Zeichen abgebildet ist, entspricht dies den Vorgaben. <i>In event a TUV Mark is displayed it complies with the design restrictions.</i>		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: Attachment 2 of 15085503 008
Test Report No.:

Seite 4 von 5
Page 4 of 5

Absatz	2 PfG 2516:2014-11	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation

3	Bedienungs-, Installations-, Aufbauanleitung User Manual, Installation - / Assembly Manual		
	Liegt in der richtigen Sprache vor, bei GS zwingend in deutscher Sprache, und entspricht dem zertifizierten. <i>Is available in the correct language (German version a must for GS) and the same as certified one.</i>		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
	Wenn ein TÜV Rheinland Zeichen abgebildet ist, entspricht dies den Vorgaben. <i>In event a TUV Mark is displayed it complies with the design restrictions.</i>		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
	Wenn eine Herstelleradresse angegeben ist, wurde diese komplett (bei GS zwingend eine Adresse im EWR) angegeben und stimmt mit der vom Typen-schild überein. <i>If the license holder and/or importer, authorized representative is displayed with address, it's complete (for GS it must be a European address) and correlates with the information on the rating label.</i>		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
	Wenn die Serviceadresse von der vom Hersteller, Importeur oder Bevollmächtigten abweicht, ist das akzeptabel. <i>If the address for service inquiries differs from manufacturer's, importer's or authorized representative's, it's acceptable.</i>		
4	Verpackung Packaging/Gift box		
	Wenn ein TÜV Rheinland Zeichen abgebildet ist, entspricht dies den Vorgaben. <i>In event a TUV Mark is displayed it complies with the design restrictions.</i>	Package not provided.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
	Der Ausweisinhaber, Importeur und/oder Bevollmächtigte ist mit auf der Verpackung benannt. <i>The license holder, importer and/or authorized representative are displayed with complete address on the packaging.</i>		P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
	Auf der Verpackung wird das Produkt nicht anders beworben als es die Zertifizierung beschreibt. Z.B. Kinder werden mit der Verpackung explizit angesprochen und aus dem Zertifikat geht hervor, dass es kein Spielzeug ist. <i>Packaging does not imply another use as certified. E.g. the package explicitly addresses but the certificate excludes use by children.</i>		P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

ANLAGE zum Prüfbericht-Nr.: Attachment 2 of 15085503 008
APPENDIX to Test Report No.:

Seite 5 von 5
Page 5 of 5

ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

Nachweise für die in der Checkliste benannten Punkte:
Evidences found during Product Verification Test:

