



ΕΚΘΕΣΗ ΔΟΚΙΜΩΝ

(TEST REPORT)

ΔΕΛΤΙΟ 200

(FORM 200)

ΣΕΛ.(PGS): 1/4

ΦΟΡΕΑΣ ΠΙΣΤΟΠΟΙΗΣΗΣ/ ΕΡΓΑΣΤΗΡΙΑ ΚΟΙΝΟΠΟΙΗΜΕΝΑ ΣΤΗΝ ΕΥΡΩΠΗ ΓΙΑ ΤΙΣ ΟΔΗΓΙΕΣ LVD 2006/95/ΕΚ , EMC 2004/108/ΕΚ ΚΑΙ GAD 2009/142/ΕΚ ΜΕ ΑΡΙΘΜΟ 0848. ΑΝΑΓΝΩΡΙΣΜΕΝΑ ΑΠΟ ΤΗΝ ΕΛΛΗΝΙΚΗ ΠΟΛΙΤΕΙΑ ΣΥΜΦΩΝΑ ΜΕ Φ.Ε.Κ. 39B/27-01-1997, 305B/5-4-1999 ΚΑΙ 1894/B/29-08-2011. ΔΙΑΠΙΣΤΕΥΜΕΝΑ ΑΠΟ ΤΟ ΕΘΝΙΚΟ ΣΥΣΤΗΜΑ ΔΙΑΠΙΣΤΕΥΣΗΣ (ΕΣΥΔ) ΣΥΜΦΩΝΑ ΜΕ ΤΟ **EN/ISO 17025** ΓΙΑ ΔΟΚΙΜΕΣ ΗΛΕΚΤΡΙΚΩΝ ΜΕΤΡΗΣΕΩΝ, ΗΛΕΚΤΡΟΜΑΓΝΗΤΙΚΗΣ ΣΥΜΒΑΤΟΤΗΤΑΣ, ΑΣΦΑΛΕΙΑΣ, ΑΚΟΥΣΤΙΚΕΣ, ΜΗΧΑΝΙΚΕΣ, ΕΠΙΔΟΣΗΣ, ΠΕΡΙΒΑΛΛΟΝΤΙΚΕΣ ΚΑΙ ΛΟΙΠΕΣ ΔΟΚΙΜΕΣ ΟΠΩΣ ΑΝΑΦΕΡΟΝΤΑΙ ΑΝΑΛΥΤΙΚΑ ΣΤΟ ΠΕΔΙΟ ΕΦΑΡΜΟΓΗΣ ΤΟΥ ΠΙΣΤΟΠΟΙΗΤΙΚΟΥ ΔΙΑΠΙΣΤΕΥΣΗΣ Αρ.07-2 ΚΑΙ ΕΠΙΣΗΣ ΔΙΑΠΙΣΤΕΥΜΕΝΟ ΣΥΜΦΩΝΑ ΜΕ ΤΟ **EN 45011** ΓΙΑ ΠΙΣΤΟΠΟΙΗΣΗ ΠΡΟΙΟΝΤΩΝ, ΟΠΩΣ ΑΝΑΦΕΡΕΤΑΙ ΑΝΑΛΥΤΙΚΑ ΣΤΟ ΠΕΔΙΟ ΕΦΑΡΜΟΓΗΣ ΤΟΥ ΠΙΣΤΟΠΟΙΗΤΙΚΟΥ ΔΙΑΠΙΣΤΕΥΣΗΣ Αρ.125-2. ΕΡΓΑΣΤΗΡΙΑ ΕΓΚΕΚΡΙΜΕΝΑ ΑΠΟ ΤΟ ICCP (INTERNATIONAL CONFORMITY CERTIFICATION PROGRAM) ΤΟΥ SASO.

[CERTIFICATION BODY/ LABORATORIES NOTIFIED IN EUROPE FOR THE LVD 2006/95/EC, EMC 2004/108/EC & GAD 2009/142/EC DIRECTIVES WITH ASSIGNED NUMBER 0848. RECOGNIZED BY THE HELLENIC STATE IN ACCORDANCE WITH THE OFFICIAL GAZETTE 39B/27-01-1997, 305B/5-4-1999 AND 1894/B/29-08-2011. ACCREDITED BY THE HELLENIC ACCREDITATION SYSTEM (ESYD) ACCORDING TO **EN/ISO 17025** FOR ELECTRICAL MEASUREMENTS, ELECTROMAGNETIC COMPATIBILITY, SAFETY, AUDIO, MECHANICAL, ENVIRONMENTAL, PERFORMANCE AND OTHER TESTING AS THEY ARE DETAILED MENTIONED IN THE APPLICATION FIELD OF THE ACCREDITATION CERTIFICATE No.07-2 AND ALSO ACCREDITED ACCORDING TO **EN 45011** FOR PRODUCT CERTIFICATION, WITH ACCREDITATION CERTIFICATE No.125-2. LAB APPROVED BY ICCP (INTERNATIONAL CONFORMITY CERTIFICATION PROGRAM) OF SASO.]

1. ΑΥΞΩΝ ΑΡ. ΕΛΕΓΧΟΥ: (LAB RECORD S/N) 503809	2. ΗΜ/ΝΙΑ ΕΚΔ.ΕΚΘΕΣΗΣ (DATE OF ISSUE) 03/08/2012
3. ΣΥΝΤΑΧΘΗΚΕ ΑΠΟ: (COMPILED BY) + ΥΠΟΓΡΑΦΗ: (+ SIGNATURE)	4. ΕΓΚΡΙΘΗΚΕ ΑΠΟ: (APPROVED BY) + ΥΠΟΓΡΑΦΗ: (+ SIGNATURE)
5. ΠΕΛΑΤΗΣ.....: (CUSTOMER)	ΔΗΜΗΤΡΙΟΣ ΙΩΑΝ. ΠΑΤΕΡΔΗΣ, ΗΛΙΑΚΑ - ΚΛΙΜΑΤΙΣΜΟΣ DIMITRIOS IOAN. PATERDIS, SOLAR SYSTEMS – AIR CONDITIONING
6. ΔΙΕΥΘΥΝΣΗ.....: (ADDRESS)	ΧΡ. ΣΜΥΡΝΗΣ 27, ΤΚ 713461, ΖΕΦΥΡΙ XR. SMIRNIS , PO 713461, ZEFIRI
ΤΗΛ.(TEL).....:	+30 210 2621742-3
ΦΑΞ.(FAX).....:	+30 210 2322185
E-mail.....:	info@bauer.gr
7. Α.Φ.Μ. ΚΑΙ ΔΟΥ ΠΕΛΑΤΗ.....: (CUSTOMER'S VAT No. & TAX SERVICE)	022206222, ΔΟΥ ΑΝΩ ΛΙΟΣΙΩΝ (VAT.No.: 022206222, TAX SERVICE: ANO LIOSION)
8. ΣΥΜΦΩΝΗΤΙΚΟ Η ΑΙΤΗΣΗ ΠΕΛΑΤΗ.....: (CUSTOMER'S AGREEMENT OR APPLICATION)	ΔΕΛΤΙΟ 300 ΜΕ ΑΡΙΘ. ΠΡΩΤ. 468/ 20-07-2012 (FORM 300 WITH SEQ. No. 468/ 20-07-2012)

[Ε.Π. - ΕΛΚΕΠΗΥ ΑΕΒΕ

(ΕΓΚΡΙΣΗ ΔΕΛΤΙΟΥ : 03/11/2011

ΕΚΔΟΣΗ: 18)]

[Q.M. - ΗΕΕQAC S.A.

(FORM APPROVAL: 03/11/2011

ISSUE : 18)]



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ΑΥΞΩΝ ΑΡ. ΕΛΕΓΧΟΥ:

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9. ΕΡΓΑΣΤΗΡΙΟ ΔΟΚΙΜΩΝ.....: (TESTING LABORATORY)	ΕΛ.Κ.Ε.Π.Η.Υ ΑΕΒΕ HEEQAC SA
10. ΔΙΕΥΘΥΝΣΗ.....: (ADDRESS)	ΚΕΦΑΛΛΗΝΙΑΣ 103 – 11251 ΑΘΗΝΑ 103 KEFALLINIAS STREET, 11251 ATHENS, GREECE
11. ΤΟΠΟΣ ΠΡΑΓΜΑΤΟΠΟΙΗΣΗΣ ΤΩΝ ΔΟΚΙΜΩΝ/ΕΠΙΘΕΩΡΗΣΕΩΝ.....: (TESTING/INSPECTION LOCATION)	ΟΠΩΣ ΣΤΗΝ ΑΝΩΤΕΡΩ ΔΙΕΥΘΥΝΣΗ. (AS ADDRESS ABOVE)
12. ΟΔΗΓΙΑ ΕΚ.....: (EC DIRECTIVE)	LVD 2006/95/EK LVD 2006/95/EC
13. ΠΡΟΤΥΠΑ.....: (STANDARDS)	EN 60335-1:2012 EN 60335-2-21:2003 +A2:2008
14. Β.Ο. - Τ.Ο. ΕΛΚΕΠΗΥ.....: (HEEQAC'S INTERNAL TECHNICAL GUIDES)	-----
15. ΔΙΑΔΙΚΑΣΙΑ ΔΟΚΙΜΩΝ.....: (TEST PROCEDURE)	ΩΣ ΑΝΩΤΕΡΩ ΠΡΟΤΥΠΑ (AS ABOVE MENTIONED STANDARDS)
16. ΑΠΟΚΛΙΣΕΙΣ ΔΙΑΔΙΚΑΣΙΩΝ.....: (PROCEDURE DEVIATIONS)	-----
17. ΜΗ ΤΥΠΟΠΟΙΗΜΕΝΕΣ ΔΙΑΔΙΚΑΣΙΕΣ.....: (NON-STANDARD TEST METHODS)	-----
18. ΔΙΑΔΙΚΑΣΙΑ ΔΕΙΓΜΑΤΟΛΗΨΙΑΣ.....: (SAMPLING PROCEDURE)	-----
19. ΑΒΕΒΑΙΟΤΗΤΑ ΜΕΤΡΗΣΕΩΝ.....: (MEASUREMENT UNCERTAINTY)	-----
20. ΔΟΚΙΜΙΟ.....: (EUT)	ΘΕΡΜΟΣΙΦΩΝΑΣ (BOILER)
21. ΤΥΠΟΣ/ΜΟΝΤΕΛΟ ΔΟΚΙΜΙΟΥ.....: (EUT TYPE/MODEL)	BAUER VR160
22. ΑΡ. ΣΕΙΡΑΣ ΔΟΚΙΜΙΟΥ.....: (S/N)	-----
23. ΤΡΟΦΟΔΟΣΙΑ ΔΟΚΙΜΙΟΥ.....: (SUPPLY RATING)	230VAC, 4KW
24. ΚΑΤΑΣΚΕΥΑΣΤΗΣ.....: (MANUFACTURER)	ΔΗΜΗΤΡΙΟΣ ΙΩΑΝ. ΠΑΤΕΡΔΗΣ (DIMITRIOS IOAN. PATERDIS)
25. ΕΜΠΟΡΙΚΟ ΣΗΜΑ ΚΑΤΑΤΕΘΕΝ.....: (TRADE MARK)	ΔΗΜΗΤΡΙΟΣ ΙΩΑΝ. ΠΑΤΕΡΔΗΣ

[Ε.Π. - ΕΛΚΕΠΗΥ ΑΕΒΕ

[Q.M.

- ΗΕΕQAC S.A.

(ΕΓΚΡΙΣΗ ΔΕΛΤΙΟΥ : 03/11/2011

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26. ΑΡΙΘΜΟΣ ΔΕΙΓΜΑΤΩΝ.....: ΕΝΑ (01)

(NUMBER OF SAMPLES)

ONE (01)

27. ΗΜ/ΝΙΑ ΠΑΡΑΛΑΒΗΣ ΔΟΚΙΜΙΩΝ.....:

(TEST ITEM'S RECEIPT DATE)

17/07/2012

28. ΗΜ/ΝΙΕΣ ΠΡΑΓΜΑΤΟΠΟΙΗΣΗΣ

ΔΟΚΙΜΩΝ/ΕΠΙΘΕΩΡΗΣΕΩΝ.....:

(TESTING PERIOD)

20/07/2012 – 31/07/2012

29. ΣΥΜΠΕΡΑΣΜΑΤΑ - ΑΠΟΤΕΛΕΣΜΑΤΑ.....:

(CONCLUSIONS - RESULTS)

ΤΟ ΔΟΚΙΜΙΟ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΜΕ ΤΙΣ ΑΠΑΙΤΗΣΕΙΣ ΤΩΝ ΠΡΟΤΥΠΩΝ EN 60335-1:2012 ΚΑΙ EN 60335-2-21:2003 +A2:2008, ΓΙΑ ΤΙΣ ΟΠΟΙΕΣ ΕΛΕΓΧΘΗΚΕ.

TEST ITEM COMPLIES WITH THE REQUIREMENTS OF EN 60335-1:2012 AND EN 60335-2-21:2003 +A2:2008 STANDARDS, STANDARD, FOR WHICH IT WAS TESTED.



ΑΥΞΩΝ ΑΡ. ΕΛΕΓΧΟΥ:

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30. ΣΥΝΗΜΜΕΝΑ (ATTACHMENTS) :

1. ΔΕΛΤΙΟ (FORM) 201-4078-C01-TRF	ΣΕΛΙΔΕΣ (PAGES):	53
2. ΔΕΛΤΙΟ (FORM) 202	ΣΕΛΙΔΕΣ (PAGES):	2
3. ΔΕΛΤΙΟ (FORM) 203	ΣΕΛΙΔΕΣ (PAGES):	7

31. ΣΥΝΟΛΟ ΣΕΛΙΔΩΝ ΑΥΤΗΣ ΤΗΣ ΑΝΑΦΟΡΑΣ.....:

66

(TOTAL NUMBER OF PAGES OF THIS REPORT)

32. ΣΗΜΕΙΩΣΕΙΣ

(NOTES):

1. Τα αποτελέσματα των ελέγχων της παρούσης έκθεσης ισχύουν μόνο για το ελεγχθέν δοκίμιο.
2. Η έκθεση αυτή συντάχθηκε σε δύο πλήρη αντίγραφα εκ των οποίων το ένα παραλαμβάνει ο Πελάτης και το δεύτερο παραμένει στο αρχείο του εργαστηρίου. Ένα επιπλέον αντίγραφο της, χωρίς τα συνημμένα της, υποβάλλεται στο Αρμόδιο Υπουργείο σύμφωνα με το αντίστοιχο ΦΕΚ (39B/27-01-1997, 305B/5-4-1999 και 1894/B/29-08-2011).
3. **Επιτρέπεται η αναπαραγωγή του συνόλου αυτής της Έκθεσης. Αναπαραγωγή μέρους αυτής επιτρέπεται μόνο μετά από γραπτή έγκριση του ΕΛ.Κ.Ε.Π.Η.Υ**
4. **Αποκλειστικά δικαιώματα κάθε μορφής του παρόντος Δελτίου και του περιεχομένου του ανήκουν στο ΕΛ.Κ.Ε.Π.Η.Υ ΑΕΒΕ.**
 1. The test results of this report apply only to the item tested.
 2. The original of this report is forwarded to the client and a complete copy remains in the lab. One more copy without attachments is submitted to the Competent Ministry in accordance with the relevant official journal (39B/27-01-1997, 305B/5-4-1999 and 1894/B/29-08-2011).
 3. **Reproduction of the complete report is permitted. Reproduction of any part of this report is not Permitted without the written approval of HEEQAC SA.**
 4. **All rights of exploitation in any form and by any means reserved by HEEQAC SA.]**

Ο Δ/ΝΤΗΣ ΕΡΓΑΣΤΗΡΙΑΚΩΝ ΕΛΕΓΧΩΝ
(Laboratory Testing Manager)

Ο Δ/ΝΤΗΣ ΔΙΑΣΦΑΛΙΣΗΣ ΠΟΙΟΤΗΤΑΣ
(Quality Assurance Manager)






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Type of test object: BOILER	Model/Type: BAUER VR160	S/N: ----
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In this Report the following terms and verdicts were used: Comply : P Not Comply : FAIL Not Applicable : N/A	Test Date From 20/07/2012 To 31/07/2012
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Tests were performed by: Signature :	Q.A Stamp 
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Standard(s) used: EN 60335-1:2012
 IEC 60335-1:2010
 EN 60335-2-21:2003+A2:2008
 IEC 60335-2-21:2002+A2:2008

Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
1.	6	CLASSIFICATION		
2.	6.1	Protection against electric hock: Class 0, 0I, I, II, III	Class I	P
3.		Water heaters shall be class I, class II or class III. (IEC 60335-2-21)	Class I	P
4.	6.2	Protection against harmful ingress of water		P
5.		Water heaters for installation outdoors shall be at least IPX4. Other water heaters shall be at least IPX1; (IEC 60335-2-21)	IP24	P
6.	7	MARKING AND INSTRUCTIONS		
7.				
8.	7.1	Rated voltage or voltage range (V)	230 V	P
9.		Nature of supply	AC	P
10.		Rated frequency (Hz)		N/A
11.		Rated power input (W) (IEC 60335-2-21)	4000W	P
12.		Rated current (A)		N/A
13.		Single-phase appliances: 230V covered		P
14.		Multi-phase appliance: 400V covered:		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
15.		Manufacturer's or responsible vendor's name, trademark or identification mark.....	See copy of marking plate in attached form 202.	P
16.		Model or type reference	BAUER VR160	P
17.		Symbol 5172 of IEC 60417, for Class II appliances		N/A
18.		IP number, other than IPX0	IP24	P
19.		Symbol IEC 60417-5036, for the enclosure of electrically-operated water valves in external hose-sets for connection of an appliance to the water mains		N/A
20.	7.1 EN 60335-2-21 :2003 +A2:2008	If not cistern type water heater - marked with the rated pressure in pascals.	1MPa	P
21.	7.1 EN 60335-2-21 :2003 +A2:2008	Marked with rated capacity in litres.	150 lt	P
22.	7.1 EN 60335-2-21 :2003 +A2:2008	Closed water heaters marked with statement: pressure-relief device is to be fitted in the installation, unless it is incorporated in the appliance.		P
23.	7.1 EN 60335-2-21 :2003 +A2:2008	Closed water heaters with less than 0,6MPa rated pressure and low pressure water heaters marked with the statement: pressure reducing valve is to be fitted in the installation.		N/A
24.	7.1 EN 60335-2-21 :2003 +A2:2008	Open-outlet water heaters marked close to the outlet or on tag attached with the following: WARNING: This outlet acts as a vent and must only be connected to a fitting recommended by the manufacturer. It must not be connected to a tap.		N/A
25.	7.2	Warning for stationary appliances for multiple supply		N/A
26.		Warning placed in vicinity of terminal cover		N/A
27.	7.3	Range of rated values marked with the lower and upper limits separated by a hyphen		N/A
28.		Different rated values marked with the values separated by an oblique strPe		N/A
29.	7.4	Appliances adjustable for different rated		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		voltages, the voltage setting is clearly discernible		
30.	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
31.		the power input is related to the arithmetic mean value of the rated voltage range		N/A
32.		Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N/A
33.	7.6	Correct symbols used		P
34.	7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply		N/A
35.	7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		
36.		- marking of terminals exclusively for the neutral conductor (N)		P
37.		- marking of protective earthing terminals (symbol 5019 of IEC 60417)		P
38.		- marking not placed on removable parts		P
39.	7.9	Marking or placing of switches which may cause a hazard		N/A
40.	7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means		N/A
41.		The figure 0 indicates only OFF position, unless no confusion with the OFF position		N/A
42.	7.11	Indication for direction of adjustment of controls		N/A
43.	7.12	The instructions state that:		P
44.		- the appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction		P
45.		- children being supervised not to play with the appliance		P
46.	7.12 EN 60335-2-21 :2003 +A2:2008	The instructions for closed water heaters shall state the substance of the following:		P
47.	7.12	- the water may drip from the discharge		P



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
	EN 60335-2-21 :2003 +A2:2008	pipe of the pressure-relief device and that this pipe must be left open to the atmosphere		
48.	7.12 EN 60335-2-21 :2003 +A2:2008	– the pressure-relief device is to be operated regularly to remove lime deposits and to verify that it is not blocked		P
49.	7.12 EN 60335-2-21 :2003 +A2:2008	– how the water heater can be drained		P
50.	7.12.1	Sufficient details for installation supplied		P
51.	7.12.1 EN 60335-2-21 :2003 +A2:2008	The installation instructions shall state the substance of the following:		P
52.	7.12.1 EN 60335-2-21 :2003 +A2:2008	– the type or characteristics of the pressure-relief device and how to connect it, unless it is incorporated in the appliance		P
53.	7.12.1 EN 60335-2-21 :2003 +A2:2008	– a discharge pipe connected to the pressure-relief device is to be installed in a continuously downward direction and in a frost-free environment		N/A
54.	7.12.1 EN 60335-2-21 :2003 +A2:2008	– the type or characteristics of a pressure reducing valve and the installation details (for appliances having a rated pressure less than 0,6 MPa)		P
55.	7.12.1 EN 60335-2-21 :2003 +A2:2008	Closed water heaters with heat exchanger give details on the installation of control devices and the temperature settings that are necessary to prevent operation of the thermal cut-out caused by the heat from the exchanger		N/A
56.	7.12.1 EN 60335-2-21 :2003 +A2:2008	cistern-fed water heaters and low-pressure water heaters shall contain the substance of the following: WARNING: Do not connect any pressure-relief device to the vent pipe of this water heater.		N/A
57.	7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		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		
58.	7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions stating that the fixed wiring must be protected		N/A
59.	7.12.4	Instructions for built-in appliances:		
60.		- dimensions of space		N/A
61.		- dimensions and position of supporting means		N/A
62.		- distances between parts and surrounding structure		N/A
63.		- dimensions of ventilation openings and arrangement		N/A
64.		- connection to supply mains and interconnection of separate components		N/A
65.		- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless		N/A
66.		a switch complying with 24.3		N/A
67.	7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N/A
68.		Replacement cord instructions, type Y attachment		P
69.		Replacement cord instructions, type Z attachment		N/A
70.	7.12.6	Caution in the instructions for heating appliances with a non-self-resetting thermal cut-out		N/A
71.	7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed		N/A
72.	7.12.8	Instructions for appliances connected to the water mains:		
73.		- max. inlet water pressure (Pa).....	18bar	P
74.		- min. inlet water pressure, if necessary (Pa).....		N/A
75.		Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		N/A
76.	7.13	Instructions and other texts in an official language		P



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
77.	7.14	Marking clearly legible and durable		P
78.	7.15	Marking on a main part		P
79.		Marking clearly discernible from the outside, if necessary after removal of a cover		P
80.		For portable appliances, cover can be removed or opened without a tool		N/A
81.		For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		P
82.		For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		N/A
83.		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
84.	7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		N/A
85.	7.101 EN 60335-2-21 :2003 +A2:2008	The water inlet and the water outlet shall be identified.		P
86.	7.101 EN 60335-2-21 :2003 +A2:2008	This identification shall not be on detachable parts.		P
87.	7.101 EN 60335-2-21 :2003 +A2:2008	If colors are used, blue shall be used for the inlet and red for the outlet.		P
88.	8	PROTECTION AGAINST ACCESS TO LIVE PARTS		
89.	8.1	Adequate protection against accidental contact with live parts		P
90.	8.1.1	Requirement applies for all positions, detachable parts removed		P
91.		Insertion or removal of lamps, protection against contact with live parts of the lamp cap		N/A
92.		Use of test probe B of IEC 61032: no contact with live parts		P
93.	8.1.2	Use of test probe 13 of IEC 61032 through openings in class 0 appliances and class II appliances/ constructions: no contact with live parts		N/A
94.		Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		contact with live parts		
95.	8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032: no contact with live parts of visible glowing heating elements		N/A
96.	8.1.4	Accessible part not considered live if:		
97.		- safety extra-low a.c. voltage: peak value not exceeding 42.4 V		N/A
98.		- safety extra-low d.c. voltage: not exceeding 42.4 V		N/A
99.		- or separated from live parts by protective impedance		N/A
100.		If protective impedance: d.c. current not exceeding 2 mA, and		N/A
101.		a.c. peak value not exceeding 0.7 mA		N/A
102.		- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 μ F		N/A
103.		- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μ C		N/A
104.		- for peak values over 15kV, the energy in the discharge not exceeding 350 mJ		N/A
105.	8.1.5	Live parts protected at least by basic insulation before installation or assembly:		
106.		- built-in appliances		N/A
107.		- fixed appliances		P
108.		- appliances delivered in separate units		N/A
109.	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		N/A
110.		Only possible to touch parts separated from live parts by double or reinforced insulation		N/A
111.	10	POWER INPUT AND CURRENT		
112.	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 10.1)	P
113.		Test for an appliance with one or more rated voltage ranges		N/A
114.	10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2		N/A



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115.		Test for an appliance with one or more rated voltage ranges		N/A
116.	11	HEATING		
117.	11.1	No excessive temperatures in normal use	(see appended table 11.1)	P
118.	11.3	Temperature rises, other than of windings, determined by thermocouples		P
119.		Temperature rises of windings determined by resistance method, unless		N/A
120.		the windings makes it difficult to make the necessary connections		N/A
121.	11.4	Heating appliances operated under normal operation at 1.15 times rated power input	4600W	P
122.	11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage		N/A
123.	11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage		N/A
124.	11.7 EN 60335-2-21 :2003 +A2:2008	The appliance is operated until steady conditions are established or until the thermostat interrupts the current for the first time after 16 h, whichever is shorter.		P
125.	11.8	Temperature rises not exceeding values in table 3	(see appended tables 11.1)	P
126.		Protective devices do not operate, except		P
127.		components in protective electronic circuits tested for the number of cycles specified in 24.1.4		N/A
128.		Sealing compound does not flow out		P
129.	13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		
130.	13.1	Leakage current not excessive and electric strength adequate		P
131.		Heating appliances operated at 1.15 times rated power input	4600W	P
132.		Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage		N/A
133.		Protective impedance and radio interference filters disconnected before carrying out the tests		N/A
134.	13.2	Leakage current measured by means of the circuit described in figure 4 of IEC 60990		P
135.		Leakage current measurements	(see appended table 13.1)	P
136.	13.3	The appliance is disconnected from the		P



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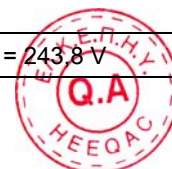
Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		supply		
137.		Electric strength tests according to table 4	(see appended table 13.2)	P
138.		No breakdown during the tests		P
139.	14	TRANSIENT OVERVOLTAGES		
140.		Appliances withstand the transient over-voltages to which they may be subjected		P
141.		Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6		N/A
142.		No flashover during the test, unless of functional insulation		N/A
143.		In case of flashover of functional insulation, the appliance complies with clause 19 with the clearance short circuited		N/A
144.	15	MOISTURE RESISTANCE		
145.	15.1	Enclosure provides the degree of moisture protection according to classification of the appliance	IP24	P
146.		Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		P
147.		No trace of water on insulation which can result in a reduction of clearances and creepage distances below values specified in clause 29		P
148.	15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529		P
149.		Water valves in external hoses for connection of an appliance to the water mains tested as specified for IPX7 appliances		N/A
150.	15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N/A
151.		Built-in appliances installed according to the instructions		N/A
152.		Appliances placed or used on the floor or table placed on a horizontal unperforated support		P
153.		Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		N/A
154.		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
155.		For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube		P



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
156.		However, for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube		N/A
157.		Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support, the pivot axis of the oscillating tube located at the level of the underside of the support		N/A
158.		For IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min		P
159.		Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N/A
160.		Appliances with type X attachment fitted with a flexible cord as described		N/A
161.		Detachable parts tested as specified		N/A
162.	15.2 EN 60335-2-21 :2003 +A2:2008	The test of 15.2 is only applicable to cistern-type water heater.		N/A
163.	15.2	Spillage of liquid does not affect the electrical insulation		N/A
164.		Appliances with type X attachment fitted with a flexible cord as described		N/A
165.		Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A
166.		Detachable parts removed		N/A
167.		The appliance withstands the electric strength test of 16.3		N/A
168.		No trace of water on insulation that can result in a reduction of clearances and creepage distances below values specified in clause 29		N/A
169.	15.3	Appliances proof against humid conditions	25°C, 93% R.H.	P
170.		Humidity test for 48 h in a humidity cabinet		P
171.		The appliance withstands the tests of clause 16		P
172.	16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		
173.	16.1	Leakage current not excessive and electric strength adequate		P
174.		Protective impedance disconnected from live parts before carrying out the tests		N/A
175.	16.2	Single-phase appliances: test voltage 1.06	1,06 x 230 = 243,8 V	P



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
176.		times rated voltage Three-phase appliances: test voltage 1.06 times rated voltage divided by $\sqrt{3}$		N/A
177.		Leakage current measurements	(see appended table 16.1)	P
178.	16.3	Electric strength tests according to table 7	(see appended table 16.2)	P
179.		No breakdown during the tests		P
180.	17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		
181.		No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use		N/A
182.		Appliance supplied with 1.06 or 0.94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied		N/A
183.		Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		N/A
184.		Temperature of the winding not exceeding the value specified in table 8,		N/A
185.		however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N/A
186.	19	ABNORMAL OPERATION		
187.	19.1	The risk of fire or mechanical damage under abnormal or careless operation obviated		P
188.		Electronic circuits so designed and applied that a fault will not render the appliance unsafe		N/A
189.		Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		N/A
190.	19.1 EN 60335-2-21 :2003 +A2:2008	Instead of the tests specified for appliances incorporating heating elements, the following applies:		
191.	19.1 EN 60335-2-21 :2003 +A2:2008	For closed water heaters, low-pressure water heaters and open-outlet water heaters, compliance is checked by the tests of 19.2, 19.3 and 19.4 if applicable. However, 19.101 applies instead for appliances not liable to be emptied in	The test of 19.101 was performed since requirements 192 to 195 are satisfied.	



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		normal use and having all four of the following features:		
192.	19.1 EN 60335-2-21 :2003 +A2:2008	- an outer enclosure of metal;		P
193.	19.1 EN 60335-2-21 :2003 +A2:2008	- non-combustible thermal insulation;		P
194.	19.1 EN 60335-2-21 :2003 +A2:2008	- a capacity exceeding 30 l;		P
195.	19.1 EN 60335-2-21 :2003 +A2:2008	- a rated power input not exceeding 6 kW.		P
196.	19.2	Appliances with heating elements are tested under the conditions specified in clause 11 but with restricted heat dissipation.		N/A
197.	19.2	The supply voltage is that required to provide a power input of 0,85 times rated power input under normal operation when the power input has stabilized		N/A
198.	19.3	The test of 19.2 is repeated but with a supply voltage, determined prior to the test, equal to that required to provide a power input of 1,24 times rated power input under normal operation		N/A
199.	19.4	The appliance is tested under the conditions specified in clause 11. Any control that limits the temperature during the test of clause 11 is short-circuited		N/A
200.	19.4 EN 60335-2-21 :2003 +A2:2008	For open-outlet water heaters, the test of 19.2 is repeated with the container filled with water to a level at least 10 mm above the highest point of the heating element. The appliance is operated at 1,15 times rated power input under normal operation		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
201.	19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the elements sheath		N/A
202.		The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N/A
203.		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
204.	19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N/A
205.		The working voltage of the PTC heating element is increased by 5% and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1.5 times working voltage or until the PTC heating element ruptures		N/A
206.	19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque or locking moving parts of other appliances		N/A
207.		Locked rotor, motor capacitors open-circuited or short-circuited, if required		N/A
208.		Locked rotor, capacitors open-circuited one at a time		N/A
209.	19.8	Three-phase motors operated at rated voltage with one phase disconnected		N/A
210.	19.9	Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously		N/A
211.		Winding temperatures not exceeding values as specified		N/A
212.	19.10	Appliances incorporating series motors are operated with the lowest possible load and supplied at 1.3 times rated voltage for 1 min		N/A
213.		During the test, parts not being ejected from the appliance		N/A
214.	19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1		N/A
215.		Appliances incorporating a protective		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		electronic circuit subjected to the tests of 19.11.3 and 19.11.4		
216.		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
217.		Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8		N/A
218.	19.11.1	Before applying the fault conditions a) to f) in 19.11.2, it is checked if circuits or parts of circuit meet both of the following conditions:		
219.		- 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
220.		- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the appliance does not rely on the correct functioning of the electronic circuit		N/A
221.	19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in cl. 11, but supplied at rated voltage, the duration of the tests as specified:		
222.		a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in 29		N/A
223.		b) open circuit at the terminals of any component	(see appended table)	N/A
224.		c) short circuit of capacitors, unless they comply with IEC 60384-14	(see appended table)	N/A
225.		d) short circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the two circuits of an optocoupler	(see appended table)	N/A
226.		e) failure of triacs in the diode mode		N/A
227.		f) failure of an integrated circuit		N/A
228.		g) failure of an electronic power switching device		N/A
229.	19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to f) of 19.11.2		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
230.		During and after each test the following is checked:		
231.		- the temperature rise of the windings do not exceed the values specified in table 8		N/A
232.		- the appliance complies with the conditions specified in 19.13		N/A
233.		- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		N/A
234.		If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided all three of the following conditions are met:		
235.		- the material of the printed circuit board withstands the burning test of annex E		N/A
236.		- any loosened conductor does not reduce the clearances or creepage distances between live parts and accessible metal parts below the values specified in cl. 29		N/A
237.		- the appliance withstands the tests of 19.11.2 with open-circuited conductor bridged		N/A
238.	19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or		N/A
239.		a device that can be placed in the stand-by mode,		N/A
240.		subjected to the tests of 19.11.4.1 to 19.11.4.7		N/A
241.		Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, except that		N/A
242.		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
243.	19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		N/A
244.	19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3		N/A
245.	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
246.	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
247.		Earthed heating elements in class I appliances disconnected		N/A



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248.	19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		N/A
249.	19.11.4.6	The appliance is subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11		N/A
250.	19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		N/A
251.	19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60s the power supply is reduces to a level such that the appliance ceases to respond or a programmable component cease to operate.		N/A
252.		The appliance continues to operate normally or requires a manual operation to restart		N/A
253.	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
254.	19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
255.		Temperature rises not exceeding the values shown in table 9	(see appended table 19.1)	P
256.		Enclosures not deformed to such an extent that compliance with cl. 8 is impaired		P
257.		If the appliance can still be operated it complies with 20.2		P
258.		Insulation, other than of class III appliance, withstand the electric strength test of 16.3, the test voltage specified in table 4:		
259.		- basic insulation	1000 V	P
260.		- supplementary insulation	1750 V	N/A
261.		- reinforced insulation	3000 V	N/A
262.		After operation or interruption of a control, clearances and creepage distances across the functional insulation withstanding the electric strength test of 16.3. the test voltage being twice the working voltage		P
263.		The appliance does not undergo a dangerous malfunction, and		P
264.		no failure of protective electronic circuits, if the appliance is still operable		P
265.		Appliances tested with an electronic switch		



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		in the off position or in the stand-by mode:		
266.		- do not become operational, or		N/A
267.		- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N/A
268.	19.13 EN 60335-2-21 :2003 +A2:2008	There shall be no leakage from the container during the tests.		P
269.	19.14	Appliances operated under the conditions of Clause 11. Contactors or relays contacts operating under the conditions of clause 11 short-circuited		N/A
270.	19.101	The appliance is tested for 24 h under the conditions specified in Clause 11 but with the container empty.		P
271.	20.1	Appliances, other than fixed appliances and hand-held appliances, intended to be used on a surface such as the floor or a table shall have adequate stability.		N/A
272.	20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		N/A
273.		Protective enclosures, guards and similar parts are non-detachable		N/A
274.		Adequate mechanical strength and fixing of protective enclosures		N/A
275.		Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, by unexpected reclosure		N/A
276.		Not possible to touch dangerous moving parts with test probe		N/A
277.	21	MECHANICAL STRENGTH		
278.	21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
279.		Checked by applying blows to the appliance in accordance with test Ehb of IEC 60068-2-75, spring hammer test, impact energy 0,5 J		P
280.		If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3		P
281.		If necessary, repetition of groups of three blows on a new sample		N/A
282.	21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		N/A
283.		The insulation is tested as specified, unless		N/A



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284.		the thickness of supplementary insulation is at least 1 mm and reinforced insulation is at least 2 mm		N/A
285.	22	CONSTRUCTION		
286.	22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	IP24	P
287.	22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		
288.		- a supply cord fitted with a plug		N/A
289.		- a switch complying with 24.3		N/A
290.		- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided		P
291.		- an appliance inlet		N/A
292.		Single-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase permanently connected class I appliances, connected in the phase conductor		P
293.	22.3	Appliance provided with pins: no undue strain on socket-outlets		N/A
294.		Applied torque not exceeding 0.25 Nm		N/A
295.		Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		N/A
296.		Each pin subjected to a torque of 0.4Nm; the pins are not rotating unless rotating does not impair compliance with the standard		N/A
297.	22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		P
298.	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 P , the appliance being disconnected from the supply at the instant of voltage peak		N/A
299.	22.6	Electrical insulation not affected by condensing water or leaking liquid		P
300.		Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
301.	22.6 EN 60335-2-21 :2003 +A2:2008	condensed water cannot accumulate within the enclosure		P
302.	22.6 EN 60335-2-21 :2003 +A2:2008	The enclosure shall have a drain hole positioned so that the water can drain without impairing electrical insulation		P
303.	22.6 EN 60335-2-21 :2003 +A2:2008	The hole shall be at least 5 mm in diameter or 20 mm ² in area with a width of at least 3 mm		P
304.	22.7	Appliances containing liquid or gases in normal use or having steam-producing devices shall incorporate adequate safeguards against the risk of excessive pressure		P
305.	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
306.	22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		P
307.		Adequate insulating properties of oil or grease to which insulation is exposed		N/A
308.	22.10	Not possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance		N/A
309.		Non-self resetting thermal motor protectors have a trip-free action, unless		N/A
310.		they are voltage maintained		N/A
311.		Location or protection of reset buttons of non-self-resetting controls is so that accidental resetting is unlikely		N/A
312.	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
313.		Obvious locked position of snap-in devices used for fixing such parts		N/A
314.		No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		N/A
315.		Tests as described	Pull=Push 50 N Torque=2Nm	P



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
316.	22.12	Handles, knobs etc. fixed in a reliable manner		N/A
317.		Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		N/A
318.		Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		N/A
319.		Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N/A
320.	22.13	Unlikely that handles, when gripped as in normal use, make the operators hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N/A
321.	22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P
322.		No exposed pointed ends of self tapping screws etc., liable to be touched by the user in normal use or during user maintenance		N/A
323.	22.15	Storage hoPs and the like for flexible cords smooth and well rounded		N/A
324.	22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands, no undue wear of contacts		N/A
325.		Cord reel tested with 6000 operations, as specified		N/A
326.		Electric strength test of 16.3, voltage of 1000 V applied		N/A
327.	22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		N/A
328.	22.18	Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use		P
329.	22.19	Driving belts not used as electrical insulation		N/A
330.	22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non-combustible		P
331.		Compliance is checked by inspection and, if necessary, by appropriate test		P
332.	22.20 EN 60335-2-21 :2003 +A2:2008	Thermal insulation shall not be used for basic insulation of internal wiring		P



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
333.	22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated		P
334.		This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N/A
335.	22.22	Appliances not containing asbestos		P
336.	22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
337.	22.24	Bare heating elements adequately supported		P
338.		In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		P
339.	22.25	Sagging heating conductors cannot come into contact with accessible metal parts		P
340.	22.26	The insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation		N/A
341.	22.27	Parts connected by protective impedance separated by double or reinforced insulation		N/A
342.	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
343.	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
344.	22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		P
345.		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
346.	22.31	Clearances and creepage distances over supplementary and reinforced insulation not reduced below values specified in clause 29 as a result of wear		N/A
347.		Clearances and creepage distances between live parts and accessible parts not reduced below values for supplementary insulation, if wires, screws etc. become loose		N/A
348.	22.32	Supplementary and reinforced insulation designed or protected against deposition of dirt or dust		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
349.		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
350.		Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation		N/A
351.		Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N/A
352.		Insulating material in which heating conductors are embedded is considered to be basic insulation and not reinforced insulation		P
353.	22.33	Conductive liquids that are or may become accessible in normal use are not in direct contact with live parts		P
354.		Electrodes not used for heating liquids		P
355.		For class II constructions, conductive liquids that are or may become accessible in normal use, not in direct contact with basic or reinforced insulation		N/A
356.		For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation		N/A
357.	22.34	Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed		N/A
358.	22.35	Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of a failure of basic insulation		N/A
359.		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
360.		This requirement does not apply to handles, levers and knobs on stationary appliances other than those of electrical components, provided they are either reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N/A
361.	22.36	Handles continuously held in the hand in normal use are so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless they are separated from live parts by double or reinforced insulation		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
362.	22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42		N/A
363.		Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		N/A
364.	22.38	Capacitors not connected between the contacts of a thermal cut-out		N/A
365.	22.39	Lamp holders used only for the connection of lamps		N/A
366.	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
367.		Unless the appliance can operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch. The actuating member of the switch being easily visible and accessible.		N/A
368.	22.41	No components, other than lamps, containing mercury		N/A
369.	22.42	Protective impedance consisting of at least two separate components		N/A
370.		Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N/A
371.	22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N/A
372.	22.44	Appliances shall not have an enclosure that is shaped or decorated like a toy		P
373.	22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.4 due to deformation as a result of an external force applied to the enclosure		N/A
374.	22.46	Software used in protective electronic circuits is software class B or C		N/A
375.	22.47	Appliances intended to be connected to the water mains shall withstand the water pressure expected in normal use		P
376.	22.47 EN 60335-2-21 :2003	Appliances shall withstand the water pressure occurring in normal use		P



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
	+A2:2008			
377.		Compliance is checked by subjecting the appliance to a water pressure of		
378.		- twice the rated pressure, for closed water heaters. If the water heater is supplied through a pressure reducing valve, the container is subjected to twice the working pressure instead	1.4 MPa	P
379.		- 1,5 times rated pressure, for cistern-fed water heaters and low-pressure water heaters;		N/A
380.		- 0,15 MPa, for open-outlet water heaters;		N/A
381.		- 0,03 MPa, for cistern-type water heaters.		N/A
382.		Pressure-relief devices are rendered inoperative. The pressure is raised at a rate of 0,13 MPa/s to the specified value and is maintained at that value for 15 min.		P
383.		Water shall not leak from the appliance and there shall be no permanent deformation to such an extent that compliance with this standard is impaired		P
384.	22.48	Appliances connected to the water mains constructed to prevent backsiphonage of non-potable water		P
385.	22.49	For remote operation, the duration of operation shall be set before the appliance can be started, unless		N/A
386.		the appliance switches off automatically or can operate continuously without hazard		N/A
387.	22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation		N/A
388.	22.51	A control on the appliance being manually adjusted to the setting for remote operation before the appliance can be operated in this mode		N/A
389.		There is a visual indication showing that the appliance is adjusted for remote operation		N/A
390.		Manual setting and visual indication not necessary on appliances that can operate as follows, without giving rise to a hazard:		
391.		- operate continuously,		N A
392.		- operate automatically, or		N/A
393.		- be operated remotely		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
394.	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
395.	22.101 EN 60335-2-21 :2003 +A2:2008	The rated pressure of closed water heaters intended for direct connection to the water main shall be at least 0,6 MPa	0,7MPa	P
396.	22.101 EN 60335-2-21 :2003 +A2:2008	The rated pressure of closed water heaters and low-pressure water heaters, intended to be supplied by a pressure reducing valve that is not incorporated in the appliance, shall be at least 0,1 MPa		N/A
397.	22.101 EN 60335-2-21 :2003 +A2:2008	The rated pressure of cistern-fed water heaters shall not exceed 0,2 MPa		N/A
398.	22.103 EN 60335-2-21 :2003 +A2:2008	Pressure-relief devices of closed water heaters shall prevent the pressure in the container from exceeding the rated pressure by more than 0,1 MPa		P
399.	22.104 EN 60335-2-21 :2003 +A2:2008	The outlet of open-outlet water heaters shall be constructed so that the water flow is not limited to such an extent that the container is subjected to a significant pressure		N/A
400.	22.104 EN 60335-2-21 :2003 +A2:2008	The vent pipe of low pressure water heaters shall have an internal diameter of at least 20 mm.		N/A
401.	22.105 EN 60335-2-21 :2003 +A2:2008	Cistern-type water heaters shall be constructed so that the container is always at atmospheric pressure by means of a vent having an area of at least 30 mm ² and a minimum dimension of at least 3mm		N/A
402.	22.106 EN 60335-2-21 :2003 +A2:2008	Closed water heaters shall incorporate a thermal cut-out providing all-pole disconnection and which operates independently from the thermostat. However, for appliances intended to be connected to fixed wiring, the neutral conductor need not be disconnected	Incorporated device that works as a thermostat and a thermal fuse.	P
403.	22.107 EN 60335-2-21 :2003 +A2:2008	Heating elements and thermal control sensors in contact with the outer surface of the container shall be held in position securely.		P



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
404.	22.108 EN 60335-2-21 :2003 +A2:2008	Appliances for wall mounting shall have reliable provision for fixing to a wall, independent of the connection to the water mains		N/A
405.	22.109 EN 60335-2-21 :2003 +A2:2008	Appliances having a capacity of more than 15 l that cannot be emptied through a drain fitted in the water pipes shall incorporate means for draining that requires a tool for its operation		N/A
406.	22.110 EN 60335-2-21 :2003 +A2:2008	Open-outlet water heaters having plastic containers shall be constructed to ensure that the appliance is only likely to be installed in the intended orientation		N/A
407.	22.111 EN 60335-2-21 :2003 +A2:2008	Closed water heaters incorporating a heat exchanger shall be constructed so that during normal use the thermal cut-out does not operate due to heat from the exchanger		N/A
408.	22.111 EN 60335-2-21 :2003 +A2:2008	Thermostatic valves, by-pass valves and similar controlling devices used for this purpose shall be supplied with the appliance		N/A
409.	22.112 EN 60335-2-21 :2003 +A2:2008	Closed water heaters shall be constructed so that repeated drawing off does not cause the water to boil		P
410.	23	INTERNAL WIRING		
411.	23.1	Wire ways smooth and free from sharp edges	The eut does not include wiring.	N/A
412.		Wires protected against contact with burrs, cooling fins etc.		N/A
413.		Wire holes in metal well rounded or provided with bushings		N/A
414.		Wiring effectively prevented from coming into contact with moving parts	No moving parts	N/A
415.	23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners		N/A
416.		Beads inside flexible metal conduits contained within an insulating sleeve		N/A
417.	23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N/A
418.		Flexible metallic tubes not causing damage to insulation of conductors		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
419.		Open-coil springs not used		N/A
420.		Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N/A
421.		No damage after 10 000 flexings for conductors flexed during normal use or 100 flexings for conductors flexed during user maintenance		N/A
422.		Electric strength test, 1000 V between live parts and accessible metal parts		N/A
423.	23.4	Bare internal wiring sufficiently rigid and fixed		N/A
424.	23.5	The insulation of internal wiring withstanding the electrical stress likely to occur in normal use		N/A
425.		No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		N/A
426.	23.6	Sleeving used as supplementary insulation on internal wiring retained in position by positive means		N/A
427.	23.7	The colour combination green/yellow used only for earthing conductors		N/A
428.	23.8	Aluminum wires not used for internal wiring		N/A
429.	23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless		N/A
430.		clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		N/A
431.	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
432.	24	COMPONENTS		
433.	24.1	Components comply with safety requirements in relevant IEC standards		P
434.		List of components	(see appended table 24.1)	P
435.		Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.6		P
436.		Components not tested and found to comply with relevant IEC standard, components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
437.	24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, complying with IEC 60384-14, or		N/A
438.		tested according to annex F		N/A
439.	24.1.2	Safety isolating transformers complying with IEC 61558-2-6, or		N/A
440.		tested according to annex G		N/A
441.	24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000, or		N/A
442.		tested according to annex H		N/A
443.		If the switch operates a relay or contactor, the complete switching system is subjected to the test		N/A
444.		Switches that control steam or water emission are subjected to 50 000 cycles of operation (IEC 60335-2-3)		N/A
445.	24.1.4	Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being:		
446.		- thermostats: 10 000		N/A
447.		- temperature limiters: 1 000		N/A
448.		- self-resetting thermal cut-outs: 300		N/A
449.		- voltage maintained non-self-resetting thermal cut-outs: 1000		N/A
450.		- other non-self-resetting thermal cut-outs: 30		N/A
451.		- timers: 3 000		N/A
452.		- energy regulators: 10 000		N/A
453.		Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D		N/A
454.		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 607302-8 is IPX7		N/A
455.	24.1.4 EN 60335-2-21 :2003 +A2:2008	Thermal cut-outs incorporated in closed water heaters shall comply with the requirements for type 2B controls in Clauses 13, 15, 16 17 and 20 of IEC 60730-1, unless they are tested with the appliance.		N/A
456.	24.1.5	Appliance couplers complying with		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		IEC 60320-1		
457.		However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N/A
458.		Interconnection couplers complying with IEC 60320-2-2		N/A
459.	24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		N/A
460.	24.1.7	If the remote operation of the appliance is via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151		N/A
461.	24.1.8	The relevant standard for thermal links is IEC 60691. Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of Clause 19		N/A
462.	24.1.9	Relays, other than motor starting relays, tested as part of the appliance		N/A
463.		They are also tested in accordance with Clause 17 of IEC 60730-1, the number of operations in 24.1.4 selected according to the relay function in the appliance		N/A
464.	24.2	No switches or automatic controls in flexible cords		N/A
465.		No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		N/A
466.		No thermal cut-outs that can be reset by soldering		N/A
467.	24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and having a contact separation in all poles, providing full disconnection under overvoltage category III conditions		N/A
468.	24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC 60083 or IEC 609061 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N/A
469.	24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
470.		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
471.	24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42V.		N/A
472.		In addition, the motors are complying with the requirements of Annex I		N/A
473.	24.7	Hose-sets for connection of appliances to the water mains, complying with IEC 61770 and supplied with the appliance		P
474.	24.101 EN 60335-2-21 :2003 +A2:2008	Thermal cut-outs shall be non-self-resetting. They shall have a trip-free switching mechanism or be located so that they can only be reset after removal of a non-detachable cover.		P
475.	24.102 EN 60335-2-21 :2003 +A2:2008	The operating temperature of the thermal cut-out of a closed water heater shall ensure that the water temperature cannot exceed 99 °C or that the thermal cut-out operates before its temperature exceeds 110 °C.		P
476.	25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		
477.	25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		
478.		- supply cord fitted with a plug		N/A
479.		- an appliance inlet having at least the same degree of protection against moisture as required for the appliance		N/A
480.	25.1 EN 60335-2-21 :2003 +A2:2008	Appliances shall not incorporate an appliance inlet.		P
481.		- pins for insertion into socket-outlets		N/A
482.	25.2	Appliance not provided with more than one means of connection to the supply mains		P
483.		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



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
484.	25.3	Connection of supply conductors for appliance intended to be permanently connected to fixed wiring possible after the appliance has been fixed to its support		P
485.		Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.6		N/A
486.		Appliance provided with a set of terminals allowing the connection of a flexible cord		N/A
487.		Appliance provided with a set of supply leads accommodated in a suitable compartment		N/A
488.		Appliance provided with a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate type of cable or conduit		P
489.	25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 10		N/A
490.		Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29		N/A
491.	25.5	Method for assemble supply cord with the appliance:		
492.		- type X attachment		N/A
493.		- type Y attachment		P
494.		- type Z attachment, if allowed in part 2		N/A
495.		Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A
496.	25.6	Plugs fitted with only one flexible cord		N/A
497.	25.7	Supply cords being one of the following types:		
498.		rubber sheathed (at least 60245 IEC 53)		N/A
499.		polychloroprene sheathed (at least 60245 IEC 57)		N/A
500.		cross-linked polyvinyl chloride sheathed (at least 60245 IEC 87)		N/A
501.		Polyvinyl chloride sheathed: Not used if they are likely to touch metal parts having a temperature rise exceeding 75K during the test of Clause 11.		
502.		- light polyvinyl chloride sheathed cord (at least 60227 IEC 52), appliances not exceeding 3 kg		N/A
503.		- ordinary polyvinyl chloride sheathed cord (at least 60227 IEC 53), other appliances		N/A
504.		Heat resistant polyvinyl chloride sheathed:		



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		Not used for type X attachment other than specially prepared cords.		
505.		- Heat-resistant light polyvinyl chloride sheathed cord (at least 60227 IEC 56), appliances not exceeding 3 kg		N A
506.		- heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), other appliances		N/A
507.	25.8	Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area (mm ²)		N/A
508.	25.9	Supply cord not in contact with sharp points or edges		P
509.	25.10	Green/yellow core for earthing purposes in Class I appliance		N/A
510.	25.11	Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless		N/A
511.		clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder		N/A
512.	25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		N/A
513.	25.13	Inlet opening so shaped as to prevent damage to the supply cord		P
514.		Unless the enclosure at the inlet opening is of insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		N/A
515.		If unsheathed supply cord, a similar additional bushing or lining is required, unless		N/A
516.		the appliance is class 0		N/A
517.	25.14	Supply cords adequately protected against excessive flexing		N/A
518.		Flexing test:		
519.		- load; 2 kg. (IEC 60335-2-3)		N/A
520.		- number of flexings; 20 000 (IEC 60335-2-3)		N/A
521.		The test is not carried out on cordless irons unless the iron can also be directly connected to the supply mains during ironing (IEC 60335-2-3)		N/A
522.		Additional test with the appliance mounted on an apparatus similar to that of figure 8. The test is carried out on a separate appliance		N/A
523.		Flexing test:		



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
524.		- applied force; 10 N		N/A
525.		- number of flexings; 2 000		N/A
526.		The tests does not result in:		
527.		- short circuit between the conductors		N/A
528.		- breakage of more than 10% of the strands of any conductor		N/A
529.		- separation of the conductor from its terminal		N/A
530.		- loosening of any cord guard		N/A
531.		- damage, within the meaning of the standard, to the cord or the cord guard		N/A
532.		- brPen strands piercing the insulation and becoming accessible		N/A
533.	25.15	Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		P
534.		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
535.		Pull and torque test of supply cord, values shown in table 10: pull (N); torque (not on automatic cord reel) (Nm) :	100N, 0,35Nm;	P
536.		Max. 2 mm displacement of the cord, and conductors not moved more than 1 mm in the terminals		P
537.		Creepage distances and clearances not reduced below values specified in 29.1		P
538.	25.16	Cord anchorages for type X attachments constructed and located so that:		
539.		- replacement of the cord is easily possible		N/A
540.		- it is clear how the relief from strain and the prevention of twisting are obtained		N/A
541.		- they are suitable for different types of cord		N/A
542.		- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from accessible metal parts by supplementary insulation		N/A
543.		- the cord is not clamped by a metal screw which bears directly on the cord		N/A
544.		- at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord		N/A
545.		- screws which have to be operated when replacing the cord do not fix any other component, if applicable		N/A



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546.		- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N/A
547.		- for Class 0, 0I and I appliances: they are of insulating material or are provided with an insulating lining, unless a failure of the insulation of the cord does not make accessible metal parts live		N/A
548.		- for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation		N/A
549.	25.17	Adequate cord anchorages for type Y and Z attachment		P
550.	25.18	Cord anchorages only accessible with the aid of a tool, or		N/A
551.		so constructed that the cord can only be fitted with the aid of a tool		P
552.	25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N/A
553.		Tying the cord into a knot or tying the cord with string not used		N/A
554.	25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		N/A
555.	25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed to permit checking of conductors with respect to correct positioning and connection before fitting any cover, no risk of damage to the conductors when fitting the cover, no contact with accessible metal parts if a conductor becomes loose, etc.		N/A
556.		For portable appliances, the uninsulated end of a conductor prevented from any contact with accessible metal parts, unless the end of the cord is such that the conductors are unlikely to slip free		N/A
557.	25.22	Appliance inlet:		
558.		- live parts not accessible during insertion or removal		N/A
559.		- connector can be inserted without difficulty		N/A
560.		- the appliance is not supported by the connector		N/A
561.		- is not for cold conditions if temp. rise of external metal parts exceeds 75 K, unless the supply cord is not likely to touch such metal parts		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
562.	25.23	Interconnection cords comply with the requirements for the supply cord, except as specified		N/A
563.		If necessary, electric strength test of 16.3		N/A
564.	25.24	Interconnection cords not detachable without the aid of a tool if compliance with the standard is impaired when they are disconnected		N/A
565.	25.25	Dimensions of pins compatible with the dimensions of the relevant socket-outlet. Dimensions of pins and engagement face in accordance with the relevant plug in IEC 60083		N/A
566.	26	TERMINALS FOR EXTERNAL CONDUCTORS		
567.	26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		P
568.		Terminals only accessible after removal of a non-detachable cover		P
569.		However, earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection		P
570.	26.2	Appliances with type X attachment and appliances for connection to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless the connections are soldered		P
571.		Screws and nuts serve only to clamp supply conductors, except		P
572.		internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N/A
573.		If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone		N/A
574.		Soldering alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free at the soldered joint		N/A
575.	26.3	Terminals for type X attachment and for connection to fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure and without damaging the conductor		N/A
576.		Terminals for type X attachment and those for connection to fixed wiring so fixed that		



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		when tightening or loosening the clamping means:		
577.		- the terminal does not loosen		N/A
578.		- internal wiring is not subjected to stress		N/A
579.		- clearances and creepage distances are not reduced below the values in 29		N/A
580.		Compliance checked by inspection and by the test of subclause 8.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm)		N/A
581.	26.4	Terminals for type X attachment, except those with a specially prepared cord, and those for connection to fixed wiring, no special preparation of conductors required, and so constructed or placed that conductors prevented from slipping out		N/A
582.	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
583.		Stranded conductor test, 8 mm insulation removed		N/A
584.		No contact between live parts and accessible metal parts and, for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N/A
585.	26.6	Terminals for type X attachment and for connection to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm ²).....		N/A
586.		Terminals only suitable for a specially prepared cord		N/A
587.	26.7	Terminals for type X attachment accessible after removal of a cover or part of the enclosure		N/A
588.	26.8	Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other		P
589.	26.9	Terminals of the pillar type constructed and located as specified		N/A
590.	26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless conductors ends fitted		P



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		with a device suitable for screw terminals		
591.		Pull test of 5 N to the connection		P
592.	26.11	For type Y and Z attachment: soldered, welded, crimped and similar connections may be used		P
593.		For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N/A
594.		For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free		N/A
595.	27	PROVISION FOR EARTHING		
596.	27.1	Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal or contact of the appliance inlet		P
597.		Earthing terminals not connected to neutral terminal		P
598.		Class 0, II and III appliance have no provision for earthing		N/A
599.		Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits		N/A
600.	27.1 EN 60335-2-21 :2003 +A2:2008	For class I water heaters, the sheath of the heating element shall be permanently and reliably connected to the earthing terminal unless		P
601.	27.1 EN 60335-2-21 :2003 +A2:2008	- the container is provided with inlet and outlet pipes of metal that are permanently and reliably connected to the earthing terminal, and		N/A
602.	27.1 EN 60335-2-21 :2003 +A2:2008	- other accessible metal parts of the container in contact with the water are permanently and reliably connected to the earthing terminal		N/A
603.	27.2	Clamping means adequately secured against accidental loosening		P
604.		Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm ² , and		N/A
605.		do not provide earthing continuity between different parts of the appliance		N/A
606.		Conductors cannot be loosened without the aid of a tool		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
607.	27.3	For detachable parts that are plugged into another part of the appliance, and having an earth connection, the earth connection made before and separated after current-carrying connections when removing the part		N/A
608.		For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		N/A
609.	27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal		P
610.		Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		P
611.		Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 mm		N/A
612.		Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		N/A
613.		In case of aluminium alloys precautions taken to avoid risk of corrosion		N/A
614.	27.5	Low resistance of connection between earthing terminal and earthed metal parts		P
615.		This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided that clearances of basic insulation are based on the rated voltage of the appliance		N/A
616.		Resistance not exceeding 0,1 Ω at the specified low-resistance test	0,024 Ω	P
617.	27.6	The printed conductors of printed circuit boards shall not be used to provide earthing continuity in handheld appliances.		N/A
618.		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
619.	28	SCREWS AND CONNECTIONS		
620.	28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		P
621.		Screws not of soft metal liable to creep,		P



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		such as zinc or aluminium		
622.		Diameter of screws of insulating material min. 3 mm		P
623.		Screws of insulating material not used for any electrical connection or connections providing earthing continuity		P
624.		Screws used for electrical connections or connections providing earthing continuity screw into metal		P
625.		Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		P
626.		Type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		N/A
627.		For screws and nuts; test as specified	(see appended table 28.1)	P
628.	28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated		P
629.		This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0.5A		N/A
630.	28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N/A
631.		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
632.		Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer		N/A
633.		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:		
634.		- in normal use,		N A
635.		- during user maintenance,		N/A
636.		- when replacing a supply cord having a type X attachment, or		N/A
637.		- during installation		N/A
638.		At least two screws being used for each connection providing earthing continuity,		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		unless		
639.		the screw forms a thread having a length of at least half the diameter of the screw		P
640.		Thread-cutting and space-threaded screws may be used in connections providing earthing continuity, provided unnecessary to disturb the connection and at least two screws are used for each connection		N/A
641.		the screw forms a thread having a length of at least half the diameter of the screw		P
642.	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
643.		Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion		N/A
644.	29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		
645.		Clearances, creepage distances and solid insulation withstand electrical stress		P
646.		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
647.		The microenvironment is pollution degree 1 under Type 1 coating		N/A
648.		No clearance or creepage distance requirements under Type 2 coating		N/A
649.	29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless		P
650.		for basic insulation and functional insulation they comply with the implulse voltage test of clause 14		N/A
651.		However, if the construction is affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1500V and above are increased by 0,5 mm and the impulse voltage test is not applicable		N/A
652.		Impulse voltage test not applicable:		
653.		- when the microenvironment is pollution degree 3		N/A
654.		- for basic insulation of class 0 and class 01 appliances		N/A
655.		Appliances are in overvoltage category II		P
656.		Clearances less than specified in table 16 not allowed for basic insulation of class 0		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		and class 0I appliances,		
657.		or if pollution degree 3 is applicable		N/A
658.		Compliance is checked by inspection and measurements as specified	(see appended table 29.1)	P
659.	29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		P
660.		Clearance at the terminals of tubular sheathed heating elements may be reduced to 1 mm if the microenvironment is pollution degree 1		N/A
661.		Lacquered conductors of windings considered to be bare conductors		N/A
662.	29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16		N/A
663.	29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, but using the next higher step for rated impulse voltage		N/A
664.	29.1.4	For functional insulation, the values of table 16 are applicable, unless		N/A
665.		the appliance complies with clause 19 with the functional insulation short-circuited		N/A
666.		Lacquered conductors of windings considered to be bare conductors		N/A
667.		However, clearances at crossover points are not measured		N/A
668.		Clearance between surfaces of PTC heating elements may be reduced to 1 mm		N/A
669.	29.1.5	Appliances having higher working voltage than rated voltage, the voltage used for determining clearances from table 16 is the sum of the rated impulse voltage and the difference between the peak value of the working voltage and the peak value of the rated voltage		N/A
670.		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
671.		Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation based on the working voltage used as the rated voltage in table 15		N/A
672.	29.2	Creepage distances not less than those appropriate for the working voltage, taking		P



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		into account the material group and the pollution degree		
673.		Pollution degree 2 applies, unless		P
674.		- precautions taken to protect the insulation; pollution degree 1	For embedded heating tube	N/A
675.		- insulation subjected to conductive pollution; pollution degree 3	For other positions	N/A
676.		Compliance is checked by inspection and measurements as specified	(see appended table 29.2)	P
677.	29.2.1	Creepage distances of basic insulation not less than specified in table 17		P
678.		Except for pollution degree 1, creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14		N/A
679.	29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17		N/A
680.	29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17		N/A
681.	29.2.4	Creepage distances of functional insulation not less than specified in table 18		N/A
682.		Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N/A
683.	29.3	Supplementary and reinforced insulation having adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		N/A
684.		Compliance checked by:		
685.		- measurement, in accordance with 29.3.1, or		N/A
686.		- an electric strength test in accordance with 29.3.2, or		N/A
687.		- an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3		N/A
688.	29.3.1	Supplementary insulation having a thickness of at least 1 mm		N/A
689.		Reinforced insulation having a thickness of at least 2 mm		N/A
690.	29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N/A
691.		Supplementary insulation consisting of at least 2 layers		N/A
692.		Reinforced insulation consisting of at least		N/A



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		3 layers		
693.	29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		N/A
694.		the electric strength test of 16.3		N/A
695.		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
696.	30	RESISTANCE TO HEAT AND FIRE		
697.	30.1	External parts of non-metallic material,		N/A
698.		parts supporting live parts, and		P
699.		thermoplastic material providing supplementary or reinforced insulation,		N/A
700.		sufficiently resistant to heat		P
701.		Ball-pressure test according to IEC 60695-10-2		P
702.		External parts: at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature(°C) :		N/A
703.		Parts supporting live parts: at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125°C, whichever is the higher; temperature (°C)	(see appended table 30.1)	P
704.		Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C)		N/A
705.	30.2	Parts of non-metallic material adequately resistant to ignition and spread of fire		P
706.		This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		N/A
707.		Compliance checked by the test of 30.2.1. In addition:		P
708.		- attended appliances, 30.2.2 applies		N/A
709.		- unattended appliances, 30.2.3 applies		P
710.		Appliances for remote operation, 30.2.3 applies		N/A
711.		Base material of printed circuit board, 30.2.4 applies		N/A
712.	30.2.1	Glow-wire test of IEC 60695-2-11 at 550 °C, unless		P
713.		the material is classified at least HB40		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
		according to IEC 60695-11-10		
714.		Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category HBF material		N/A
715.	30.2.2	Appliances operated while attended, parts of non-metallic material supporting current-carrying connections, and parts of non-metallic material within a distance of 3mm of such connections, are subjected to the glow-wire test of IEC 60695-2-11.		N/A
716.		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:		
717.		-750°C, for connections carrying a current exceeding 0,5A during normal operation		N A
718.		-650°C, for other connections		N/A
719.		Test as specified for an interposed shielding material		N/A
720.		When the glow-wire test of IEC 60695-2-11 is carried out, the temperatures are:		
721.		-750°C, for connections carrying a current exceeding 0,5A during normal operation		N/A
722.		-650°C, for other connections		N/A
723.		Test not applicable to conditions as specified	Handle held appliance	N/A
724.	30.2.3	Appliances that are operated while unattended are tested as specified in 30.2.3.1 and 30.2.3.2. However, the tests are not applicable to		P
725.		– parts supporting welded connections,		N/A
726.		– parts supporting connections in low-power circuits described in 19.11.1,		N/A
727.		– soldered connections on printed circuit boards,		N/A
728.		– connections on small components that are mounted on printed circuit boards		N/A
729.		and parts within 3 mm of any of these connections		N/A
730.	30.2.3.1	Parts of non-metallic material supporting connections that carry a current exceeding 0,2 A during normal operation, and parts of non-metallic material within a distance of 3 mm of such connections, are subjected to the glow-wire test of IEC 60695-2-11	(see appended table 30.1)	P



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		with a test severity of 850 °C		
731.		However, the glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index of at least 850 °C according to IEC 60695-2-12		N/A
732.	30.2.3.2	Parts of non-metallic material supporting current-carrying connections, and parts of non-metallic material within a distance of 3 mm of such connections, are subjected to the glow-wire test of IEC 60695-2-11		N/A
733.		However, the glow-wire test is not carried out on parts of material classified as having a glow-wire ignition temperature according to IEC 60695-2-13 of at least:		N/A
734.		- 775 °C, for connections that carry a current exceeding 0,2 A during normal operation,		N/A
735.		- 675 °C, for other connections		
736.	30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E		N/A
737.		Test not applicable to conditions as specified		N/A
738.	31	RESISTANCE TO RUSTING		
739.		Relevant ferrous parts adequately protected against rusting		P
740.	32	RADIATION, TOXICITY AND SIMILAR HAZARDS		
741.		Appliance shall not emit harmful radiation, present a toxic or similar hazard due to their operation in normal use		P
742.		Relevant tests specified in part 2, if necessary		N/A
743.	A	ANNEX A (INFORMATIVE) ROUTIN TESTS		
744.		Description of routine tests to be carried out by the manufacturer		
745.	B	ANNEX B (INFORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES		
746.		No battery		N/A
747.	C	ANNEX C (INFORMATIVE) AGEING TEST ON MOTORS		
748.		No motor		N/A
749.	D	ANNEX D (INFORMATIVE)		



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		MOTOR PROTECTORS		
750.		No motor		N/A
751.	E	ANNEX E (INFORMATIVE) NEEDLE FLAME TEST		
752.		No need for this test		N/A
753.	F	ANNEX F (INFORMATIVE) CAPACITORS		
754.		No capacitor		N/A
755.	G	ANNEX G (INFORMATIVE) SAFETY ISOLATING TRANSFORMERS		
756.		No transformer		N/A
757.	H	ANNEX H (INFORMATIVE) SWITCHES		
758.		No such switch		N/A
759.	I	ANNEX I (INFORMATIVE) MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		
760.		No motor		N/A
761.	J	ANNEX J (INFORMATIVE) COATED PRINTED CIRCUIT BOARDS		
762.		No such PCB		N/A
763.	K	ANNEX K (INFORMATIVE) OVERVOLTAGE CATEGORIES		
764.		The information on overvoltage categories is extracted from IEC 60664-1		P
765.		Overvoltage category is a numeral defining a transient overvoltage condition		P
766.		Equipment of overvoltage category IV is for use at the origin of the installation		N/A
767.		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
768.		Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		P
769.		If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N/A
770.		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
771.	L	ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCE AND CREEPAGE DISTANCES		



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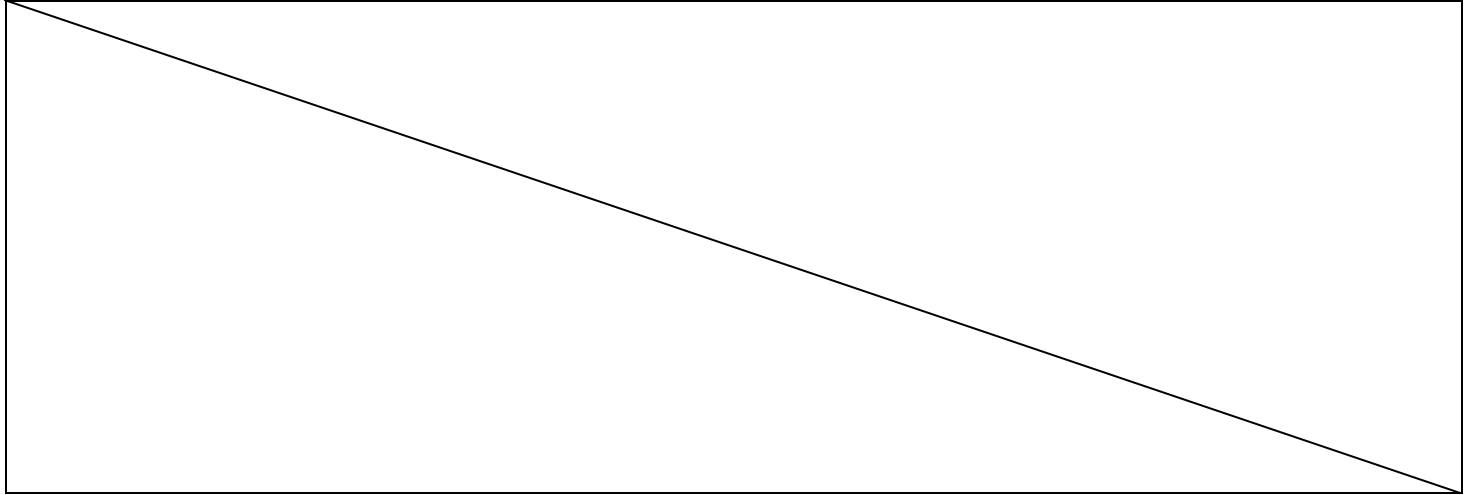
Lab Record S/N		503809		
Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
772.		Sequences for the determination of clearances and creepage distances		P
773.	M	ANNEX M (INFORMATIVE) POLLUTION DEGREE		
774.		The information on pollution degrees is extracted from IEC 60664-1		P
775.		Pollution		
776.		The microenvironment determines the effect of pollution on the insulation, taking into account the microenvironment		P
777.		Means may be provided to reduce pollution at the insulation by effective enclosures or similar		P
778.		Minimum clearances specified where pollution may be present in the microenvironment		P
779.		Degrees of pollution in the microenvironment		
780.		For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		
781.		- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		N/A
782.		- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		P
783.		- 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
784.		- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N/A
785.	N	ANNEX N (INFORMATIVE) PROOF TRACKING TEST		
786.		No such test was performed		N/A
787.	O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		
788.		Description of tests for determination of resistance to heat and fire		P
789.	P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES		
790.		Not intend for such use		N/A



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Seq. No	PARAGRAPHS	REQUIREMENTS	RESULTS	VERDICT
791.	Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS		
792.		No electronic circuit		N/A
793.	R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION		
794.		No software		N/A



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ΑΥΞΩΝ ΑΡ. ΕΛΕΓΧΟΥ:
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CLAUSE	TABLE 10.1: POWER INPUT AND CURRENT TEST					P
10						
input deviation	Prated (W)	P (W)	dP	required dP	Remark	
dP of/at:						
230V	4000W	3900	-2,5%	+5%/-10%	P	

CLAUSE	TABLE 11.1: HEATING TEST, THERMOCOUPLES		P
11.8			
Ambient, t ₁ (°C)	24	--	
Ambient, t ₂ (°C)	24	--	
Test voltage (V).....	237,1		
Test input (W)	1,15 x 4000=4600		
Thermocouple locations:	NORMAL CONDITIONS	Limits:	
Supply cord	19K	50K	
thermostat	31K	95K	
Plastic box surface	19K	--	
wiring	47K	50K	
Metal surface	8K	--	

CLAUSE	TABLE 13.1: LEAKAGE CURRENT		P
13.2			
Heating appliances: 1.15 x rated input.....	1,15 x 4000 = 4600 W		
Motor-operated and combined appliances: 1.06 x rated voltage			
Leakage current between:	I (mA)	Max. allowed I (mA)	
L/N and accessible metal part	0,036	3	



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CLAUSE	TABLE 13.2: ELECTRIC STRENGTH		P
13.3			
Test voltage applied between:	Voltage (V)	Breakdown (Yes/No)	
B/W live part and accessible metal parts	1000	NO	
B/W live part and plastic enclosure	1000	NO	

CLAUSE	TABLE 16.1: LEAKAGE CURRENT		P
16.2			
Single phase appliances: 1.06 x rated voltage :	1,06x230=243,8 V		
Three phase appliances 1.06 x rated voltage divided by $\sqrt{3}$:.....:			
Leakage current between	I (mA)	Max. allowed I (mA)	
L/N and accessible metal part	0,036	3	

CLAUSE	TABLE 16.2: ELECTRIC STRENGTH		P
16.3			
Test voltage applied between:	Voltage (V)	Breakdown (Yes/No)	
B/W live part and accessible metal parts	1250	NO	
B/W live part and plastic enclosure	1250	NO	

CLAUSE	TABLE 19.1: ABNORMAL OPERATION, TEMPERATURE RISE MEASUREMENTS		P
19.101			
Ambient, t1 (°C) :	24	—	
Ambient, t2 (°C) :	24	—	
Test voltage (V) :	237,1	—	
Test power input (W) :	1,15 x 4000=4600	—	
Temperature rise dT of part/at:	dT (K)	Max. dT (K)	
Supply Cord	15	150	



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ΑΥΞΩΝ ΑΡ. ΕΛΕΓΧΟΥ:
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CLAUSE	TABLE 24.1: COMPONENTS				
24.1					
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
Heating element	KLAPAKIS S.A	----	4000W, 230V	--	CE
Thermostat	THERMOWATT	R-T-S 3	20A, 230V T:105		CE, ENEC03
Cord gland		PG135			CE

CLAUSE	TABLE 28.1: Threaded part torque test				P
28.1					
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)		
Terminal screw	3,87	III	0,5		
Enclosure screw	3,87	III	0,5		
Screws for electric connection	--	--	--		

CLAUSE	TABLE 29.1: Clearances						P
29.1							
	Overvoltage category...:		II				
		Type of insulation:					
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark	
330	0,5	--	--	--	--	--	
500	0,5	--	--	--	--	--	
800	0,5	--	--	--	--	--	
1500	1,0	--	--	--	--	--	
2500	2,0	4,2	--	--	--	P	
4000	3,5	--	--	--	--	--	
6000	6,0	--	--	--	--	--	
8000	8,5	--	--	--	--	--	
10000	11,5	--	--	--	--	--	



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ΑΥΘΩΝ ΑΡ. ΕΛΕΓΧΟΥ:
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CLAUSE 29.2	TABLE 29.2: CREEPAGE DISTANCES, BASIC, SUPPLEMENTARY AND REINFORCED INSULATION										P
Working voltage (V)	Creepage distance (mm) Pollution degree									Type of insulation	
	1	2			3						
		Material group			Material group						
		I	II	111 a III b	I	II	111 a III b	B*	S*	R*	Verdict
>125 and <250	0,56	1,25	1,8	2,5	3,2	3,6	4,0	2,5			P
Between poles: 37,4mm.											
>125 and <250	0,56	1,25	1,8	2,5	3,2	3,6	4,0	2,5			P
Pole and metal plate: 4,2mm											
>125 and <250	1,12	2,5	3,6	5,0	6,4	7,2	8,0			8,0	N/A
Pole and plastic cover ---.											

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

CLAUSE 29.2	TABLE 29.3: CREEPAGE DISTANCES, FUNCTIONAL INSULATION									N/A
Working voltage (V)	Creepage distance (mm) Pollution degree									
	1	2			3					
		Material group			Material group					
		I	II	111 a III b	I	II	111 a III b	Verdict / Remark		
>125 and <250	0,4	1,0	1,4	2,0	2,5	2,8	3,2	N/A		



ΔΕΛΤΙΟ ΣΤΟΙΧΕΙΩΝ ΤΑΥΤΟΤΗΤΑΣ ΚΑΙ ΣΥΝΘΕΣΕΩΣ ΔΟΚΙΜΙΟΥ
(TEST ITEM IDENTITY AND ASSEMBLY INFORMATION)

ΔΕΛΤΙΟ 202
(FORM 202)

ΣΕΛΑ: 1/2

ΑΥΞΩΝ ΑΡ.ΕΛΕΓΧΟΥ:

503809

(LAB RECORD S/N)

ΣΤΑ ΕΡΓΑΣΤΗΡΙΑ ΠΑΡΕΜΕΙΝΕ ΔΕΙΓΜΑ _____ ΤΟΥ ΔΟΚΙΜΙΟΥ _____

ΝΑΙ

ΟΧΙ

(SAMPLE OF THE TESTED ITEM REMAINS IN THE LAB _____) (YES) (NO)

Όψεις του δοκιμίου και της συσκευασίας του:



ΠΑΤΕΡΔΗΣ ΔΗΜΗΤΡΙΟΣ

BAUER

ΤΥΠΟΣ: VR 160

ΤΑΣΗΣ: 230VAC

ΙΣΧΥΣ: 4000W

ΟΝ.ΠΙΕΣΗ: 1MPa

ΧΩΡΗΤΙΚΟΤΗΤΑ : 150L

ΠΡΟΣΤΑΣΙΑ: IP24

ΕΛΛΗΝΙΚΗΣ ΚΑΤΑΣΚΕΥΗΣ



ΠΑΤΕΡΔΗΣ ΔΗΜΗΤΡΙΟΣ
 BAUER
 ΤΥΠΟΣ: VR 160
 ΤΑΣΗΣ: 230VAC
 ΙΣΧΥΣ: 4000W
 ΟΝ.ΠΙΕΣΗ: 1MPa
 ΧΩΡΗΤΙΚΟΤΗΤΑ : 150L
 ΠΡΟΣΤΑΣΙΑ: IP24
 ΕΛΛΗΝΙΚΗΣ ΚΑΤΑΣΚΕΥΗΣ

ΑΥΘΩΝ ΑΡ. ΕΛΕΓΧΟΥ:
(LAB RECORD S/N)

503809





ΕΡΓΑΣΤΗΡΙΑΚΑ ΣΤΟΙΧΕΙΑ

(LABORATORY DATA)

ΔΕΛΤΙΟ 203

(FORM 203)

ΣΕΛ: 1 / 1

ΑΥΞΩΝ ΑΡ. ΕΛΕΓΧΟΥ:

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(LAB RECORD S/N)

Στο παρόν Δελτίο επισυνάπτονται τα κάτωθι:

1. ΔΕΛΤΙΟ 300 ΜΕ Α/Α 468/20-07-2012 , ΣΕΛΙΔΕΣ: 3
2. ΟΔΗΓΙΕΣ ΕΓΚΑΤΑΣΤΑΣΗΣ , ΣΕΛΙΔΕΣ: 3

ΣΥΝΟΛΟ ΣΕΛΙΔΩΝ: 6



ΔΕΛΤΙΟ 300

ΑΡΙΘ. ΠΡΩΤΟΚΟΛΛΟΥ. & ΗΜΕΡΟΜΗΝΙΑ : 468/20-07-2012

ΣΕΛ. : 2/3

5. ΑΙΤΗΜΑ ΠΕΛΑΤΗ : Πραγματοποίηση δοκιμών στα κάτωθι αναφερόμενα δοκίμια για έλεγχο συμμόρφωσης σύμφωνα με τις απαιτήσεις: της Ευρωπαϊκής Οδηγίας LVD 2006/95/ΕΚ και σύμφωνα με τα εναρμονισμένα σε αυτήν πρότυπα EN 60335-1 & EN 60335-2-21

6. ΔΟΚΙΜΙΟ : BOILER

7. ΤΥΠΟΣ / ΜΟΝΤΕΛΟ : BAUER VR160

8. ΑΡΙΘΜΟΣ ΣΕΙΡΑΣ : Ως επί του Δοκιμίου

9. ΤΡΟΦΟΔΟΣΙΑ : Ως επί του Δοκιμίου

10. ΚΑΤΑΣΚΕΥΑΣΤΗΣ : ΔΗΜΗΤΡΙΟΣ ΙΩΑΝ. ΠΑΤΕΡΔΗΣ

11. ΕΜΠΟΡΙΚΟ ΣΗΜΑ ΚΑΤΑΤΕΘΕΝ :



ΔΕΛΤΙΟ 300

ΑΡΙΘ. ΠΡΩΤΟΚΟΛΛΟΥ.& ΗΜΕΡΟΜΗΝΙΑ : 468/20-07-2012

ΣΕΛ.: 3/3

12. ΧΩΡΑ/ΕΣ ΤΗΣ Ε.Υ. ΓΙΑ ΤΗΝ/ΤΙΣ ΟΠΟΙΑ/ΕΣ ΠΡΟΟΡΙΖΕΤΑΙ ΝΑ ΧΡΗΣΙΜΟΠΟΙΗΘΕΙ ΤΟ ΠΡΟΣ ΕΛΕΓΧΟ ΠΡΟΪΟΝ. : EU

13. ΕΠΙΤΡΕΠΟΝΤΑΙ ΔΟΚΙΜΕΣ ΠΟΥ ΜΠΟΡΟΥΝ ΝΑ ΠΡΟΚΑΛΕΣΟΥΝ ΒΛΑΒΕΣ ΣΤΑ ΔΟΚΙΜΙΑ; : ΝΑΙ ΟΧΙ

14. ΕΠΙΜΕΡΟΥΣ ΜΟΝΑΔΕΣ/ ΕΞΑΡΤΗΜΑΤΑ ΤΟΥ ΔΟΚΙΜΙΟΥ ΤΑ ΟΠΟΙΑ ΑΝ ΚΑΙ ΥΠΟΚΕΙΝΤΑΙ ΣΤΗΝ ΥΠΟΧΡΕΩΣΗ "CE" ΔΕΝ ΔΙΑΘΕΤΟΥΝ ΤΕΚΜΗΡΙΟ ΣΥΜΜΟΡΦΩΣΗΣ ΩΣ ΠΡΟΣ ΤΙΣ ΑΠΑΙΤΗΣΕΙΣ ΤΗΣ ΚΕΙΜΕΝΗΣ ΝΟΜΟΘΕΣΙΑΣ. : ΝΑΙ

15. ΔΗΛΩΣΗ ΠΕΛΑΤΗ ΟΤΙ ΕΧΕΙ ΛΑΒΕΙ ΓΝΩΣΗ ΤΟΥ ΔΕΛΤΙΟΥ ΕΝΗΜΕΡΩΣΗΣ ΠΕΛΑΤΗ. : ΕΧΟΥΜΕ ΛΑΒΕΙ ΓΝΩΣΗ ΤΟΥ ΔΕΛΤΙΟΥ 301 ΕΚΔΟΣΗ 27^η ΚΑΙ ΣΥΜΦΩΝΟΥΜΕ ΑΝΕΠΙΦΥΛΑΚΤΑ

16. ΠΑΡΑΤΗΡΗΣΕΙΣ ΠΕΛΑΤΗΣ :



Οδηγίες Εγκατάστασης

ΒΑΣΗ ΓΙΑ ΕΠΙΠΕΔΗ ΕΠΙΦΑΝΙΑ

Η ΒΑΣΗ

Η τελική μορφή της βάσης είναι αυτή που φαίνεται στο σχέδιο (1)

Η βάση αποτελείται από τα παρακάτω μέρη.

1. Πίσω κατακόρυφα ποδαρικά σε σχήμα Π με στράβωμα στο κάτω μέρος: τεμ 2.
2. Ελάσματα ελαφρός τσακισμένα κατά μήκος στην μέση για το χιαστή: τεμ 2.
3. Μπροστινά ποδαρικά σε σχήμα Π πάντα είναι μακρύτερα από τα κατακόρυφα: τεμ 2.
4. Κεφαλάρια σε σχήμα Υ για την επικαθίσει του καζανιού: τεμ 2.
5. Μπάρες σε σχήμα Π για την συγκράτηση των συλλεκτών: τεμ 2.

ΔΙΑΔΙΚΑΣΙΑ ΣΥΝΑΡΜΟΛΟΓΗΣΕΙΣ ΤΗΣ ΒΑΣΗΣ

1. Βιδώνουμε τα 2 κεφαλάρια στα κάθετα ποδαρικά.
2. Τα δυο ελάσματα για το χιαστή τα βιδώνουμε μεταξύ τους με μια βίδα στην μέση.
3. Βιδώνουμε το χιαστή στα δυο κάθετα, (τα κάθετα Π να είναι και τα δυο προς τα μέσα, ούτως ώστε η εγκοπή που έχουν τα δυο κεφαλάρια να είναι προς την ίδια πλευρά).σχέδιο (2)
4. Βιδώνουμε τα δυο μπροστινά ποδαρικά στην εγκοπή που έχουν τα δυο κεφαλάρια (όλα τα Π πρέπει να κοιτάνε μπρος τα μέσα).
5. Βιδώνουμε μια από της δυο μπάρες Π στο κάτω μέρος τον λοξών ποδαρικών.
6. Βιδώστε σφιχτά όλες της βίδες.
7. Τοποθετήστε τους συλλέκτες στην κάτω μπάρα της βάσης.
8. Αφού προσανατολίσετε την βάση(η συλλέκτες προς τον Νότο) βιδώστε την βάση στο δάπεδο, (εφόσον ευθυγραμμίστε τα πίσω ποδαρικά με τα μπροστινά), χρησιμοποιώντας τα ούπατ και τα στριφώνια που ηπάρχουν στην συσκευασία.
9. Βεβαιωθείτε πως όλες η βίδες είναι σφιγμένες και η βάση αλφαδιασμένη.
10. Σύστημα με δύο συλλέκτες, συνδέστε τους δύο συλλέκτες μεταξύ τους με τα Ταφ μηχανικής σύσφιξης που υπάρχουν στην συσκευασία.
11. τοποθετούμε το καζάνη στα κεφαλάρια της βάσης αφού προηγουμένως έχουμε βιδώσει τα Ρακώρ 3/4 (παρέχονται) στα αντίστοιχα μεσαία σωληνάκια με το λοξό σωληνάκι 3/4 να είναι προς τα μπροστά, προς την μεριά των συλλεκτών..
12. Βιδώνουμε το ένα άκρο της πλαστικής στο κάτω Ταφ τον συλλεκτών μετράμε μέχρι το σωληνάκι 3/4 στη μέση στο κάτω μέρος του καζανιού κόβουμε την σωλήνα και την βιδώνουμε με το Ρακώρ.

Το υπόλοιπο κομμάτι της σωλήνας το βιδώνουμε στο επάνω Ταφ τον συλλεκτών και στο αντίστοιχο λοξό σωληνάκι 3/4.13. βιδώνουμε το ασφαλιστικό (παρέχετε) στο σωληνάκι της παροχής 1/2 με τη μπλε ροζέτα, στο κάτω μέρος του καζανιού, δεν το σφίγγουμε πάρα πολύ, μετά το ασφαλιστικό βιδώνουμε έναν διακόπτη σφαιρικό, και στην συνέχεια την σωλήνα παροχής νερού. Κατόπιν συνδέστε την σωλήνα κατανάλωσης στο σωληνάκι 1/2 με την κόκκινη ροζέτα στο κάτω μέρος του καζανιού Προσοχή, όχι χάλκινες σωλήνες για την αποφυγή ηλεκτρολύσεων.

ΓΕΜΙΣΜΑ ΤΟΥ ΜΠΟΙΛΕΡ ΜΕ ΝΕΡΟ

1. Ανοίξτε και αφήστε ανοιχτή μια οποιαδήποτε βρύση του ζεστού νερού στο σπίτι.
2. Ανοίξτε τον σφαιρικό διακόπτη παροχής και αφήστε το Κοζάνη να γεμίσει με νερό.
3. Αφού γεμίσει, κλείστε τη βρύση που αφήσατε ανοιχτή.

ΓΕΜΙΣΜΑ ΤΟΥ ΚΥΚΛΩΜΑΤΟΣ



Μέγιστη πίεση εισόδου 1MPa

1. Ετοιμάστε το μίγμα της προπυλαινογλυκόλης με το νερό σε ένα κάδο.
2. Ως μέσο μεταφοράς θερμότητας χρησιμοποιείται προπυλαινογλυκόλη (**μη τοξική,**)
3. Η προπυλαινογλυκόλη πρέπει να αναμιγνύεται πολύ καλά με νερό, χύνοντας σε ένα κάδο την προπυλαινογλυκόλη και το νερό ανακατεύουμε πολύ καλά.
4. Αν δεν ανακατευτεί πολύ καλά ως βαρύτερο υλικό θα επικαθίσει στο κάτω μέρος των συλλεκτών με αποτέλεσμα ο ηλιακός να μην λειτουργήσει.
5. Το γέμισμα του κυκλώματος να γίνεται πάντα με γεμάτο το καζάνι.
6. Γεμίστε το κύκλωμα από το σωληνάκι 1/2 που βρίσκετε στο πάνω μέρος του καζανιού.
7. Το γέμισμα θεωρείτε τελειωμένο όταν το σωληνάκι υπερχειλίζει και η στάθμη μένη σταθερά γεμάτο.
8. Βιδώστε τώρα το ασφαλιστικό.
9. Ελέγξτε προσεκτικά της συνδέσεις για τυχών διαρροές.
10. Το σύστημα είναι έτυμο και ξεκίνησε να λειτουργοί αυτόματα.

ΣΥΝΔΕΣΜΟΛΟΓΙΑ ΗΛΕΚΤΡΙΚΗΣ ΑΝΤΙΣΤΑΣΗΣ. (Οδηγίες αντικατάστασης καλωδίου)

ΠΡΟΣΟΧΗ, κλείστε το ρεύμα από τον πίνακα.

1. Αφαιρέστε το καπάκι που καλύπτει την αντίσταση ξεβιδώνοντας της βίδες.
2. Η σύνδεση του θερμοστάτη είναι ήδη εκτελεσμένη από τον κατασκευαστή.
3. Περάστε το καλώδιο τροφοδοσίας μέσα στην οπή του στιπλιοθλιπτη που βρίσκεται στο καπάκι της αντίστασης.
4. Συνδέστε την φάση (καφέ η μαύρο καλώδιο) στον θερμοστάτη με την ένδειξη L.
5. Συνδέστε τον ουδέτερο (μπλε καλώδιο) στον θερμοστάτη με την ένδειξη N.
6. Συνδέστε την γείωση (δίχρωμο καλώδιο) στην αντίστοιχη βίδα στη φλάντζα της αντίστασης με την ένδειξη της γείωσης.
7. Ο θερμοστάτης είναι ρυθμισμένος περίπου στους 60, μπορεί να ρυθμιστή σε διαφορετική θερμοκρασία. Μην ρυθμίζεται τον θερμοστάτη πάνω από τους 75 βαθμούς.
8. Βιδώστε το καπάκι της αντίστασης.

Μην ανάβεται το ρεύμα όταν το καζάνι είναι άδειο.

ΑΝΤΙΚΑΤΑΣΤΑΣΗ ΤΗΣ ΡΑΒΔΟΥ ΜΑΓΝΗΣΙΟΥ.

Όλοι οι ηλιακοί θερμοσίφωνες έχουν τοποθετημένη μια ράβδο μαγνησίου μέσα στο καζάνι (στην αντίσταση),για την αποφυγή ηλεκτρολύσεων.

1. Κλίστε τον διακόπτη του ρεύματος και αδειάστε το νερό από το καζάνι.
2. Ξεβιδώστε το καπάκι της αντίστασης.
3. Αποσυνδέστε τα καλώδια.
4. Αφαιρέστε τον θερμοστάτη τραβώντας τον με προσοχή.
5. Ξεβιδώστε της 8 βίδες που συγκρατούν την αντίσταση.
6. Ξεβιδώστε την ράβδο μαγνησίου (φθαρμένη) που είναι στην αντίσταση.
7. Τοποθετήστε την καινούρια ράβδο σφίγγοντας την πολλή καλά.
8. Επανατοποθετήστε την αντίσταση στον λαιμό του καζανιού με καινούρια φλάντζα (λάστιχο)

ΠΡΟΣΟΧΗ

Τηρείστε την προϋπάρχουσα θέση της αντίστασης.
Ξανά τοποθετείστε τον θερμοστάτη και τα καλώδια όπως τα αφαιρέσατε.
Γεμίστε το καζάνι με νερό.



ΠΡΟΣΟΧΗ

Η ΡΑΒΔΟΣ ΜΑΓΝΗΣΙΟΥ ΠΡΕΠΕΙ ΝΑ ΑΝΤΙΚΑΘΙΣΤΑΤΑΙ ΑΠΑΡΑΙΤΗΤΑ ΚΑΘΕ ΔΥΟ ΧΡΟΝΙΑ.

ΠΡΟΣΟΧΗ

Η ΣΥΣΚΕΥΗ ΔΕΝ ΠΡΕΠΕΙ ΝΑ ΧΡΗΣΙΜΟΠΟΙΕΙΤΑΙ ΑΠΟ ΠΑΙΔΙΑ Η ΠΡΟΣΩΠΑ ΜΕ ΜΕΙΩΜΕΝΗ ΦΥΣΙΚΕΣ, ΑΙΣΘΗΤΗΡΙΑΚΕΣ Η ΝΟΗΤΙΚΕΣ ΙΚΑΝΟΤΗΤΕΣ Η ΑΠΟ ΑΝΘΡΩΠΟΥΣ ΜΕ ΕΛΛΕΙΨΗ ΓΝΩΣΕΩΝ ΚΑΙ ΕΜΠΕΙΡΙΑΣ, ΕΚΤΟΣ ΚΑΙ ΑΝ ΕΠΙΒΛΕΠΟΝΤΑΙ.

ΤΑ ΠΑΙΔΙΑ ΠΡΕΠΕΙ ΝΑ ΕΠΙΤΗΡΟΥΝΤΑΙ ΩΣΤΕ ΝΑ ΜΗΝ ΠΑΙΖΟΥΝ ΜΕ ΤΗΝ ΣΥΣΚΕΥΗ ΝΕΡΟ ΜΠΟΡΕΙ ΝΑ ΤΡΕΞΕΙ ΑΠΟ ΤΗΝ ΒΑΛΒΙΔΑ ΕΚΤΟΝΩΣΗΣ.

Η ΒΑΛΒΙΔΑ ΕΚΤΟΝΩΣΗΣ ΠΡΕΠΕΙ ΝΑ ΑΦΗΝΕΤΑΙ ΑΝΟΙΧΤΗ.

Η ΒΑΛΒΙΔΑ ΕΚΤΟΝΩΣΗΣ ΠΡΕΠΕΙ ΝΑ ΕΝΕΡΓΟΠΟΙΕΙΤΑΙ ΣΥΧΝΑ ΕΤΣΙ ΩΣΤΕ ΝΑ ΑΦΑΙΡΟΥΝΤΑΙ ΑΣΒΕΣΤΟΥΧΑ ΙΖΗΜΑΤΑ ΚΑΙ ΝΑ ΕΛΕΓΧΕΤΑΙ ΟΤΙ ΔΕΝ ΕΙΝΑΙ ΒΟΥΛΩΜΕΝΗ.

ΜΕΣΑ ΑΠΟΣΥΝΔΕΣΗΣ ΠΡΕΠΕΙ ΝΑ ΕΝΣΩΜΑΤΩΝΟΝΤΑΙ ΣΤΗΝ ΣΤΑΘΕΡΗ ΚΑΛΩΔΙΩΣΗ ΣΥΜΦΩΝΑ ΜΕ ΤΟΥΣ ΑΝΤΙΣΤΟΙΧΟΥΣ ΚΑΝΟΝΕΣ

ΑΣΦΑΛΙΣΤΙΚΗ ΒΑΛΒΙΔΑ ΜΕΜΒΡΑΝΗΣ: ΕΒΕΜ ΤΥΠΟΥ 03, 10BAR

ΤΟ ΑΔΕΙΑΣΜΑ ΤΟΥ ΜΠΟΙΛΕΡ ΠΡΕΠΕΙ ΝΑ ΓΙΝΕΤΑΙ ΑΠΟ ΕΞΕΙΔΙΚΕΥΜΕΝΟ ΤΕΧΝΙΚΟ.

