



Test Report issued under the responsibility of:



TEST REPORT
IEC 60335-2-53
Part 1: Safety of household and similar electrical appliances
Part 2: Particular requirements for sauna heating appliances

Report Number: 265022-1
Date of issue.....: 21.03.2013
Total number of pages: 94

CB Testing Laboratory.....: SGS Fimko Ltd
Address: P.O. Box 30, FIN-00211 HELSINKI, FINLAND

Applicant's name.....: Helo Oy
Address: Pohjoinen Pallbontie 1, 10900 HANKO, FINLAND

Test specification:

Standard: IEC 60335-2-53:2011 (Fourth edition) in conjunction with
IEC 60335-1:2010 (Fifth edition), and
IEC 62233:2005 (First edition)
Test procedure: CB Scheme
Non-standard test method.....: N/A

Test Report Form No......: IEC60335_2_53C
Test Report Form(s) Originator: VDE
Master TRF: Dated 2012-03

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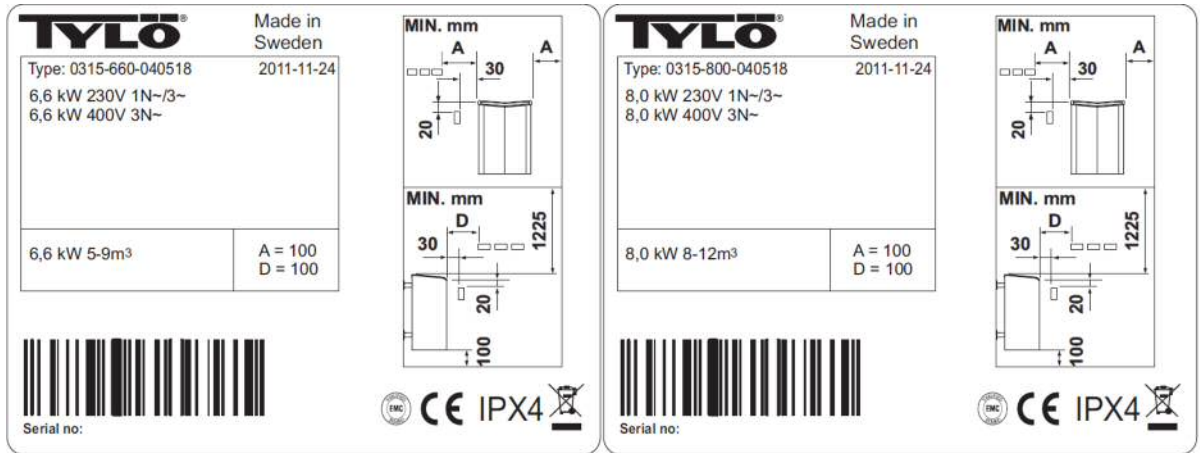
This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

Test item description	Electric sauna heating appliance
Trade Mark	Helo, Tylö
Manufacturer	Helo Oy, Pohjoinen Pallbontie 1, 10900 HANKO, FINLAND
Model/Type reference.....	0315-xx-040518 (Helo) 0315-xxx-040518 (Tylö) 0315-xx-1718 (Helo) 0315-xxx-1718 (Tylö) Detailed model/type info, see page 10.
Ratings	230V - 240V 1N~ / 2~, 400V-415V 2N~ , IPX4, 4,4kW 230V - 240V 1N~/ 2~, 230V 3~, 400V-415V 3N~ , IPX4, 6,6kW 230V - 240V 1N~/ 2~, 230V 3~, 400V-415V 3N~ , IPX4, 8kW

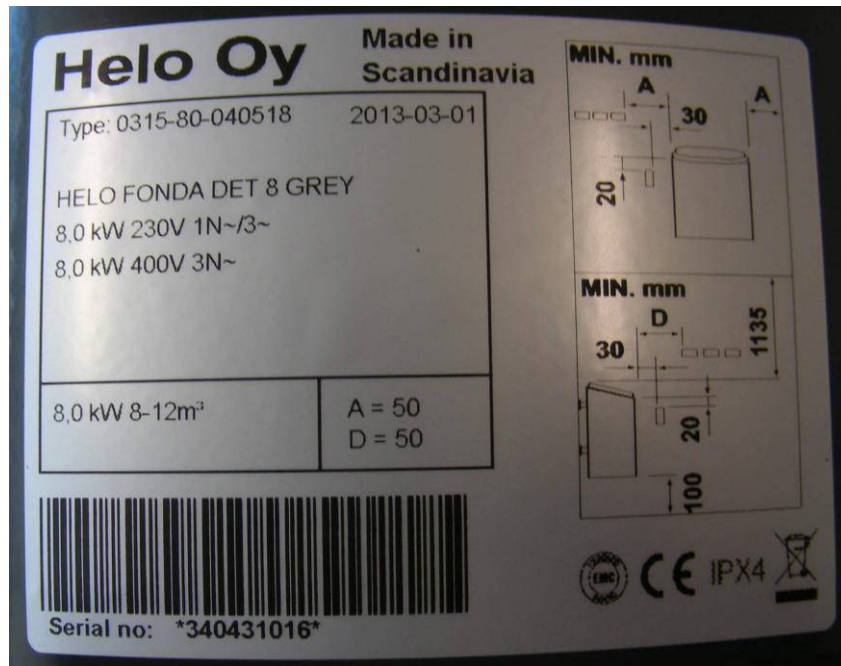
Testing procedure and testing location:		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	SGS Fimko Ltd
Testing location/ address.....:		Särkiniementie 3, 00210 HELSINKI, FINLAND
<input type="checkbox"/>	Associated CB Laboratory:	
Testing location/ address.....:		
Tested by (name + signature)		Kari Koskenmäki Testing Engineer <i>K. Koskenmäki</i>
Approved by (name + signature)		Timo Myllykangas Senior Testing Engineer <i>T. Myllykangas</i>
<input type="checkbox"/>	Testing procedure: TMP	
Testing location/ address.....:		
Tested by (name + signature)		
Approved by (name + signature)		
<input type="checkbox"/>	Testing procedure: WMT	
Testing location/ address.....:		
Tested by (name + signature)		
Witnessed by (name + signature)		
Approved by (name + signature)		
<input type="checkbox"/>	Testing procedure: SMT	
Testing location/ address.....:		
Tested by (name + signature)		
Approved by (name + signature)		
Supervised by (name + signature)		
<input type="checkbox"/>	Testing procedure: RMT	
Testing location/ address.....:		
Tested by (name + signature)		
Approved by (name + signature)		
Supervised by (name + signature)		

<p>List of Attachments (including a total number of pages in each attachment):</p> <p>Annex 1: EU group differences and national differences (EN60335-1), 9 pages.</p> <p>EN60335-2-53: There are no special national conditions causing a deviation from this European Standard, other than those listed in Annex ZA to EN 60335-1. There are no national deviations from this European Standard, other than those listed in Annex ZB to EN 60335-1.</p>	
<p>Summary of testing:</p> <p>Full testing was carried out on model 0315-80-040518 (8kW) with T2 and partially testing was carried out on models 0315-66-040518 (6,6kW) with T2, 0315-44-040518 (4,4kW) with T2, 0315-80-040518 (8kW) with CC50 and 0315-80-1718 (8kW) with timer. The control panel (T2 or CC50) was outside of sauna room.</p> <p>The product has been tested according to standards:</p> <ul style="list-style-type: none"> - IEC 60335-2-53:2011 - IEC 60335-1:2010 - EN 60335-2-53:2011 - EN 60335-1:2012 - EN 62233:2008 <p>Products complies with the requirements of the standards.</p>	
<p>Tests performed (name of test and test clause):</p>	<p>Testing location:</p>
<p>Summary of compliance with National Differences</p> <p>Not checked</p>	

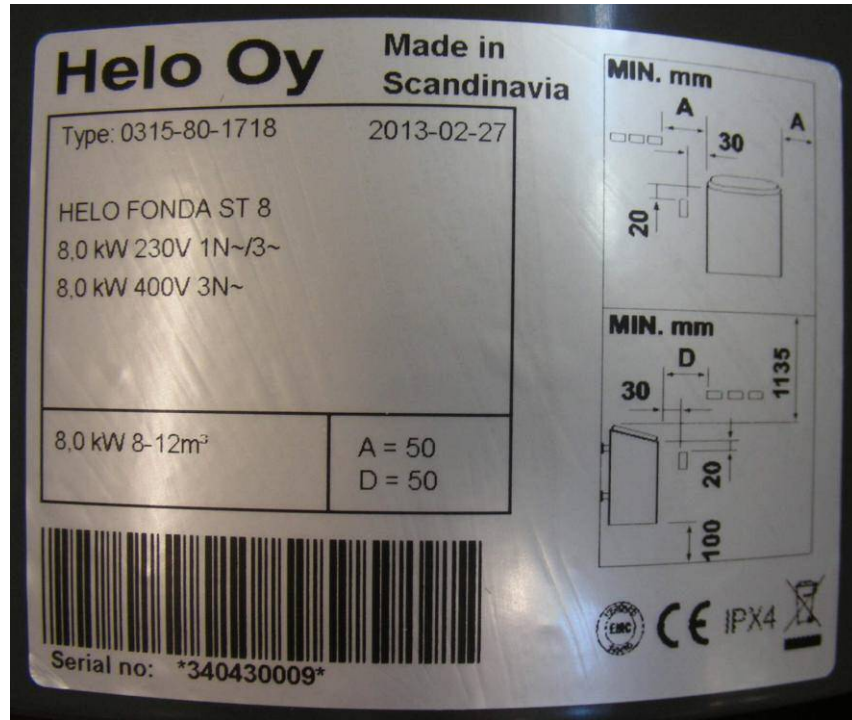
Copy of marking plate:



Marking label of 0315-xxx-040518 series



Marking label of 0315-xx-040518 series. Labels are identical except type and rated power input.

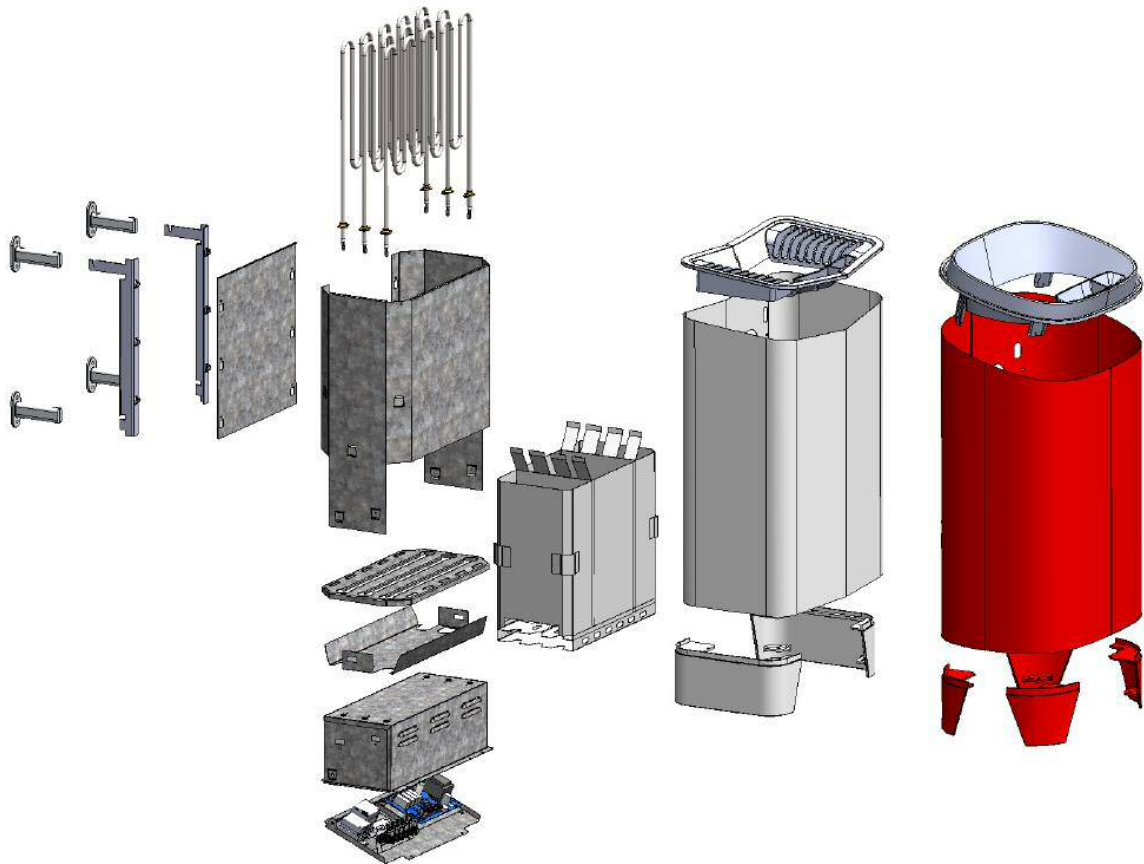


Marking label of 0315-xx-1718 series and 0315-xxx-1718 series. Labels are identical except type, trade mark and rated power input.



I-0

Photographs:



Tylö model

Helo model

Test item particulars	
Supply connection	fixed connection
Nature of supply	a.c.
Class of protection against electric shock.....	I
Degree of protection against moisture.....	IPX4
Type of cord attachment	-
Sauna heater	<input checked="" type="checkbox"/>
for public saunas	<input type="checkbox"/>
for adjacent installation	<input type="checkbox"/>
for wall mounting	<input type="checkbox"/>
for floor standing.....	<input checked="" type="checkbox"/>
of thermal storage type	<input type="checkbox"/>
rock container detachable.....	<input type="checkbox"/>
Sauna heating appliance.....	<input checked="" type="checkbox"/>
for public saunas	<input type="checkbox"/>
Prefabricated sauna	<input type="checkbox"/>
Humidifier unit.....	<input type="checkbox"/>
Ventilating fan operates independently of heating element:	<input type="checkbox"/>
Luminaires	<input type="checkbox"/>
Switch	<input checked="" type="checkbox"/>
Thermostat	<input checked="" type="checkbox"/>
Thermostat without an OFF position.....	<input type="checkbox"/>
Non-self-resetting thermal cut-out.....	<input checked="" type="checkbox"/>
Contact opening > 3 mm in each pole	<input checked="" type="checkbox"/>
Thermal link	<input type="checkbox"/>
Electronic circuit	<input checked="" type="checkbox"/>
with software class	A
Protective electronic circuit.....	<input type="checkbox"/>
with software class	No
Programmer, timer, switching devices.....	<input checked="" type="checkbox"/>
Remote operation.....	<input type="checkbox"/>
Stand-by mode	<input type="checkbox"/>
Appliances - with supply cord	<input type="checkbox"/>
- with supply cord fitted with a plug	<input type="checkbox"/>
Motor with capacitor in auxiliary winding.....	<input type="checkbox"/>
Series motors incorporated	<input type="checkbox"/>
Detachable part with earth connector	<input type="checkbox"/>
Mercury switch provided.....	<input type="checkbox"/>
Appliances intended to be operated unattended	<input type="checkbox"/>
Protection against effects of covering.....	<input type="checkbox"/>
Used in vehicles or on board ships or aircraft, additional requirements may be necessary	<input type="checkbox"/>
.....	<input type="checkbox"/>

Possible test case verdicts:

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

Testing

Date of receipt of test item: 13.10.-11,28.11.-11, 14.2.-12, 5.3.-12,17.8.-12
 Date (s) of performance of tests: 19.10.2011-20.9.2012

General remarks:

The test results presented in this report relate only to the object tested.
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 "(see Enclosure #)" refers to additional information appended to the report.
 "(see appended table)" refers to a table appended to the report.

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

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. This document cannot be reproduced except in full, without prior approval of the Company.

Manufacturer's Declaration per sub-clause 6.2.5 of IECEE 02:

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

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

Name and address of factory (ies).....:

Tylö Ab Svarvaregatan 6, SE-30250, Halmstad

General product information:

Sauna heating appliance for domestic use.

Models with control panel are electrically and mechanically (except Tylö models stone compartment and covering) similar, only heating elements varies. See page 7.

Control panel T2 or CC50 located outside sauna room. Supply voltage of those is 5Vdc.

Models with mechanical timer are electrically and mechanically (except Tylö models stone compartment and covering) similar, only heating elements varies.

Trade mark	Type	Rated power	Supply	Note
Helo	0315-44-040518	4,4kW	230-240V 1N~/2~ 400-415V 2N~	This type have electrical control panel.
Helo	0315-66-040518	6,6kW	230-240V 1N~/2~ 400-415V 3N~ 230V 3~	This type have electrical control panel.
Helo	0315-80-040518	8,0kW	230-240V 1N~/2~ 400-415V 3N~ 230V 3~	This type have electrical control panel.
Tylö	0315-660-040518	6,6kW	230V 1N~/3~ 400V 3N~	This type have electrical control panel.
Tylö	0315-800-040518	8,0kW	230V 1N~/3~ 400V 3N~	This type have electrical control panel.
Helo	0315-44-1718	4,4kW	230-240V 1N~/2~ 400-415V 3N~	This type have mechanical timer.
Helo	0315-66-1718	6,6kW	230-240V 1N~/2~ 400-415V 3N~ 230V 3~	This type have mechanical timer.
Helo	0315-80-1718	8,0kW	230-240V 1N~/2~ 400-415V 3N~ 230V 3~	This type have mechanical timer.
Tylö	0315-660-1718	6,6kW	230-240V 1N~/2~ 400-415V 3N~ 230V 3~	This type have mechanical timer.
Tylö	0315-800-1718	8,0kW	230-240V 1N~/2~ 400-415V 3N~ 230V 3~	This type have mechanical timer.

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
5	GENERAL CONDITIONS FOR THE TESTS		P
	Tests performed according to clause 5, e.g. nature of supply, sequence of testing, etc.		P
5.2	Appliance with more than one sauna heater or more than one infrared emitter are tested together.(IEC 60335-2-53)		N/A
5.3	Appliances where sauna and humidifying operation is possible, the tests for sauna operation are made first (IEC 60335-2-53)		N/A
	followed immediately by the tests for humidifying. (IEC 60335-2-53)		N/A
	Thermostats and humidity controls are initially set to their maximum setting. (IEC 60335-2-53)		P
5.101	Ventilating fan which operates independently of the heating element, the tests are carried out with or (IEC 60335-2-53)		N/A
	without the fan in operation, whichever is more unfavourable. (IEC 60335-2-53)		P
5.102	Combination of sauna-heating appliances and infrared emitting units is to be tested under the most unfavourable conditions. (IEC 60335-2-53)		N/A
6	CLASSIFICATION		P
6.1	Protection against electric shock: Class I, II, III : (IEC 60335-2-53)	Class I	P
6.2	Protection against harmful ingress of water		P
	Appliances, controls, protective devices and control boards intended to be mounted inside a sauna room are at least IPX4. (IEC 60335-2-53)	IPX4	P
	Electrical components of prefabricated saunas are at least IPX4. (IEC 60335-2-53)		N/A
	Infrared emitters, controls and protective devices intended to be mounted inside a cabin are at least IPX2. (IEC 60335-2-53)		N/A
	Infrared emitters, controls and protective devices intended to be mounted inside a cabin in combination with a sauna-heating appliance are at least IPX4. (IEC 60335-2-53)		N/A
7	MARKING AND INSTRUCTIONS		P
7.1	Rated voltage or voltage range (V).....:	230-240V, 400-415V	P
	Symbol for nature of supply, or.....:	~	P
	Rated frequency (Hz)		N/A
	Rated power input (W), or	4,4kW 6,6kW 8kW	P
	Rated current (A)		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	Manufacturer's or responsible vendor's name, trademark or identification mark	Helo, Tylö	P
	Model or type reference.....	See page 10.	P
	Symbol IEC 60417-5172, for class II appliances		N/A
	IP number, other than IPX0.....	IPX4	P
	Symbol IEC 60417-5180, for class III appliances, unless		N/A
	the appliance is operated by batteries only		N/A
	Symbol IEC 60417-5036, for the enclosure of electrically-operated water valves in external hose-sets for connection of an appliance to the water mains, if the working voltage exceeds extra-low voltage		N/A
	Sauna heaters and infrared emitters are marked with symbol ISO 7000-0790 (2004-01) or with the substance of the following:		N/A
	Read operators manual. (IEC 60335-2-53)		P
	- the minimum distance between the top of the heater and the ceiling of the sauna room; (IEC 60335-2-53)		P
	- the minimum distance between the bottom of the heater and the floor of the sauna room, unless (IEC 60335-2-53)		P
	- distance is determined by the construction of the heater; (IEC 60335-2-53)		N/A
	- the minimum horizontal distance between the heater and any combustible material of the sauna room, including a protective rail, unless (IEC 60335-2-53)		P
	- these distances are determined by the construction of the heater; (IEC 60335-2-53)		N/A
	- the maximum depth and minimum width of the recess for sauna heaters intended to be installed in a recess. (IEC 60335-2-53)		N/A
	Sauna heaters and infrared emitters are marked with symbol IEC 60417-5641 (2002-10) combined with the prohibition sign of ISO 3864-1, except for colours, or with the substance of the following:		N/A
	WARNING: Do not cover. (IEC 60335-2-53)		P
	Inside wall of prefabricated saunas or prefabricated infrared cabins are marked near the sauna heater or infrared emitter with the substance of the following		N/A
	WARNING: Covering the heater or infrared emitter causes fire risk (IEC 60335-2-53)		N/A
	Sauna heaters are marked with the substance of the following: (IEC 60335-2-53)		P
	WARNING: An inadequately filled rock container causes fire risk (IEC 60335-2-53)		P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	NOTE 101 This warning is not required if the sauna heater complies with Clause 11 without rocks in the container. (IEC 60335-2-53)		N/A
7.2	Warning for stationary appliances for multiple supply		N/A
	Warning placed in vicinity of terminal cover		N/A
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen	230V-240V, 400V-415V	P
	Different rated values marked with the values separated by an oblique stroke		N/A
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible		N/A
	Requirement met if frequent changes are not required and the rated voltage to which the appliance is to be adjusted is determined from a wiring diagram		N/A
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless		N/A
	the power input is related to the arithmetic mean value of the rated voltage range		P
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N/A
7.6	Correct symbols used		P
	Symbol for nature of supply placed next to rated voltage		P
	Symbol for class II appliances placed unlikely to be confused with other marking		N/A
	Units of physical quantities and their symbols according to international standardized system		P
	- Do not cover (IEC 60335-2-53)		P
	NOTE 101 Symbol incorporates symbol IEC 60417-5641(2002-10) combined with the prohibition sign of ISO 3864-1, except for colours. (IEC 60335-2-53)		N/A
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply, unless		P
	correct mode of connection is obvious		N/A
	Control boards connection diagram gives details of electrical connections for controls and protective devices (IEC 60335-2-53)		P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	NOTE 101 The connection diagram may also show connections, other than those required, provided the additional information does not cause confusion. (IEC 60335-2-53)		P
	NOTE 102 If more than one control board is provided, the connection diagram may be divided so that each control board has its own connection diagram and a reference to the other control boards. (IEC 60335-2-53)		N/A
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows		P
	- marking of terminals exclusively for the neutral conductor (letter N)		P
	- marking of protective earthing terminals (symbol IEC 60417-5019)		P
	- marking not placed on removable parts		P
7.9	Marking or placing of switches which may cause a hazard		P
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means	0 I	P
	This applies also to switches which are part of a control		P
	If figures are used, the off position indicated by the figure 0		P
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		P
7.11	Indication for direction of adjustment of controls		P
7.12	Instructions for safe use provided		P
	Details concerning precautions during user maintenance		P
	The instructions state that		P
	- the appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction		P
	- children being supervised not to play with the appliance		P
	For a part of class III construction supplied from a detachable power supply unit, the instructions state that the appliance is only to be used with the unit provided		N/A
	Instructions for class III appliances state that it must only be supplied at SELV, unless		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	it is a battery-operated appliance, the battery being charged outside the appliance		N/A
	Instructions for sauna heaters state how to fill the rock container. (IEC 60335-2-53)		P
	Instructions for appliances for public saunas that do not have a timer state that the appliance is to be continuously attended. (IEC 60335-2-53)		N/A
	Instructions for other sauna heating appliances and infrared emitting units state that the sauna room or cabin is to be inspected before either restarting the timer or by switching on the appliance by a separate remote-control system. (IEC 60335-2-53)		P
	Unless the sauna heater for public saunas complies with the test of 19.101, the instructions for sauna heaters for public saunas and sauna heating appliances and infrared emitting units for public saunas that switched on by a separate remote-control system state that the sauna room or cabin is to be inspected before setting the appliance to a standby mode for a delayed start. (IEC 60335-2-53)		N/A
	Instructions for prefabricated infrared cabins and the instructions for prefabricated saunas incorporating infrared emitters state that cleaning with steam cleaners, high pressure cleaners and spraying water is not allowed. (IEC 60335-2-53)		N/A
	If the appliances are marked with the symbol IEC 60417-5641 (2002-10) combined with the prohibition sign of ISO 3864-1 except for colours, their meaning is explained. (IEC 60335-2-53)		N/A
	Instructions for infrared emitters include the substance of the following:: (IEC 60335-2-53)		N/A
	- it is recommended that the infrared cabin is not used within 24 h after UV radiation exposure from artificial sources or sun-bathing; (IEC 60335-2-53)		N/A
	- individuals who may be at risk from hyperthermia, such as individuals suffering from cardiovascular disease, should seek medical advice before use of infrared warming cabins; (IEC 60335-2-53)		N/A
	- when persistent erythema (reddening of the skin lasting more than a day) and netlike colour changes persist after regular exposure to infrared radiation, exposure should not be repeated and medical advice should be sought to prevent development of erythema ab igne; (IEC 60335-2-53)		N/A
	- if you are a person with compromised heat pain sensation or under the influence of alcohol or tranquilizers you should not use infrared warming cabins. (IEC 60335-2-53)		N/A
7.12.1	Sufficient details for installation supplied		P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	For an appliance intended to be permanently connected to the water mains and not connected by a hose-set, this is stated		N/A
	Installation instructions of sauna heaters intended for a recessed installation give details of the proper installation in a recessed area and state that means that prevent combustible objects being placed on the top of the heater have to be installed in the air channel above the heater. (IEC 60335-2-53)		N/A
	NOTE 101 For example, an air outlet grill or guard spaced a minimum 40 mm from any heated surfaces beneath, whose dimensions of the opening do not exceed 53 mm × 20 mm or 126 mm × 12 mm, is considered to be a suitable means. (IEC 60335-2-53)		N/A
	Installation instructions for prefabricated saunas and prefabricated infrared cabins give details on how to assemble the appliance. (IEC 60335-2-53)		N/A
	Installation instructions for sauna heating appliances and infrared emitting units include the following details: (IEC 60335-2-53):		P
	- minimum and maximum volume, in cubic metres, of the sauna room or cabin in which the sauna heater or infrared emitter is intended to be installed; (IEC 60335-2-53)		P
	- minimum height of the sauna room or cabin; (IEC 60335-2-53)		P
	- materials to be used for the walls and the ceiling of the sauna room or cabin; (IEC 60335-2-53)		P
	- arrangement of the separate protective rail, if applicable; (IEC 60335-2-53)		N/A
	- means of ventilating the sauna room or cabin; (IEC 60335-2-53)		P
	- the installation of adjacent sauna heaters or infrared emitters or a statement that the sauna heater or infrared emitter must be used alone; (IEC 60335-2-53)		P
	- the connection and position of controls in the sauna room or cabin; (IEC 60335-2-53)		P
	- that thermostat sensors have to be installed so that they are not influenced by incoming air; (IEC 60335-2-53)		P
	- the installation of the control board, including a statement that the control board must be mounted outside the sauna room or cabin (not necessary if the control board is at least IPX4); (IEC 60335-2-53)		N/A
	- the type of cable for supplying of the sauna heater or infrared emitter. (IEC 60335-2-53)	H07RN-F	P
	Instructions for infrared emitters state: (IEC 60335-2-53):		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	- the minimum distance between the top of an infrared emitter and the ceiling of the cabin; (IEC 60335-2-53)		N/A
	- the minimum distance between the bottom of an infrared emitter and the floor of the cabin, unless this distance is determined by the construction of the infrared emitter; (IEC 60335-2-53)		N/A
	- the minimum horizontal distance between an infrared emitter and any combustible material of the cabin, including a protective rail, unless these distances are determined by the construction of the infrared emitter; (IEC 60335-2-53)		N/A
	- the minimum distance between adjacent infrared emitters (IEC 60335-2-53)		N/A
	Installation instructions for appliances for public saunas or infrared cabins that do not have a timer state that a pilot lamp showing that the heater or infrared emitter is switched on is to be installed in the attendant's room. (IEC 60335-2-53)		N/A
	Unless sauna heater for public saunas complies with clause 19.101, (IEC 60335-2-53)		N/A
	the installation instructions for sauna heating appliances or infrared emitting units that incorporate a stand-by mode setting for remote operation state that the door of the sauna room or cabin is fitted with an interlock such that the stand-by mode setting for remote operation is disabled if the sauna door or cabin door is opened when the stand-by mode setting for remote operation is set. (IEC 60335-2-53)		N/A
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules	Switch + contactor	N/A
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions state that the fixed wiring must be protected		N/A
7.12.4	Instructions for built-in appliances		N/A
	- dimensions of space		N/A
	- dimensions and position of supporting and fixing		N/A
	- minimum distances between parts and surrounding structure		N/A
	- minimum dimensions of ventilating openings and arrangement		N/A
	- connection to supply mains and interconnection of separate components		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless		N/A
	a switch complying with 24.3		N/A
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N/A
	Replacement cord instructions, type Y attachment		N/A
	Replacement cord instructions, type Z attachment		N/A
7.12.6	Caution in the instructions for appliances incorporating a non-self-resetting thermal cut-out that is reset by disconnection of the supply mains, if this cut-out is required to comply with the standard		N/A
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed		P
7.12.8	Instructions for appliances connected to the water mains.....:		N/A
	- max. inlet water pressure (Pa) :		N/A
	- min. inlet water pressure, if necessary (Pa) :		N/A
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		N/A
7.13	Instructions and other texts in an official language		P
7.14	Marking clearly legible and durable, rubbing test as specified		P
	Marking of distances to combustible material of the sauna room or cabin is clearly visible from the outside of the sauna heater or infrared emitter without removing covers. (IEC 60335-2-53)		P
	Warnings concerning fire risks are visible after the sauna heater or infrared emitter is installed and (IEC 60335-2-53):		P
	lettering have a height of at least (IEC 60335-2-53):		P
	- 5 mm, for headings; (IEC 60335-2-53)		P
	- 3 mm, for other lettering.(IEC 60335-2-53)		P
	NOTE 101 These warnings may be placed on a recessed low part of the sauna heater or infrared emitter. (IEC 60335-2-53)		P
7.15	Markings on a main part		P
	Marking clearly discernible from the outside, if necessary after removal of a cover		P
	For portable appliances, cover can be removed or opened without a tool		N/A
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		P
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading		P
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		N/A
7.101	Appliance is marked with instruction to replace infrared emitters with the exact same manufacturer and model of emitter. (IEC 60335-2-53)		N/A
8	PROTECTION AGAINST ACCESS TO LIVE PARTS		P
8.1	Adequate protection against accidental contact with live parts		P
8.1.1	Requirement applies for all positions, detachable parts removed		P
	Lamps behind a detachable cover not removed, if conditions met		N/A
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap		N/A
	Use of test probe B of IEC 61032, with a force not exceeding 1 N: no contact with live parts		P
8.1.2	Use of test probe 13 of IEC 61032, with a force not exceeding 1 N, through openings in class 0 appliances and class II appliances/constructions: no contact with live parts		N/A
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		P
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032, with a force not exceeding 1 N: no contact with live parts of visible glowing heating elements		N/A
8.1.4	Accessible part not considered live if		N/A
	- safety extra-low a.c. voltage: peak value not exceeding 42,4 V		N/A
	- safety extra-low d.c. voltage: not exceeding 42,4 V		N/A
	- or separated from live parts by protective impedance		N/A
	If protective impedance: d.c. current not exceeding 2 mA, and		N/A
	a.c. peak value not exceeding 0,7 mA		N/A
	- for peak values over 42,4 V up to and including 450 V, capacitance not exceeding 0,1 µF		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μ C		N/A
	- for peak values over 15 kV, the energy in the discharge not exceeding 350 mJ		N/A
8.1.5	Live parts protected at least by basic insulation before installation or assembly		P
	- built-in appliances		N/A
	- fixed appliances		P
	- appliances delivered in separate units		N/A
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only		N/A
	Only possible to touch parts separated from live parts by double or reinforced insulation		N/A
10	POWER INPUT AND CURRENT		P
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1 ...:	(see appended table)	P
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N/A
	the rated power input is related to the arithmetic mean value		P
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2	(see appended table)	N/A
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N/A
	the rated current is related to the arithmetic mean value of the range		N/A
11	HEATING		P
11.1	No excessive temperatures in normal use		P
11.2	The appliance is held, placed or fixed in position as described	On the floor	P
	Test is also carried out with the rock container empty unless (IEC 60335-2-53)		N/A
	the sauna heater is marked with the warning concerning an inadequately filled rock container. (IEC 60335-2-53)		P
	Appliances normally placed on a floor in use, are placed on the floor as near to the walls as possible, taking into account the instructions. (IEC 60335-2-53)		P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		N/A
	the windings are non-uniform or it is difficult to make the necessary connections		N/A
	Temperature rises in front of the sauna heater are measured on a movable wooden rod painted dull black placed vertically on the floor. Rod has dimensions approximately 20 mm by 20 mm and has sufficient length to extend at least 400 mm above the highest point of the sauna heater or for sauna heaters containing rocks, the highest point of the rocks. (IEC 60335-2-53)		P
	Distance between the rod and the heater is the minimum horizontal distance marked on the heater. (IEC 60335-2-53).....:	Helo 50mm and Tylö 100mm	P
	For infrared emitters, the vertical distance between the rod and the emitter is varied so as to attain the highest temperature. (IEC 60335-2-53)		N/A
	Horizontal distance between the rod and the emitter is the minimum horizontal distance stated in the instructions. (IEC 60335-2-53)		N/A
	NOTE 101 If it is indicated that the minimum horizontal distance varies with the height from the floor, the measurements are made accordingly. (IEC 60335-2-53)		P
11.4	Heating appliances operated under normal operation at 1,15 times rated power input (W)	1.15 x 8kW	P
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0,94 and 1,06 times rated voltage (V)		N/A
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0,94 and 1,06 times rated voltage (V)		N/A
11.7	Appliances are operated until steady conditions are established. (IEC 60335-2-53)		P
11.8	Temperature rises monitored continuously and not exceeding the values in table 3	(see appended table)	P
	If the temperature rise of a motor winding exceeds the value of table 3, or		N/A
	if there is doubt with regard to classification of insulation,		N/A
	tests of annex C are carried out		N/A
	Sealing compound does not flow out		P
	Protective devices do not operate, except		P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		N/A
	Temperature rise of the wooden rod, walls, ceiling and floor of the sauna room or of the prefabricated sauna does not exceed 115 K. (IEC 60335-2-53)		P
	Air outlet grill or guard of heaters for recessed installations does not exceed 130 K rise, if of metal. (IEC 60335-2-53)		N/A
	In the sauna room or cabin, the temperature rises of handles, knobs, grips and similar parts that are held for short periods only, are increased by 20 K. (IEC 60335-2-53)		P
	NOTE 101 The ambient temperature is the temperature of the air outside the sauna room. (IEC 60335-2-53)		P
	For appliances provided with a humidifier, while the humidifier is in operation, the temperature of the sauna room or cabin is reduced step by step by adjusting the temperature control. (IEC 60335-2-53)		N/A
	Values of temperature and relative humidity at a point located 300 mm below the centre of the ceiling in the sauna room do not exceed the permissible range in Figure 101. (IEC 60335-2-53)		N/A
13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		P
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1,15 times the rated power input (W)	1.15 x 8kW	P
	Motor-operated appliances and combined appliances supplied at 1,06 times the rated voltage (V)		N/A
	Protective impedance and radio interference filters disconnected before carrying out the tests		N/A
	Sauna heaters of the thermal storage type, the tests are carried out at the end of the charging period. (IEC 60335-2-53)		N/A
13.2	For class 0, class II and class III appliances, leakage current measured by means of the circuit described in figure 4 of IEC 60990		N/A
	For other appliances, a low impedance ammeter may be used		P
	Leakage current measurements	(see appended table)	P
13.3	The appliance is disconnected from the supply		P
	Electric strength tests according to table 4	(see appended table)	P
	No breakdown during the tests		P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
14	TRANSIENT OVERVOLTAGES		N/A
	Appliances withstand the transient over-voltages to which they may be subjected		N/A
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6	(see appended table)	N/A
	No flashover during the test, unless		N/A
	of functional insulation if the appliance complies with clause 19 with the clearance short-circuited		N/A
15	MOISTURE RESISTANCE		P
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance		P
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		P
	No trace of water on insulation which can result in a reduction of clearances or creepage distances below values specified in clause 29		P
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529.....	IPX4	P
	Water valves containing live parts in external hoses for connection of an appliance to the water mains tested as specified for IPX7 appliances		N/A
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N/A
	Built-in appliances installed according to the instructions		N/A
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		N/A
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		P
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N/A
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube, and		P
	for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube		N/A
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions	Floor mounting and safety fixing to a wall	N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support, the pivot axis of the oscillating tube located at the level of the underside of the support, and		N/A
	for IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min		P
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Detachable parts subjected to the relevant treatment with the main part		P
	However, if a part has to removed for user maintenance and a tool is needed, this part is not removed		P
15.2	Spillage of liquid does not affect the electrical insulation		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A
	Detachable parts are removed		N/A
	Overfilling test with additional amount of water, over a period of 1 min (l).....:		N/A
	The appliance withstands the electric strength test of 16.3		N/A
	No trace of water on insulation that can result in a reduction of clearances or creepage distances below values specified in clause 29		N/A
15.3	Appliances proof against humid conditions		P
	Checked by test Cab: Damp heat steady state in IEC 60068-2-78		P
	Detachable parts removed and subjected, if necessary, to the humidity test with the main part		N/A
	Humidity test for 48 h in a humidity cabinet		P
	Reassembly of those parts that may have been removed		N/A
	The appliance withstands the tests of clause 16		P
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		P
16.1	Leakage current not excessive and electric strength adequate		P
	Protective impedance disconnected from live parts before carrying out the tests		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	Tests carried out at room temperature and not connected to the supply		P
16.2	Single-phase appliances: test voltage 1,06 times rated voltage (V)		N/A
	Three-phase appliances: test voltage 1,06 times rated voltage divided by $\sqrt{3}$ (V)	1.06x415V/ $\sqrt{3}$	P
	Leakage current measurements	(see appended table)	P
	Limit values doubled if		N/A
	- all controls have an off position in all poles, or		N/A
	- the appliance has no control other than a thermal cut-out, or		N/A
	- all thermostats, temperature limiters and energy regulators do not have an off position, or		N/A
	- the appliance has radio interference filters		N/A
	With the radio interference filters disconnected, the leakage current do not exceed limits specified.....	(see appended table)	N/A
16.3	Electric strength tests according to table 7.....	(see appended table)	P
	Test voltage applied between the supply cord and inlet bushing and cord guard and cord anchorage as specified.....	(see appended table)	P
	No breakdown during the tests		P
17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		P
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use	Fuse F800 (0.8A) worked. See clause 19, page 31.	P
	Appliance supplied with 1,06 or 0,94 times rated voltage under the most unfavourable short-circuit or overload likely to occur in normal use (V).....	254V	P
	Basic insulation is not short-circuited		P
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		N/A
	Temperature of the winding not exceeding the value specified in table 8		P
	However, limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N/A
19	ABNORMAL OPERATION		P
19.1	The risk of fire, mechanical damage or electric shock under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe	(see appended table)	P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	Appliances incorporating heating elements subjected to the tests of 19.2 and 19.3, and		P
	if the appliance also has a control that limit the temperature during clause 11 it is subjected to the test of 19.4, and		P
	if applicable, to the test of 19.5		N/A
	Appliances incorporating PTC heating elements are also subjected to the test of 19.6		N/A
	Appliances incorporating motors subjected to the tests of 19.7 to 19.10, as applicable		N/A
	Appliances incorporating electronic circuits subjected to the tests of 19.11 and 19.12, as applicable		N/A
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		P
	Appliances incorporating voltage selector switches subjected to the test of 19.15		N/A
	Unless otherwise specified, the tests are continued until a non-self-resetting thermal cut-out operates, or		P
	until steady conditions are established		P
	If a heating element or intentionally weak part becomes open-circuited, the relevant test is repeated on a second sample		N/A
	Tests of clause 19.2 to 19.4 and 19.101 are carried out in the sauna room of Annex AA, volume being maximum specified in instructions or (IEC 60335-2-53)	6 m ³ 9 m ³ 12 m ³	P
	volume shown in table 101, whichever is greater (IEC 60335-2-53)		N/A
	NOTE 101: Not applicable to prefabricated saunas (IEC 60335-2-53)		N/A
	≤ 3,5 kW 5 m ³ (IEC 60335-2-53)		N/A
	> 3,5 and ≤ 5 kW 6 m ³ (IEC 60335-2-53)		N/A
	> 5 and ≤ 8 kW 10 m ³ (IEC 60335-2-53)		N/A
	> 8 and ≤ 10 kW 12 m ³ (IEC 60335-2-53)		N/A
	> 10 and ≤ 13 kW 16 m ³ (IEC 60335-2-53)		N/A
	> 13 and ≤ 16 kW 20 m ³ (IEC 60335-2-53)		N/A
	> 16 and ≤ 20 kW 25 m ³ (IEC 60335-2-53)		N/A
	Intermediate values of rated power input (kW), volume (m ³) of sauna room is determined by interpolation (IEC 60335-2-53).....:		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	Test of 19.101 is carried out on sauna heaters intended to be used in public saunas unless (IEC 60335-2-53)		N/A
	they form part of a sauna heating appliance or (IEC 60335-2-53)		N/A
	prefabricated sauna complying with 22.108 or (IEC 60335-2-53)		N/A
	are supplied with the instructions for sauna heaters for public saunas that are switched on by a separate remote-control system. (IEC 60335-2-53)		N/A
	Test of 19.101 is also carried out on sauna heaters intended for household use and that incorporate a stand-by mode setting for remote operation, unless (IEC 60335-2-53)		N/A
	they form part of a sauna heating appliance or prefabricated sauna complying with 22.108. (IEC 60335-2-53)		N/A
	Sauna heaters intended for a recessed installation and having air outlets in the wall of the sauna room are also subjected to the test of 19.102. (IEC 60335-2-53)		N/A
	Infrared emitters are also subjected to the test of 19.103. (IEC 60335-2-53)		N/A
19.2	Test of appliances with heating elements with restricted heat dissipation; test voltage (V), power input of 0,85 times rated power input (W)	0.85x8kW (369V)	P
	Rock container is detachable or (IEC 60335-2-53)		N/A
	supplied separately, (IEC 60335-2-53)		N/A
	test is carried out without the container. (IEC 60335-2-53)		N/A
	Test is carried out with any lid placed in the most unfavourable position. (IEC 60335-2-53)		N/A
	For appliances provided with a humidifier, while the humidifier is in operation, the quantity of air per hour drawn through the test sauna room is reduced to three times the volume of the room. (IEC 60335-2-53)		N/A
	Thermostats and humidity controls are initially set to their maximum setting. (IEC 60335-2-53)		N/A
	Temperature of the sauna room is reduced step by step by adjusting the temperature control. (IEC 60335-2-53)		N/A
	Values of temperature and relative humidity at a point located 300 mm below the centre of the ceiling in the sauna room do not exceed the permissible range in Figure 102. (IEC 60335-2-53)		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	Test is repeated with the humidity control inoperative. (IEC 60335-2-53)		N/A
19.3	Test of 19.2 repeated; test voltage (V), power input of 1,24 times rated power input (W)	1.24x8kW (447V)	P
	Appliances are operated as specified in Clause 11 but under the conditions of 19.101, power input of 1,24 times rated power input. (IEC 60335-2-53)		P
19.4	Test conditions as in clause 11, any control limiting the temperature during tests of clause 11 short-circuited	1.15x8kW (430V)	P
19.5	Test of 19.4 repeated on class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the sheath		N/A
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N/A
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		P
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N/A
	The working voltage of the PTC heating element is increased by 5 % and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1,5 times working voltage or until the PTC heating element ruptures (V).....		N/A
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque, or		N/A
	locking moving parts of other appliances		N/A
	Locked rotor, capacitors open-circuited one at a time		N/A
	Test repeated with capacitors short-circuited one at a time, unless		N/A
	capacitor is of class P2 of IEC 60252-1		N/A
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed.....		N/A
	Other appliances supplied with rated voltage for a period as specified.....		N/A
	Winding temperatures not exceeding values specified in table 8.....	(see appended table)	N/A
19.8	Multi-phase motors operated at rated voltage with one phase disconnected		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
19.9	Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously		N/A
	Motor-operated and combined appliances for which 30.2.3 is applicable and that use overload protective devices relying on electronic circuits to protect the motor windings, are also subjected to the test		N/A
	Winding temperatures not exceeding values as specified	(see appended table)	N/A
19.10	Series motor operated at 1,3 times rated voltage for 1 min (V)		N/A
	During the test, parts not being ejected from the appliance		N/A
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless		P
	they comply with the conditions specified in 19.11.1		P
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8, unless		P
	restarting does not result in a hazard		P
	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		P
	If the safety of the appliance under any of the fault conditions depends on the operation of a miniature fuse-link complying with IEC 60127, the test of 19.12 is carried out		P
	During and after each test the following is checked		P
	- the temperature of the windings do not exceed the values specified in table 8		P
	- the appliance complies with the conditions specified in 19.13		P
	-any current flowing through protective impedance not exceeding the limits specified in 8.1.4		N/A
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided both of the following conditions are met		N/A
	- the base material of the printed circuit board withstands the test of annex E		N/A
	- any loosened conductor does not reduce clearance or creepage distances between live parts and accessible metal parts below the values specified in clause 29		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
19.11.1	Fault conditions a) to g) in 19.11.2 are not applied to circuits or parts of circuits meeting both of the following conditions.....:		P
	- 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	<10W	P
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction of other parts of the appliance does not rely on the correct functioning of the electronic circuit		P
19.11.2	Fault conditions applied one at a time, the appliance operating under conditions specified in clause 11, but supplied at rated voltage, duration of the tests as specified		P
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in clause 29		N/A
	b) open circuit at the terminals of any component	Terminal of sensor	P
	c) short circuit of capacitors, unless they comply with IEC 60384-14	S-c of C811, C804, C813	P
	d) short circuit of any two terminals of an electronic component, other than integrated circuits	S-c of sensor	P
	This fault condition is not applied between the two circuits of an optocoupler		N/A
	e) failure of triacs in the diode mode		N/A
	f) failure of microprocessors and integrated circuits	S-c of U802	P
	g) failure of an electronic power switching device		N/A
	Each low power circuit is short-circuited by connecting the low-power point to the pole of the supply source from which the measurements were made		N/A
19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to g) of 19.11.2		N/A
19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or		N/A
	a device that can be placed in the stand-by mode,		P
	subjected to the tests of 19.11.4.1 to 19.11.4.7, the device being set in the off position or in the stand-by mode		P
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, the tests being carried out after the protective electronic circuit has operated, except that		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena.		N/A
	Surge protective devices disconnected, unless		N/A
	They incorporate spark gaps		N/A
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4	SGS Fimko: EMC immunity report 265022-3, 265022-4 and 265022-5	P
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3		P
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified		P
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified		P
	Earthed heating elements in class I appliances disconnected		P
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		P
19.11.4.6	Appliances having a rated current not exceeding 16 A are subjected to the class 3 voltage dips and interruptions in accordance with IEC 61000-4-11	3N~ connection	P
	Appliances having a rated current exceeding 16 A are subjected to the class 3 voltage dips and interruptions in accordance with IEC 61000-4-34	1N~ connection	P
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		P
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60 s the power supply is reduced to a level such that the appliance ceases to respond or parts controlled by the programmable component cease to operate		P
	The appliance continues to operate normally, or		N/A
	requires a manual operation to restart		P
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).....:	Fuse F800 ratings: 0,8AT measured: 3.5A (4,4 times rated current)	P
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Temperature rises not exceeding the values shown in table 9	(see appended table)	P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	Compliance with clause 8 not impaired		P
	If the appliance can still be operated it complies with 20.2		P
	Insulation, other than of class III appliances or class III constructions that do not contain live parts, withstands the electric strength test of 16.3, the test voltage as specified in table 4.....:		P
	- basic insulation (V)	1000V	P
	- supplementary insulation (V)	1750V	-
	- reinforced insulation (V).....:	3000V	-
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstand the electric strength test of 16.3, the test voltage being twice the working voltage		N/A
	The appliance does not undergo a dangerous malfunction, and		P
	no failure of protective electronic circuits, if the appliance is still operable		N/A
	Appliances tested with an electronic switch in the off position, or in the stand-by mode.....:		P
	- do not become operational, or		P
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N/A
	If the appliance contains lids or doors that are controlled by one or more interlocks, one of the interlocks may be released provided that.....:		N/A
	- the lid or door does not move automatically to an open position when the interlock is released, and		N/A
	- the appliance does not start after the cycle in which the interlock was released		N/A
	Temperature rise of the surfaces of walls, ceiling and floor of the sauna room and wooden rod not exceed 140 K. (IEC 60335-2-53)		P
	Compliance criteria relating to interlocks are not applicable. (IEC 60335-2-53)		P
	During the test of 19.101, the temperature rises of the surfaces of the sauna heater under the blanket not exceed 180 K.		N/A
19.14	Appliances operated under the conditions of clause 11, any contactor or relay contact operating under the conditions of clause 11 being short-circuited		P
	For a relay or contactor with more than one contact, all contacts are short-circuited at the same time		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	A relay or contactor operating only to ensure the appliance is energized for normal use is not short-circuited		P
	If more than one relay or contactor operates in clause 11, they are short-circuited in turn		P
19.15	For appliances with a mains voltage selector switch, the switch is set to the lowest rated voltage position and the highest value of rated voltage is applied		N/A
19.101	Woollen blanket having a specific mass of approximately 470 g/m ² and having the same width as the sauna heater is placed from the wall, over the top surface and down the entire front surface of the heater. (IEC 60335-2-53)		N/A
	NOTE The blanket between the wall and the heater is allowed to drop behind the heater. Care is to be taken to ensure that the blanket is not held away from the front of the heater. (IEC 60335-2-53)		N/A
	Temperature rise of the surfaces of the sauna heater under the blanket is determined. (IEC 60335-2-53)		N/A
19.102	Sauna heaters intended for a recessed installation having air outlets in the wall of the sauna room are operated as specified in Clause 11 with the air outlet covered. (IEC 60335-2-53)		N/A
	Covering and test setup is made as specified. (IEC 60335-2-53)		N/A
	Strips are applied to each half of the air outlet in turn and then to the complete air outlet. (IEC 60335-2-53)		N/A
	Thermal controls that operate during the test of Clause 11 are allowed to operate. (IEC 60335-2-53)		N/A
	Temperature rise of the strips not exceed 150 K but an overshoot of 25 K is allowed during the first hour. (IEC 60335-2-53)		N/A
19.103	Infrared emitters are operated as specified in Clause 11 but at rated power input. (IEC 60335-2-53)		N/A
	Tested as specified (IEC 60335-2-53)		N/A
	Flannelette does not smoulder or ignite within 10 s. (IEC 60335-2-53)		N/A
	NOTE If smouldering has started, a hole will have formed in the material with its edge glowing red. Blackening without smouldering is ignored. (IEC 60335-2-53)		N/A
19.104	Sauna heaters or infrared emitters do not emit excessive heat radiation that could damage combustible material of the sauna room or cabin. (IEC 60335-2-53)		P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	Sauna heater or infrared emitter is installed as specified for normal operation but the volume of the sauna room is the maximum specified in the instructions. (IEC 60335-2-53)		P
	Quantity of sand is sprinkled through the rock container so that heat-reflecting surfaces are covered as far as possible, before filling the container with rocks. (IEC 60335-2-53)		P
	Wooden rod is placed in front of the heater, as specified in 11.3. (IEC 60335-2-53)		P
	Sauna heater operated at 1,24 times rated power input (kW) (IEC 60335-2-53)	1,24 x 8kW	P
	Door of the room is opened as necessary to maintain the temperature just above 90 °C at a point located 300 mm below the centre of the ceiling. (IEC 60335-2-53)		P
	Test is continued until steady conditions are established. (IEC 60335-2-53)		P
	Infrared-emitters are operated at 1,24 times rated power input (kW) (IEC 60335-2-53)		N/A
	Door of the cabin is opened as necessary to maintain the temperature rise just above 90 % of the temperature rise measured during the tests of Clause 11 at a point located 300 mm below the centre of the ceiling. (IEC 60335-2-53)		N/A
	Test is continued until steady conditions are established. (IEC 60335-2-53)		P
	Temperature of the surfaces of walls, ceiling and floor of the sauna room or cabin and wooden rod not exceed 140 °C. (IEC 60335-2-53)		P
	NOTE 1 Fans are not to be used for evacuating heat from the room. (IEC 60335-2-53)		P
	NOTE 2 Heating elements are replaced if they rupture during the test. (IEC 60335-2-53)		N/A
20	STABILITY AND MECHANICAL HAZARDS		P
20.1	Appliances having adequate stability	Floor mounting. Fixing to the wall.	P
	Tilting test through an angle of 10°, appliance placed on an inclined plane/horizontal support, not connected to the supply mains; appliance does not overturn		N/A
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		N/A
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		N/A
	Protective enclosures, guards and similar parts are non-detachable, and		N/A
	have adequate mechanical strength		N/A
	Enclosures that can be opened by overriding an interlock are considered to be detachable parts		N/A
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, by unexpected reclosure		N/A
	Not possible to touch dangerous moving parts with the test probe described		N/A
21	MECHANICAL STRENGTH		P
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
	Checked by applying 3 blows to every point of the enclosure like to be weak, in accordance with test Ehb of IEC 60068-2-75, spring hammer test, with an impact energy of 0,5 J		P
	The appliance shows no damage impairing compliance with this standard, and		P
	compliance with 8.1, 15.1 and clause 29 not impaired		P
	If doubt, supplementary or reinforced insulation subjected to the electric strength test of 16.3		N/A
	If necessary, repetition of groups of three blows on a new sample		N/A
	Appliances with live parts that are in direct contact with panels made of glass, ceramic or similar material that are accessible parts, the impact energy of the blows applied to the panel is 2,00 J. (IEC 60335-2-53)		N/A
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		N/A
	Test not applicable if the thickness of supplementary insulation is at least 1 mm and reinforced insulation at least 2 mm		N/A
	The insulation is tested as specified, and does withstand the electric strength test of 16.3		N/A
21.101	Fireguards have adequate strength. (IEC 60335-2-53)		N/A
	Compliance is checked by test as specified. (IEC 60335-2-53)		N/A
	After the test, the fireguard shows no significant permanent deformation or does not have become detached. (IEC 60335-2-53)		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
21.102	Suspension means of sauna heaters and infrared emitters for ceiling mounting have adequate strength. (IEC 60335-2-53)		N/A
	Compliance is checked by test as specified. (IEC 60335-2-53)		N/A
	Suspension means show no significant deformation or do not have become detached. (IEC 60335-2-53)		N/A
22	CONSTRUCTION		P
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	IPX4	N/A
22.2	Stationary appliance: means to ensure all-pole disconnection from the supply being provided.....:		P
	- a supply cord fitted with a plug, or		N/A
	- a switch complying with 24.3, or		P
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided, or		N/A
	- an appliance inlet		N/A
	Single-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected class 01 and class I appliances, connected to the phase conductor		N/A
	For sauna heating appliances and infrared emitting units, means to be provided to ensure all-pole disconnection from the supply mains. (IEC 60335-2-53)		P
	Such means are one of the following: (IEC 60335-2-53)		P
	- a switch complying with 24.3; (IEC 60335-2-53)		P
	- a supply cord fitted with a plug (only for single-phase appliances with a current not exceeding 16 A). (IEC 60335-2-53)		N/A
22.3	Appliance provided with pins: no undue strain on socket-outlets		N/A
	Applied torque not exceeding 0;25 Nm		N/A
	Pull force of 50 N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1 mm		N/A
	Each pin subjected to a torque of 0;4 Nm; the pins are not rotating, unless		N/A
	rotating does not impair compliance with this standard		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		N/A
22.5	No risk of electric shock when touching the pins of the plug, for appliances having a capacitor with rated capacitance exceeding 0,1 μF, the appliance being disconnected from the supply at the instant of voltage peak		N/A
	Voltage not exceeding 34 V (V).....:		N/A
22.6	Electrical insulation not affected by condensing water or leaking liquid		P
	Electrical insulation of class II appliances not affected if a hose ruptures or seal leaks		N/A
	In case of doubt, test as described		N/A
22.7	Adequate safeguards against the risk of excessive pressure in appliances containing liquid or gases or having steam-producing devices		N/A
	If steam is emitted through steam-producing devices, the electrical insulation is not affected and (IEC 60335-2-53)		N/A
	the user is not exposed to a hazard. (IEC 60335-2-53)		N/A
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use		P
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances, unless		P
	the substance has adequate insulating properties		N/A
22.10	Not possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance, if		N/A
	- a non-self-resetting thermal cut-out is required by the standard, and		N/A
	- a voltage maintained non-self-resetting thermal cut-out is used to meet it		N/A
	Non-self resetting thermal motor protectors have a trip-free action, unless		N/A
	they are voltage maintained		N/A
	Reset buttons of non-self-resetting controls so located or protected that accidental resetting is unlikely		P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts		P
	Obvious locked position of snap-in devices used for fixing such parts		N/A
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		N/A
	Tests as described		N/A
22.12	Handles, knobs etc. fixed in a reliable manner		P
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		P
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		P
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N/A
22.13	Unlikely that handles, when gripped as in normal use, make the operator's hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		P
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P
	No exposed pointed ends of self tapping screws or other fasteners, likely to be touched by the user in normal use or during user maintenance		P
22.15	Storage hooks and the like for flexible cords smooth and well rounded		N/A
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands and no undue wear of contacts		N/A
	Cord reel tested with 6000 operations, as specified		N/A
	Electric strength test of 16.3, voltage of 1000 V applied		N/A
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		N/A
	Heat shields are fixed so that it is not possible to remove them without the aid of a tool. (IEC 60335-2-53)		P
22.18	Current-carrying parts and other metal parts resistant to corrosion		P
22.19	Driving belts not relied upon to provide the required level of insulation, unless		N/A
	constructed to prevent inappropriate replacement		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless		N/A
	material used is non-corrosive, non-hygroscopic and non-combustible		N/A
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless		N/A
	impregnated		N/A
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N/A
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
22.24	Bare heating elements, except in class III appliances or class III constructions that do not contain live parts, adequately supported		N/A
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N/A
22.25	Sagging heating conductors, except in class III appliances or class III constructions that do not contain live parts, cannot come into contact with accessible metal parts		N/A
22.26	For class III constructions the insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation		N/A
22.27	Parts connected by protective impedance separated by double or reinforced insulation		N/A
22.28	Metal parts of class II appliances conductively connected to gas pipes or in contact with water, separated from live parts by double or reinforced insulation		N/A
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation		N/A
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		N/A
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		P
22.31	Neither clearances nor creepage distances over supplementary and reinforced insulation reduced below values specified in clause 29 as a result of wear		P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	Neither clearances nor creepage distances between live parts and accessible parts reduced below values for supplementary insulation if wires, screws etc. become loose		P
22.32	Supplementary and reinforced insulation constructed or protected against pollution so that clearances or creepage distances are not reduced below the values in clause 29		P
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2		N/A
	Ceramic material not tightly sintered, similar materials or beads alone not used as supplementary or reinforced insulation		N/A
	Insulating material in which heating conductors are embedded is considered to be basic insulation, not reinforced insulation		N/A
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N/A
22.33	Conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts are not in direct contact with live parts		N/A
	Electrodes not used for heating liquids		N/A
	For class II constructions, conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts, not in direct contact with basic or reinforced insulation, unless		N/A
	the reinforced insulation consists of at least 3 layers		N/A
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation, unless		N/A
	the reinforced insulation consists of at least 3 layers		N/A
	An air layer not used as basic or supplementary insulation in a double insulation system if likely to be bridged by leaking liquid		N/A
	Construction of the appliance prevents a direct contact with the steam (IEC 60335-2-53)		P
	or hot water outlet. (IEC 60335-2-53)		N/A
22.34	Shafts of operating knobs, handles, levers etc. not live, unless		P
	the shaft is not accessible when the part is removed		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
22.35	For other than class III constructions, handles, levers and knobs, held or actuated in normal use, not becoming live in the event of a failure of basic insulation		P
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of a failure of basic insulation, are either adequately covered by insulation material or their accessible parts are separated from their shafts or fixings by supplementary insulation		N/A
	This requirement does not apply to handles, levers and knobs on stationary appliances, other than those of electrical components, provided they are reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N/A
	Insulating material covering metal handles, levers and knobs withstand the electric strength test of 16.3 for supplementary insulation		N/A
22.36	For appliances other than class III, handles continuously held in the hand in normal use so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless		N/A
	they are separated from live parts by double or reinforced insulation		N/A
22.37	Capacitors in class II appliances not connected to accessible metal parts and their casings, if of metal, separated from accessible metal parts by supplementary insulation, unless		N/A
	the capacitors comply with 22.42		N/A
22.38	Capacitors not connected between the contacts of a thermal cut-out		P
22.39	Lamp holders used only for the connection of lamps		N/A
	Insulating parts of lampholders for the heat lamps in infrared emitters are ceramic. (IEC 60335-2-53)		N/A
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible		N/A
	If the appliance can not operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch for stopping the operation. The actuating member of the switch being easily visible and accessible		N/A
22.41	No components, other than lamps, containing mercury		P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
22.42	Protective impedance consisting of at least two separate components		N/A
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N/A
	Resistors checked by the test of 14.1 a) in IEC 60065		N/A
	Capacitors checked by the tests for class Y capacitors in IEC 60384-14		N/A
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N/A
22.44	Appliances not having an enclosure that is shaped or decorated like a toy		P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.3 due to deformation as a result of an external force applied to the enclosure		N/A
22.46	For programmable protective electronic circuits used to ensure compliance with the standard, the software contains measures to control the fault/error conditions in table R.1		N/A
	Software that contains measures to control the fault/error conditions specified in table R.2 is to be specified in parts 2 for particular constructions or to address specific hazards		N/A
	These requirements are not applicable to software used for functional purpose or compliance with clause 11		N/A
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use		N/A
	No leakage from any part, including any inlet water hose		N/A
22.48	Appliances connected to the water mains constructed to prevent backsiphonage of non-potable water		N/A
22.49	For remote operation, the duration of operation is to be set before the appliance can be started, unless		N/A
	the appliance switches off automatically or can operate continuously without hazard		N/A
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation		N/A
22.51	There is a control on the appliance manually adjusted to the setting for remote operation before the appliance can be operated in this mode		N/A
	There is a visual indication showing that the appliance is adjusted for remote operation		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	These requirements not necessary on appliances that can operate as follows, without giving rise to a hazard		N/A
	- continuously, or		N/A
	- automatically, or		N/A
	- remotely		N/A
22.52	Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold		N/A
22.101	Sauna heaters for wall mounting are constructed so that they are fixed securely to a wall, independent of any connection to the water mains. (IEC 60335-2-53)	Floor mounting	N/A
	Fixing means have adequate mechanical strength. (IEC 60335-2-53)		N/A
	NOTE Keyhole slots, hooks and similar means without any further provision to prevent the heater from being inadvertently lifted off the wall are not considered to be adequate means for fixing the heater securely to the wall. (IEC 60335-2-53)		N/A
	Compliance is checked by inspection and by the following test as specified. (IEC 60335-2-53)		N/A
	Heater remains securely fixed to the wall and the fixing means show no appreciable deformation. (IEC 60335-2-53)		N/A
22.102	Terminal compartment of the supply for the sauna heater has a drain hole at least 5 mm in diameter or (IEC 60335-2-53)		N/A
	20 mm ² in area with a width of at least 3 mm. (IEC 60335-2-53)		P
22.103	Appliances, other than those for installation in public saunas, are provided with a timer. (IEC 60335-2-53)		P
	Appliances use in blocks of flats, hotels and similar locations, the operating period of the sauna heater or infrared emitter is limited to 12 h with a minimum rest period of 6 h before any automatic restarting. (IEC 60335-2-53)		N/A
	For other appliances, the operating period of the timer is limited to 6 h, automatic restarting not being allowed. (IEC 60335-2-53)		P
22.104	Appliances are supplied with sufficient rocks to fill the container. (IEC 60335-2-53)		P
	NOTE This does not apply if the appliance complies with Clause 11 without rocks. (IEC 60335-2-53)		N/A
22.105	Sauna heating appliances which consist of more than one sauna heater are constructed so that the heaters can be installed adjacent to each other and (IEC 60335-2-53)		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	controlled by common controls and protective devices. (IEC 60335-2-53)		N/A
	Infrared emitting units which consist of more than one infrared emitter are constructed so that the infrared emitters can be installed adjacent to each other and (IEC 60335-2-53)		N/A
	controlled by common controls and protective devices. (IEC 60335-2-53)		N/A
22.106	Luminaires inside prefabricated saunas are controlled independently from the main switch controlling the sauna heating appliance. (IEC 60335-2-53)		N/A
22.107	Contacts and sensing elements of thermostats and thermal cut-outs operate independently of each other and (IEC 60335-2-53)		P
	not control the same contactor. (IEC 60335-2-53)		P
22.108	Sauna heating appliances that incorporate a stand-by mode setting for remote operation incorporate an interlock such that the stand-by mode setting for remote operation is disabled if the door of the sauna in which the sauna heating appliance is installed is opened when the stand-by mode setting for remote operation is set. (IEC 60335-2-53)		N/A
	Sauna heating appliances that incorporate a stand-by mode setting for remote operation incorporate an interlock such that the stand-by mode setting for remote operation is disabled if the door of the sauna in which the sauna heating appliance is installed is opened when the stand-by mode setting for remote operation is set. (IEC 60335-2-53)		N/A
	Control on the appliance has to be manually adjusted to reselect the stand-by mode setting for remote operation. (IEC 60335-2-53)		N/A
	Requirements are not applicable if the sauna heater complies with the test of 19.101. (IEC 60335-2-53)		N/A
	If compliance relies on the operation of an electronic circuit, the appliance is further tested as follows. (IEC 60335-2-53)		N/A
	Stand-by mode setting for remote operation is set, the appliance being operated under the conditions of Clause 11 but supplied at rated voltage. (IEC 60335-2-53)		N/A
	Following conditions are then applied separately: : (IEC 60335-2-53)		N/A
	- the fault conditions in a) to g) of 19.11.2 applied one at a time to the electronic circuit; (IEC 60335-2-53)		N/A
	- the electromagnetic phenomena tests of 19.11.4.1 to 19.11.4.7 applied one at a time to the appliance. (IEC 60335-2-53)		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	After each test, the door of the sauna is opened and the stand-by mode setting for remote operation is disabled. (IEC 60335-2-53)		N/A
	Software of programmable electronic circuits contains measures to control the fault/error conditions specified in Table R.1 and (IEC 60335-2-53)		N/A
	is evaluated in accordance with the relevant requirements of Annex R. (IEC 60335-2-53)		N/A
22.109	Panels made of glass, ceramic or similar material that are accessible parts and that are in direct contact with live parts withstand thermal shock. (IEC 60335-2-53)		N/A
	Compliance is checked and tested as specified (IEC 60335-2-53)		N/A
	Panel is not damaged. (IEC 60335-2-53)		N/A
23	INTERNAL WIRING		P
23.1	Wireways smooth and free from sharp edges		P
	Wires protected against contact with burrs, cooling fins etc.		P
	Wire holes in metal well-rounded or provided with bushings		P
	Wiring effectively prevented from coming into contact with moving parts		N/A
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges		N/A
	Beads inside flexible metal conduits contained within an insulating sleeve		N/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N/A
	Flexible metallic tubes not causing damage to insulation of conductors		N/A
	Open-coil springs not used		N/A
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N/A
	No damage after 10 000 flexings for conductors flexed during normal use, or		N/A
	100 flexings for conductors flexed during user maintenance		N/A
	Electric strength test of 16.3, 1000 V between live parts and accessible metal parts		N/A
	Not more than 10 % of the strands of any conductor broken, and		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	not more than 30 % for wiring supplying circuits that consume no more than 15 W		N/A
23.4	Bare internal wiring sufficiently rigid and fixed		N/A
23.5	The insulation of internal wiring subjected to the supply mains voltage withstanding the electrical stress likely to occur in normal use		P
	Basic insulation electrically equivalent to the basic insulation of cords complying with IEC 60227 or IEC 60245, or		N/A
	no breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by clamping at both ends, or		N/A
	be such that it can only be removed by breaking or cutting		N/A
23.7	The colour combination green/yellow only used for earthing conductors		P
23.8	Aluminium wires not used for internal wiring		P
23.9	Stranded conductors not consolidated by soldering where they are subjected to contact pressure, unless		P
	the contact pressure is provided by spring terminals		N/A
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52)		N/A
24	COMPONENTS		P
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components	(see appended table)	P
	If components have not been tested and found to comply with relevant IEC standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		N/A
	For components mentioned in 24.1.1 to 24.1.9 no additional tests specified in the relevant component standard are necessary other than those specified in 24.1.1 to 24.1.9		P
	Components not tested and found to comply with relevant IEC standard and components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	Lampholders and starterholders that have not being tested and found to comply with the relevant IEC standard, tested as a part of the appliance and additionally according to the gauging and interchangeability requirements of the relevant IEC standard		N/A
	No additional tests specified for nationally standardized plugs such as those detailed in IEC/TR 60083 or connectors complying with the standard sheets of IEC 60320-1 and IEC 60309		N/A
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, complying with IEC 60384-14		N/A
	If the capacitors have to be tested, they are tested according to annex F		N/A
24.1.2	Safety isolating transformers complying with IEC 61558-2-6	IEC 61558-2-6	P
	If they have to be tested, they are tested according to annex G		N/A
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000	IEC 61058-1	P
	If they have to be tested, they are tested according to annex H		N/A
	If the switch operates a relay or contactor, the complete switching system is subjected to the test		P
	If the switch only operates a motor starting relay complying with IEC 60730-2-10 with the number of cycles of a least 10 000 as specified, the complete switching system need not be tested		N/A
24.1.4	Automatic controls complying with IEC 60730-1 with the relevant part 2. The number of cycles of operation being at least		P
	- thermostats:..... 10 000		P
	- temperature limiters:..... 1 000		N/A
	- self-resetting thermal cut-outs:..... 300		N/A
	- voltage-maintained non-self-resetting thermal cut-outs: 1 000		N/A
	- other non-self-resetting thermal cut-outs: 30		P
	- timers: 3 000		P
	- energy regulators:..... 10 000		N/A
	The number of cycles for controls operating during clause 11 need not be declared, if the appliance meets the requirements of this standard when they are short-circuited		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	Thermal motor protectors are tested in combination with their motor under the conditions specified in annex D		N/A
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection declared for subclause 6.5.2 of IEC 60730-2-8 is IPX7		N/A
24.1.5	Appliance couplers complying with IEC 60320-1		N/A
	However, for appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N/A
	Interconnection couplers complying with IEC 60320-2-2		N/A
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		N/A
24.1.7	For remote operation of the appliance via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151		N/A
24.1.8	The relevant standard for thermal links is IEC 60691		N/A
	Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of clause 19		N/A
24.1.9	Contactors and relays, other than motor starting relays, tested as part of the appliance		N/A
	They are also tested in accordance with clause 17 of IEC 60730-1, the number of cycles of operations in 24.1.4 selected according to the contactor or relay function in the appliance		N/A
24.2	Appliances not fitted with		P
	- switches or automatic controls in flexible cords		P
	- devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	- thermal cut-outs that can be reset by soldering, unless		P
	the solder has a melting point of at least 230 °C		N/A
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and have a contact separation in all poles, providing full disconnection under overvoltage category III conditions	Timer: Faucigny Instruments Mi2	P

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Clause	Requirement - Test	Result - Remark	Verdict
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N/A
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance, and used accordingly		N/A
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load		N/A
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42 V		N/A
	In addition, the motors comply with the requirements of annex I		N/A
24.7	Detachable hose-sets for connection of appliances to the water mains comply with IEC 61770		N/A
	They are supplied with the appliance		N/A
	Appliances intended to be permanently connected to the water mains not connected by a detachable hose-set		N/A
24.8	Motor running capacitors in appliances for which 30.2.3 is applicable and that are permanently connected in series with a motor winding, not causing a hazard in event of a failure		N/A
	One or more of the following conditions are to be met.....:		N/A
	- the capacitors are of class P2 according to IEC 60252-1		N/A
	- the capacitors are housed within a metallic or ceramic enclosure		N/A
	- the distance of separation of the outer surface to adjacent non-metallic parts exceeds 50 mm		N/A
	- adjacent non-metallic parts within 50 mm withstand the needle-flame test of annex E		N/A
	- adjacent non-metallic parts within 50 mm classified as at least V-1 according to IEC 60695-11-10		N/A
24.101	Thermal cut-outs are not self-resetting and disconnect all heating elements of the sauna heater. (IEC 60335-2-53)		P
	For infrared emitters, the thermal cut-outs are selfresetting. (IEC 60335-2-53)		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
24.102	Controls and protective devices for mounting inside the sauna room, and (IEC 60335-2-53)		P
	luminaires of prefabricated saunas, are suitable for use at the highest temperature measured during the test of Clause 11 or (IEC 60335-2-53)		N/A
	125 °C, whichever is higher. (IEC 60335-2-53)		P
	Controls and protective devices for mounting inside the cabin, and (IEC 60335-2-53)		N/A
	luminaires of prefabricated infrared cabins, are suitable for use at the highest temperature measured during the test of Clause 11. (IEC 60335-2-53)		N/A
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		P
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply.....:		N/A
	- supply cord fitted with a plug,		N/A
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance, or		N/A
	- pins for insertion into socket-outlets		N/A
	- Appliance inlets are not allowed for prefabricated saunas. (IEC 60335-2-53)		N/A
25.2	Appliance not provided with more than one means of connection to the supply mains		P
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		N/A
25.3	Appliance intended to be permanently connected to fixed wiring provided with one of the following means for connection to the supply mains:		P
	- a set of terminals allowing the connection of a flexible cord		P
	- a fitted supply cord		N/A
	- a set of supply leads accommodated in a suitable compartment		N/A
	- a set of terminals for the connection of cables of fixed wiring, cross-sectional areas specified in 26.6, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	- a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate types of cable or conduit, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A
	For a fixed appliance constructed so that parts can be removed to facilitate easy installation, this requirement is met if it is possible to connect the fixed wiring without difficulty after a part of the appliance has been fixed to its support		N/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimension according to table 10 (mm)	5G2,5 / 15,5mm	P
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in clause 29		P
25.5	Method for assembling the supply cord to the appliance		N/A
	- type X attachment		N/A
	- type Y attachment		N/A
	- type Z attachment, if allowed in relevant part 2		N/A
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A
	For multi-phase appliances supplied with a supply cord and that are intended to be permanently connected to fixed wiring, the supply cord is assembled to the appliance by type Y attachment		N/A
25.6	Plugs fitted with only one flexible cord		N/A
25.7	Supply cords are polychloroprene sheathed and (IEC 60335-2-53)		P
	not lighter polychloroprene-sheathed flexible cord (code designation 60245 IEC 66). (IEC 60335-2-53)	H07RN-F /60245 IEC 66	P
	Supply cords for class III appliances adequately insulated		N/A
	Test with 500 V for 2 min for supply cords of class III appliances that contain live parts		N/A
25.8	Nominal cross-sectional area of supply cords not less than table 11; rated current (A); cross-sectional area (mm ²).....	11,6A 2,5mm ²	P
25.9	Supply cords not in contact with sharp points or edges		P
25.10	Supply cord of class I appliances have a green/yellow core for earthing		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
25.11	Conductors of supply cords not consolidated by soldering where they are subject to contact pressure, unless		N/A
	the contact pressure is provided by spring terminals		N/A
25.12	Insulation of the supply cord not damaged when moulding the cord to part of the enclosure		N/A
25.13	Inlet openings so constructed as to prevent damage to the supply cord		P
	If the enclosure at the inlet opening is not of insulating material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		P
	If unsheathed supply cord, a similar additional bushing or lining is required, unless the appliance is		N/A
	class 0, or		N/A
	a class III appliance not containing live parts		N/A
25.14	Supply cords moved while in operation adequately protected against excessive flexing		N/A
	Flexing test, as described.....:		N/A
	- applied force (N).....:		N/A
	- number of flexings.....:		N/A
	The test does not result in.....:		N/A
	- short-circuit between the conductors, such that the current exceeds a value of twice the rated current		N/A
	-breakage of more than 10 % of the strands of any conductor		N/A
	- separation of the conductor from its terminal		N/A
	- loosening of any cord guard		N/A
	- damage to the cord or the cord guard		N/A
	- broken strands piercing the insulation and becoming accessible		N/A
25.15	For appliances with supply cord and appliances to be permanently connected to fixed wiring by a flexible cord, conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		P
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		P
	Pull and torque test of supply cord, values shown in table 12: mass (kg); pull (N); torque (not on automatic cord reel) (Nm).....:	100N 0.35Nm	P
	Cord not damaged and max. 2 mm displacement of the cord		P

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

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Clause	Requirement - Test	Result - Remark	Verdict
25.20	The insulated conductors of the supply cord for type Y and Z attachment additionally insulated from accessible metal parts		N/A
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed		P
	- to permit checking of conductors with respect to correct positioning and connection before fitting any cover		P
	- so there is no risk of damage to the conductors or their insulation when fitting the cover		P
	- for portable appliances, so that the uninsulated end of a conductor, if it becomes free from the terminal, prevented from contact with accessible metal parts		N/A
	2 N test to the conductor for portable appliances; no contact with accessible metal parts		N/A
25.22	Appliance inlets		N/A
	- live parts not accessible during insertion or removal		N/A
	Requirement not applicable to appliance inlets complying with IEC 60320-1		N/A
	- connector can be inserted without difficulty		N/A
	- the appliance is not supported by the connector		N/A
	- not for cold conditions if temp. rise of external metal parts exceeds 75 K during clause 11, unless		N/A
	the supply cord is unlikely to touch such metal parts		N/A
25.23	Interconnection cords comply with the requirements for the supply cord, except that		N/A
	- the cross-sectional area of the conductors is determined on the basis of the maximum current during clause 11		N/A
	- the thickness of the insulation may be reduced		N/A
	If necessary, electric strength test of 16.3		N/A
25.24	Interconnection cords not detachable without the aid of a tool if compliance with this standard is impaired when they are disconnected		N/A
25.25	Dimensions of pins that are inserted into socket-outlets compatible with the dimensions of the relevant socket-outlet.		N/A
	Dimensions of pins and engagement face in accordance with the dimensions of the relevant plug in IEC/TR 60083		N/A
26	TERMINALS FOR EXTERNAL CONDUCTORS		P

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Clause	Requirement - Test	Result - Remark	Verdict
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		P
	Terminals only accessible after removal of a non-detachable cover, except		P
	for class III appliances that do not contain live parts		N/A
	Earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection		N/A
26.2	Appliances with type X attachment and appliances for the connection of cables to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless		P
	the connections are soldered		N/A
	Screws and nuts not used to fix any other component, except		P
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N/A
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone, unless		N/A
	barriers provided so that neither clearances nor creepage distances between live parts and other metal parts reduced below the values for supplementary insulation if the conductor becomes free at the soldered joint		N/A
26.3	Terminals for type X attachment and for connection of cables of fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure but without damaging the conductor		P
	Terminals fixed so that when the clamping means is tightened or loosened		P
	- the terminal does not become loose		P
	- internal wiring is not subjected to stress		P
	- neither clearances nor creepage distances are reduced below the values in clause 29		P
	Compliance checked by inspection and by the test of subclause 9.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified (Nm).....:	1,8Nm	P
	No deep or sharp indentations of the conductors		P

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Clause	Requirement - Test	Result - Remark	Verdict
26.4	Terminals for type X attachment, except those having a specially prepared cord and those for the connection of cables of fixed wiring, no special preparation of conductors such as by soldering, use of cable lugs, eyelets or similar, and		P
	so constructed or placed that conductors prevented from slipping out when clamping screws or nuts are tightened		N/A
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		N/A
	Stranded conductor test, 8 mm insulation removed		N/A
	No contact between live parts and accessible metal parts and,		N/A
	for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N/A
26.6	Terminals for type X attachment and for connection of cables of fixed wiring suitable for connection of conductors with cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm ²).....:	11,6A 2,5mm ²	P
	If a specially prepared cord is used, terminals need only be suitable for that cord		N/A
26.7	Terminals for type X attachment, except in class III appliances not containing live parts, accessible after removal of a cover or part of the enclosure		N/A
26.8	Terminals for the connection of fixed wiring, including the earthing terminal, located close to each other		P
26.9	Terminals of the pillar type constructed and located as specified		P
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless		N/A
	conductors ends fitted with means suitable for screw terminals		N/A
	Pull test of 5 N to the connection		N/A
26.11	For type Y and Z attachment, soldered, welded, crimped or similar connections may be used		N/A
	For class II appliances, the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	If soldering, welding or crimping alone used, barriers provided so that clearances and creepage distances between live parts and other metal parts are not reduced below the values for supplementary insulation if the conductor becomes free		N/A
27	PROVISION FOR EARTHING		P
27.1	Accessible metal parts of class 0I and I appliances permanently and reliably connected to an earthing terminal or earthing contact of the appliance inlet		P
	Earthing terminals and earthing contacts not connected to the neutral terminal		P
	Class 0, II and III appliances have no provision for earthing		N/A
	Safety extra-low voltage circuits not earthed, unless		N/A
	protective extra-low voltage circuits		N/A
27.2	Clamping means of earthing terminals adequately secured against accidental loosening		P
	Terminals for the connection of external equipotential bonding conductors allow connection of conductors of 2,5 to 6 mm ² , and		N/A
	do not provide earthing continuity between different parts of the appliance, and		N/A
	conductors cannot be loosened without the aid of a tool		N/A
27.3	For a detachable part having an earth connection and being plugged into another part of the appliance, the earth connection is made before and separated after current-carrying connections when removing the part		N/A
	For appliances with supply cords, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		N/A
27.4	No risk of corrosion resulting from contact between parts of the earthing terminal and the copper of the earthing conductor or other metal		P
	Parts providing earthing continuity, other than parts of a metal frame or enclosure, have adequate resistance to corrosion		P
	If of steel, these parts provided with an electroplated coating with a thickness at least 5 µm		P
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		P
	In the body of the earthing terminal is a part of a frame or enclosure of aluminium or aluminium alloys, precautions taken to avoid risk of corrosion		P

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Clause	Requirement - Test	Result - Remark	Verdict
27.5	Low resistance of connection between earthing terminal and earthed metal parts		P
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided the clearances of basic insulation are based on the rated voltage of the appliance		N/A
	Resistance not exceeding 0,1 Ω at the specified low-resistance test (Ω).....:	9m Ω	P
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand-held appliances.		N/A
	They may be used to provide earthing continuity in other appliances if at least two tracks are used with independent soldering points and the appliance complies with 27.5 for each circuit		N/A
28	SCREWS AND CONNECTIONS		P
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		P
	Screws not of soft metal liable to creep, such as zinc or aluminium		P
	Diameter of screws of insulating material min. 3 mm		N/A
	Screws of insulating material not used for any electrical connections or connections providing earthing continuity		N/A
	Screws used for electrical connections or connections providing earthing continuity screwed into metal		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N/A
	For type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw impairs basic insulation		N/A
	For screws and nuts; torque-test as specified in table 14.....:	(see appended table)	P
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure is not transmitted through non-ceramic insulating material liable to shrink or distort, unless		P
	there is resiliency in the metallic parts to compensate for shrinkage or distortion of the insulating material		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	This requirement does not apply to electrical connections in circuits of appliances for which		N/A
	- 30.2.2 is applicable and that carry a current not exceeding 0,5 A		N/A
	- 30.2.3 is applicable and that carry a current not exceeding 0,2 A		N/A
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		P
	Thread-cutting (self-tapping) screws and thread rolling screws only used for electrical connections if they generate a full form standard machine screw thread		N/A
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer		N/A
	Thread-cutting, thread rolling and space threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection		N/A
	- in normal use,		N/A
	- during user maintenance,		N/A
	- when replacing a supply cord having a type X attachment, or		N/A
	- during installation		N/A
	At least two screws being used for each connection providing earthing continuity, unless		N/A
	the screw forms a thread having a length of at least half the diameter of the screw		N/A
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		P
	This requirement does not apply to screws in the earthing circuit if at least two screws are used, or		P
	If an alternative earthing circuit is provided		N/A
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if the connections are subjected to torsion		N/A
29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		P
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	For coatings used on printed circuits boards to protect the microenvironment (Type 1) or to provide basic insulation (Type 2), annex J applies.....		N/A
	The microenvironment is pollution degree 1 under type 1 protection		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	For type 2 protection, the spacing between the conductors before the protection is applied is not less than the values specified in Table 1 of IEC 60664-3		N/A
	These values apply to functional, basic, supplementary and reinforced insulation		N/A
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless	(see appended table)	P
	for basic insulation and functional insulation they comply with the impulse voltage test of clause 14		N/A
	However, if the distances are affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1500 V and above are increased by 0,5 mm and the impulse voltage test is not applicable		N/A
	Impulse voltage test is not applicable		N/A
	- when the microenvironment is pollution degree 3, or		N/A
	- for basic insulation of class 0 and class 01 appliances		N/A
	Appliances are in overvoltage category II		P
	A force of 2 N is applied to bare conductors, other than heating elements		N/A
	A force of 30 N is applied to accessible surfaces		P
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		P
	The values of table 16 or the impulse voltage test of clause 14 are applicable	(see appended table)	P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1,0 mm if the microenvironment is pollution degree 1		N/A
	Lacquered conductors of windings considered to be bare conductors		N/A
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16 :	(see appended table)	P
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, using the next higher step for rated impulse voltage	(see appended table)	N/A
	For double insulation, with no intermediate conductive part between basic and supplementary insulation, clearances are measured between live parts and the accessible surface, and the insulation system is treated as reinforced insulation		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
29.1.4	Clearances for functional insulation are the largest values determined from.....:		P
	- table 16 based on the rated impulse voltage :	(see appended table)	P
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		P
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		N/A
	If values of table 16 are largest, the impulse voltage test of clause 14 may be applied instead, unless		N/A
	the microenvironment is pollution degree 3, or		N/A
	the distances can be affected by wear, distortion, movement of the parts or during assembly		N/A
	However, clearances are not specified if the appliance complies with clause 19 with the functional insulation short-circuited		N/A
	Lacquered conductors of windings considered to be bare conductors		N/A
	However, clearances at crossover points are not measured		N/A
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N/A
29.1.5	Appliances having higher working voltages than rated voltage, clearances for basic insulation are the largest values determined from.....:		N/A
	- table 16 based on the rated impulse voltage.....:		N/A
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N/A
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		N/A
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1 or clause 4 of IEC 60664-4, the clearances of supplementary insulation are not less than those specified for basic insulation		N/A
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1, the clearances of reinforced insulation dimensioned as specified in Table F.7a are to withstand 160% of the withstand voltage required for basic insulation		N/A
	If clearances for basic insulation are selected from clause 4 of IEC 60664-4, the clearances of reinforced insulation are twice the value required for basic insulation		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N/A
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation are based on the working voltage used as the rated voltage in table 15		N/A
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree	(see appended table)	P
	Pollution degree 2 applies, unless		P
	- precautions taken to protect the insulation; pollution degree 1		N/A
	- insulation subjected to conductive pollution; pollution degree 3		N/A
	A force of 2 N is applied to bare conductors, other than heating elements		N/A
	A force of 30 N is applied to accessible surfaces		P
	In a double insulation system, the working voltage for both the basic and supplementary insulation is taken as the working voltage across the complete double insulation system		N/A
	Appliances incorporating a humidifier, the microenvironment is pollution degree 3 unless (IEC 60335-2-53)		N/A
	the insulation is enclosed or (IEC 60335-2-53)		N/A
	located so that it is unlikely to be exposed to pollution during normal use of the appliance. (IEC 60335-2-53)		N/A
29.2.1	Creepage distances of basic insulation not less than specified in table 17	(see appended table)	P
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 17		N/A
	Except for pollution degree 1, corresponding creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14		N/A
29.2.2	Creepage distances of supplementary insulation at least those specified for basic insulation in table 17, or	(see appended table)	P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	Table 2 of IEC 60664-4, as applicable		N/A
29.2.3	Creepage distances of reinforced insulation at least double those specified for basic insulation in table 17, or	(see appended table)	N/A
	Table 2 of IEC 60664-4, as applicable		N/A
29.2.4	Creepage distances of functional insulation not less than specified in table 18.....	(see appended table)	P
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 18.....		N/A
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N/A
29.3	Supplementary and reinforced insulation have adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		P
	Compliance checked		N/A
	- by measurement, in accordance with 29.3.1, or		P
	- by an electric strength test in accordance with 29.3.2, or		N/A
	- by an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3, and		N/A
	for accessible parts of reinforced insulation consisting of a single layer, by measurement in accordance with 29.3.4, or		N/A
	- as specified in subclause 6.3 of IEC 60664-4 for insulation that is subjected to any periodic voltage having a frequency exceeding 30 kHz		N/A
29.3.1	Supplementary insulation have a thickness of at least 1 mm	Transformer: BV EI 4811379, BV EI 3821190	P
	Reinforced insulation have a thickness of at least 2 mm	Transformer: BV EI 4811379, BV EI 3821190	P
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N/A
	Supplementary insulation consist of at least 2 layers		N/A
	Reinforced insulation consist of at least 3 layers		N/A
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		N/A
	the electric strength test of 16.3		N/A
	If the temperature rise during the tests of clause 19 does not exceed the value specified in table 3, the test of IEC 60068-2-2 is not carried out		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
29.3.4	Thickness of accessible parts of reinforced insulation consisting of a single layer not less than specified in table 19.....:		N/A
30	RESISTANCE TO HEAT AND FIRE		P
30.1	External parts of non-metallic material,		N/A
	parts supporting live parts, and		P
	parts of thermoplastic material providing supplementary or reinforced insulation		P
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P
	External parts tested at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C).....:	(see appended table)	N/A
	Parts supporting live parts tested at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 125 °C, whichever is the higher; temperature (°C).....:	(40+ 46) - > 125°C (supply terminal)	P
	Parts of thermoplastic material providing supplementary or reinforced insulation tested at 25 °C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C)	(see appended table)	N/A
30.2	Parts of non-metallic material resistant to ignition and spread of fire		P
	This requirement does not apply to		P
	parts having a mass not exceeding 0,5 g, provided the cumulative effect is unlikely to propagate flames that originate inside the appliance by propagating flames from one part to another, or		N/A
	decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		P
	Compliance checked by the test of 30.2.1, and in addition		N/A
	- for attended appliances, 30.2.2 applies		N/A
	- for unattended appliances, 30.2.3 applies		P
	For appliances for remote operation, 30.2.3 applies		N/A
	For base material of printed circuit boards, 30.2.4 applies		P
30.2.1	Parts of non-metallic material subjected to the glow-wire test of IEC 60695-2-11 at 550 °C		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	However, test not carried out if the material is classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 550 °C, or		N/A
	the material is classified at least HB40 according to IEC 60695-11-10		N/A
	Parts for which the glow-wire test cannot be carried out need to meet the requirements in ISO 9772 for material classified HBF		N/A
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	The tests are not applicable to conditions as specified		N/A
30.2.3.1	Parts of non-metallic material supporting connections carrying a current exceeding 0,2 A during normal operation, and	Supply terminal	P
	parts of non-metallic material, other than small parts, within a distance of 3 mm,		N/A
	subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850 °C		P
	Glow-wire applied to an interposed shielding material, if relevant		N/A
	The glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 850 °C		N/A
30.2.3.2	Parts of non-metallic material supporting connections, and		P
	parts of non-metallic material within a distance of 3 mm,		N/A
	subjected to glow-wire test of IEC 60695-2-11		P
	The test severity is.....:		P
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation	Supply terminal	P
	- 650 °C, for other connections		N/A
	Glow-wire applied to an interposed shielding material, if relevant		N/A
	However, the glow-wire test of 750 °C or 650 °C as appropriate, is not carried out on parts of material fulfilling both or either of the following classifications		N/A
	- a glow-wire ignition temperature according to IEC 60695-2-13 of at least.....:		N/A
	- 775 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	- 675 °C, for other connections		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	- a glow-wire flammability index according to IEC 60695-2-12 of at least.....:		N/A
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	- 650 °C, for other connections		N/A
	The glow-wire test is also not carried out on small parts. These parts are to:		N/A
	- comprise material having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- comprise material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- comply with the needle-flame test of annex E, or		N/A
	- comprise material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
	The consequential needle-flame test of annex E applied to non-metallic parts that encroach within the vertical cylinder placed above the centre of the connection zone and on top of the non-metallic parts supporting current-carrying connections, and parts of non-metallic material within a distance of 3 mm of such connections if these parts are those.....:		N/A
	- parts that withstood the glow-wire test of IEC 60695-2-11 of 750 °C or 650 °C as appropriate, but produce a flame that persist longer than 2 s, or		N/A
	- parts that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- small parts, that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- small parts for which the needle-flame test of annex E was applied, or		N/A
	- small parts for which a material classification of V-0 or V-1 was applied		N/A
	However, the consequential needle-flame test is not carried out on non-metallic parts, including small parts, within the cylinder that are:		N/A
	- parts having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- parts comprising material classified as V-0 or V-1 according to IEC 60695-11-10, or		N/A
	- parts shielded by a flame barrier that meets the needle-flame test of annex E or that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
30.2.4	Base material of printed circuit boards subjected to the needle-flame test of annex E		P
	Test not applicable to conditions as specified:		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
31	RESISTANCE TO RUSTING		P
	Relevant ferrous parts adequately protected against rusting		P
	Tests specified in part 2 when necessary		N/A
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		P
	Appliance does not emit harmful radiation or present a toxic or similar hazard due to their operation in normal use		P
	Compliance is checked by the limits or tests specified in part 2, if relevant		N/A
32.101	Infrared emitters in prefabricated infrared cabins not emit radiation in hazardous amounts. (IEC 60335-2-53)		N/A
	Compliance is checked by measurement as specified in Annex BB. (IEC 60335-2-53)		N/A
	Irradiance measured not exceed 1 000 W/m ² at any point in the usable area of the prefabricated infrared cabin. (IEC 60335-2-53)		N/A
A	ANNEX A (INFORMATIVE) ROUTINE TESTS		N/A
	Description of routine tests to be carried out by the manufacturer		N/A
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES		N/A
	Sub-clauses deleted.		N/A
C	ANNEX C (NORMATIVE) AGEING TEST ON MOTORS		N/A
	Sub-clauses deleted.		N/A
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS		N/A
	Sub-clauses deleted.		N/A
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		N/A
	Sub-clauses deleted.		N/A
F	ANNEX F (NORMATIVE) CAPACITORS		N/A
	Sub-clauses deleted.		N/A
G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		N/A
	Sub-clauses deleted.		N/A
H	ANNEX H (NORMATIVE) SWITCHES		N/A

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	Sub-clauses deleted.		N/A
I	ANNEX I (NORMATIVE) MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		N/A
	Sub-clauses deleted.		N/A
J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		N/A
	Sub-clauses deleted.		N/A
K	ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES		P
	The information on overvoltage categories is extracted from IEC 60664-1		P
	Overvoltage category is a numeral defining a transient overvoltage condition		P
	Equipment of overvoltage category IV is for use at the origin of the installation		N/A
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		N/A
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		P
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N/A
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		N/A
L	ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		P
	Information for the determination of clearances and creepage distances		P
M	ANNEX M (NORMATIVE) POLLUTION DEGREE		P
	The information on pollution degrees is extracted from IEC 60664-1		P
	Pollution		P
	The microenvironment determines the effect of pollution on the insulation, taking into account the macroenvironment		P
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	Minimum clearances specified where pollution may be present in the microenvironment		P
	Degrees of pollution in the microenvironment		P
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established		P
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		N/A
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		P
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		N/A
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N/A
N	ANNEX N (NORMATIVE) PROOF TRACKING TEST		N/A
	Sub-clauses deleted.		N/A
O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF clause 30		P
	Description of tests for determination of resistance to heat and fire		P
P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES		N/A
	Sub-clauses deleted.		N/A
Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS		P
	Description of tests for appliances incorporating electronic circuits		P
R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION		N/A
	Sub-clauses deleted.		N/A
AA	ANNEX AA (NORMATIVE) SAUNA ROOM FOR TESTING SAUNA HEATING APPLIANCES (IEC 60335-2-53)		P
	Sauna room is shown in Figure AA.1 and has adjustable dimensions. (IEC 60335-2-53)		P

IEC 60335-2-53			
Clause	Requirement - Test	Result - Remark	Verdict
	Ceiling height can be adjusted to 1 900 mm, 2 100 mm or 2 300 mm and depends upon the minimum vertical distance marked on the sauna heater. Width is 2 500 mm and the length is adjustable by moving one of the walls. (IEC 60335-2-53)	Ceiling height adjustable. Used 1900mm.	P
	If a smaller sauna room is required, a partition wall having a length of 1 200 mm is installed. (IEC 60335-2-53)		P
	Walls, ceiling and floor of the sauna room are made of plywood approximately 20 mm thick. Walls and ceiling are insulated using insulation having a thermal resistance of 1,875 m ² K/W to 2,5 m ² K/W (IEC 60335-2-53)		P
	Floor is installed 30 mm above the supporting surface. (IEC 60335-2-53)		P
	Sauna room is ventilated by air having a temperature of 20 °C ± 5 °C passing through an inlet opening in the fixed wall. (IEC 60335-2-53)		P
	Opening is at floor level and has dimensions of 150 mm x 150 mm. (IEC 60335-2-53)		P
	Opening moved in the horizontal direction so that it is located symmetrically behind the sauna heater. (IEC 60335-2-53)		P
	An air outlet having approximately the same area is positioned in the opposite wall 300 mm below the ceiling and at least 1 000 mm from the fixed wall. (IEC 60335-2-53)		P
	Forced ventilation is used to provide six air changes per hour. (IEC 60335-2-53)		P
BB	ANNEX BB (NORMATIVE) ESTIMATION OF THE INFRARED RADIATION (IEC 60335-2-53)		N/A
	Description of measurement of the radiation in the infrared-cabin.. (IEC 60335-2-53)		N/A

EMF			
	See Annex 1 page 9.		P

TABLE R.1 ^e – GENERAL FAULT/ERROR CONDITIONS				
Component ^a	Fault/error	Acceptable measures ^{b,c}	Definitions See IEC 60730-1	Verdict
	Sub-clauses deleted.			N/A

10.1	TABLE: Power input deviation					P
Input deviation of/at:	P rated (W)	P measured (W)	ΔP (W, %)	Required ΔP (W, %)	Remark	
235V:	8000W	8275W	+ 3,4%	+ 5/-10%	P	
235V:	6600W	6850W	+ 3,8%	+ 5/-10%	P	
235V:	4400W	4580W	+4,1%	+ 5/-10%	P	
Supplementary information:						

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

11.8	TABLE: Heating test, thermocouple measurements				P
	Test voltage (V)	430V			—
	Ambient (°C)	23			—
Thermocouple locations	Max. temperature rise measured, ΔT (K)			Max. temperature rise limit, ΔT (K)	
Thermocouple locations	Type 0315-80-040518	Type 0315-80-040518 with CC50	Type 0315-44-040518	-	
Terminals	46	44	45	60	
Supply cord	21	38	18	50	
Relay (Schrack RZ03)	57	-	58	115	
Contactora (Finder 62.x)	58	61	57	115	
Internal wire	58	72	40	155	
Relay (Omron)	-	60	-	115	
Ceiling	82	83	80	115	
Wall	79	80	79	115	
Floor	53	64	53	115	
Wooden rod	64	73	69	115	
Supplementary information:					

11.8	TABLE: Heating test, thermocouple measurements			P
	Test voltage (V)	430V	—	
	Ambient (°C)	23	—	
Thermocouple locations		Max. temperature rise measured, ΔT (K)	Max. temperature rise limit, ΔT (K)	
Thermocouple locations		Type 0315-80-1718	-	
Terminals		47	60	
Supply cord		42	50	
Timer		56	100	
Thermostat		52	80	
Internal wire		62	155	
Knob		30	60	
Ceiling		110	115	
Wall		112	115	
Floor		70	115	
Wooden rod		99	115	
Supplementary information:				

11.8	TABLE: Heating test, resistance method					P
	Test voltage (V)	430			—	
	Ambient, t1 (°C)	23			—	
	Ambient, t2 (°C)	23			—	
Temperature rise of winding		R1 (□)	R2 (□)	ΔT (K)	Max. ΔT (K)	Insulation class
Transformer primary		278	342	59	95	130(B)
Transformer secondary		1,6	1,95	56	95	130(B)

13.2	TABLE: Leakage current			P
	Heating appliances: 1,15 x rated input (W)	1.15 x 8000W		—
	Motor-operated and combined appliances: 1,06 x rated voltage (V)	N/A		—
Leakage current between			I (mA)	Max. allowed I (mA)
Live parts / accessible parts (3N~)				
switches a, b, c closed :			0,10mA	5mA
switch a open			0,65mA	5mA
switch b open			0,56mA	5mA
switch c open			0,65mA	5mA

Supplementary information:

13.3	TABLE: Electric strength			P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)	
Live parts / accessible metal parts		1000V	No	
Parts insulated by basic insulation and accessible parts over supplementary insulation		1750V	-	
Live parts / control panel		3000V	No	
Supplementary information:				

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

16.2	TABLE: Leakage current			P
	Single phase appliances: 1,06 x rated voltage (V)	N/A		—
	Three phase appliances 1,06 x rated voltage divided by $\sqrt{3}$ (V)	$1,06 \times 415 / \sqrt{3} = 254V$		—
Leakage current between		I (mA)	Max. allowed I (mA)	
Live parts / accessible metal parts		0,50mA	5mA	
Supplementary information:				

16.3	TABLE: Electric strength			P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)	
Live parts / accessible metal parts		1250V	No	
Parts insulated by basic insulation and accessible parts over supplementary insulation		1750V	-	
Live parts / control panel		3000V	No	

Supplementary information:

17	TABLE: Overload protection, thermocouple measurements		N/A
Temperature rise of part/at:		ΔT (K)	Max. ΔT (K)
Supplementary information:			

17	TABLE: Overload protection, resistance method				P
	Test voltage (V)		254		—
	Ambient, t1 (°C)		23		—
	Ambient, t2 (°C)		23		—
Temperature of winding	R1 (\square)	R2 (\square)	ΔT (K)	T (°C)	Max. T (°C)
					165
Supplementary information: After short-circuit , no temperature rise. Fuse F800 (0.8A) worked immediately.					

19		Abnormal operation conditions						P
Operational characteristics		YES/NO	Operational conditions					
Are there electronic circuits to control the appliance operation?		YES						
Are there "off" or "stand-by" position?		YES						
The unintended operation of the appliance results in dangerous malfunction?		NO						
Sub-clause	Operating conditions description	Test results description	PEC description	EMP 19.11.4	Software type required	19.11.3 PEC	Final result	
19.2	0,85xPn	Thermostat worked	N.A	N.A	N.A	N.A	P	
19.3	1,24xPn	Thermostat worked	N.A	N.A	N.A	N.A	P	
19.4	Thermostat inoperative	Thermal cut-out worked	N.A	N.A	N.A	N.A	P	
19.5								
19.6								
19.7								
19.8								
19.9								
19.10								
19.11.2	S-c of components	Appliance not worked	N.A	N.A	N.A	N.A	P	
19.11.4.8	Ceases to respond	Manual restart	N.A	N.A	N.A	N.A	P	
19.104	1,24xPn	Thermostat worked	N.A	N.A	N.A	N.A	P	
Supplementary information:								

19.7	TABLE: Abnormal operation, locked rotor/moving parts					N/A
	Test voltage (V)	N/A			—	
	Ambient, t1 (°C)	N/A			—	
	Ambient, t2 (°C)	N/A			—	
Temperature of winding		R1 (□)	R2 (□)	ΔT (K)	T (°C)	Max. T (°C)
Supplementary information:						

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

19.13	TABLE: Abnormal operation, temperature rises					P
Thermocouple locations	Max. temperature rise measured, ΔT (K)				Max.temperature rise limit, ΔT (K)	
	Type 0315-80-040518 cl 19.2	Type 0315-80-040518 cl 19.3	Type 0315-80-040518 cl 19.4	Type 0315-44-040518 cl 19.4		
Supply cord	24	26	19	24	150	
Ceiling	80	82	109	115	140	
Walls	78	80	102	113	140	
Floor	50	67	90	86	140	
Wooden rod	64	67	92	93	140	
Supplementary information:						

19.13	TABLE: Abnormal operation, temperature rises					P
Thermocouple locations	Max. temperature rise measured, ΔT (K)				Max.temperature rise limit, ΔT (K)	
	Type 0315-44-040518 cl 19.104	Type 0315-80-040518 with CC50 cl 19.4	Type 0315-80-1718 cl 19.4	Type 0315-80-040518 cl 19.104		
Supply cord	16	70	64	40	150	
Ceiling	80	116	119	81	140	
Walls	78	108	114	79	140	
Floor	69	109	94	49	140	
Wooden rod	61	118	116	66	140	
Supplementary information:						

24.1	TABLE: Components information					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
Standard						
Switch	Marquart	1858	5/100A 250V T100/55 5E4 cycles	IEC/EN 61058-1	Kema 2124278	
Terminals	Ensto	242.06	4mm ² 450V	IEC/EN 60998-2-1	FI26021	
Alternative	Weco	323	2,5mm ² 450V T85	IEC/EN 60998-2-1	VDE 40020279	
Terminals	Metalluk	1971	10mm ² 100A 450V T150	IEC/EN 60998-2-1	VDE 40027638	
Alternative	Weco	327	16mm ² 750V T85	IEC/EN 60998-2-1	VDE 40020288	
Relay	Finder	62.83.8.23 0.0300	15A 250V 1E5 cycles	IEC/EN 61810-1	VDE 40011730	
Fuse holder	Schurter	FPG2	10A 250V	IEC/EN 60127-1	VDE12721 6	
Fuse	Schurter	SP 5x20	1A 250V	IEC/EN 60127-1	VDE40009 397	
Internal wire	Alstermo	H05	T90	HD21.7 S2:1996+ A1	Semko 902247	
Thermal cut- out	Elmwood	2450RCM	10(6)A 250V L150C, 1E3 cycles	IEC/EN 60730-2-9	VDE 40012362	
PCB material	Boluo Konka	BLK	UL94V-0	IEC/EN 60335-2-53	UL E313218	
Control panel	Tylö	T2		IEC/EN 60335-2-53	Tested with the appliance	
Control panel	Tylö	CC50		IEC/EN 60335-2-53	Tested with the appliance	
Olea 97 (relay board)						
Transformer	Hahn	BV EI 481 1379	230V sec 12V 10VA	IEC/EN 61558-2-6	VDE 108266	
Relay	Schrack	RZ03	250V 1E5 cycles	IEC/EN 61810-1	VDE 40023970	
Olea 98 (relay board)						
Relay	Omron	G2RL	250V 3E4 cycles	IEC/EN 61810-1	VDE 119650	
Capacitor	Arcotronics	R46	68n 275V X2	EN 132400:1994 + A2+ A3+ A4	IMQ DAT97000 141	
Alternative	Rifa	PHE840M	68n 275V X2	IEC/EN 60384-14	ENEC 14 SE/0140- 12B	

Transformer	Hahn	BV EI 382 1190	230V sec 18V 4,5VA	EN 61558-2-6	VDE 119359
Fonda/Sense					
Sensor/temperature cut-out	Cothem	BTS	240V T105 therm. 1E5 cycles cut-out 300 cycles	EN 60730-1	VDE 40024001
Timer	Faucigny Instruments	Mi2	16A 250V	EN 60730-1	VDE 40007715
Heating element 4,4kW	Backer, Kaneta, Loyal, Tylö	SEPC 64	2200W 230V	IEC/EN 60335-2-53	Tested with the appliance
Heating element 6,6kW	Backer, Kaneta, Loyal, Tylö	SEPC 64	2200W 230V	IEC/EN 60335-2-53	Tested with the appliance
Heating element 8kW	Backer, Kaneta, Loyal, Tylö	SEPC 65	2670W 230V	IEC/EN 60335-2-53	Tested with the appliance

Supplementary information:

¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039.

28.1	TABLE: Threaded part torque test			P
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)	
Screws of enclosure	3,5	II	0,8Nm	
Screws of terminals	5,8	II	2,5Nm	

Supplementary information:

29.1	TABLE: Clearances						P
	Overvoltage category.....				II		—
		Type of insulation:					
Rated impulse voltage (V):	Min. cl (mm)	Basic (mm)	Supplementary (mm)	Reinforced (mm)	Functional (mm)	Verdict / Remark	
330	0,2* / 0,5 / 0,8**						
500	0,2* / 0,5 / 0,8**						
800	0,2* / 0,5 / 0,8**						
1 500	0,5 / 0,8** / 1,0***						
2 500	1,5 / 2,0***	>3,0	>3,0			P	
4 000	3,0 / 3,5***			3,9		P	
6 000	5,5 / 6,0***						
8 000	8,0 / 8,5***						
10 000	11,0 / 11,5***						
Supplementary information: *) For tracks on printed circuit boards if pollution degree 1 and 2 **) For pollution degree 3 ***) If the construction is affected by wear, distortion, movement of the parts or during assembly							

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V)	Creepage distance (mm)										
	Pollution degree										
	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb [*]	B ^{**})	S ^{**})	R ^{**})	Verdict
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9		—	—	
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9	—		—	
≤50	0,36	1,2	1,7	2,4	3,0	3,4	3,8	—	—		
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4		—	—	
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4	—		—	
125	0,56	1,5	2,1	3,0	3,8	4,2	4,8	—	—		
250	0,56	1,25	1,8	2,5	3,2	3,6	4,0	>5,0	—	—	P
250	0,56	1,25	1,8	2,5	3,2	3,6	4,0	—	>5,0	—	P
250	1,12	2,5	3,6	5,0	6,4	7,2	8,0	—	—	5,0	P
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	
400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	
500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	
>630 and ≤800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	
>800 and ≤1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	
>1000 and ≤1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—	
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—		—	
>1250 and ≤1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—		
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		—	—	
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—		—	
>1600 and ≤2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—		

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

Supplementary information:

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

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

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

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

30																				TABLE: Resistance to heat and fire																			
Object/ part No.	Manufacturer/ trademark	Type/ model	Ball pressure test °C				Glow wire test (GWT) °C						Glow-wire flammability index (GWFI) °C				Glow- wire ignition temp. (GWIT) °C		Needle - flame test (NFT)	Verdict																			
			75	125	cl. 11 +40	cl. 19 +25	550	650		750		850	550	650	750	850	675	775																					
							te		ti																														
Terminal	Metalluk	1971		X	86				0	0	0				X					P																			
Relay	Finder	62.							0	0	0									P																			
Relay	Omron	G2RL							0	0	0									P																			
Relay	Schrack	RZ							0	0	0									P																			
Switch	Marquart	1858												X	X					P																			
Cut-out	Honeywell	2450																		(Ceramic) P																			
Terminal	Weco	323																X		P																			
Terminal	Weco	327																X		P																			
Cut-out	Cotherm	BTS												X	X					P																			

Supplementary information:

- 1) Parts of material classified at least HB40 or if relevant HBF
- 2) Parts of material classified as V-0 or V-1
- 3) Flame persisting longer than 2 s (= te – ti) need only be reported for unattended appliances
- 4) Surrounding parts subjected to the needle-flame test of annex E
- 5) Base material classified as V-0 or if relevant VTM-0
- 6) The GWIT pre-selection option, the 850 °C GWFI pre-selection option, and the 850 °C GWT are not applicable for attended appliances

List of test equipment used:

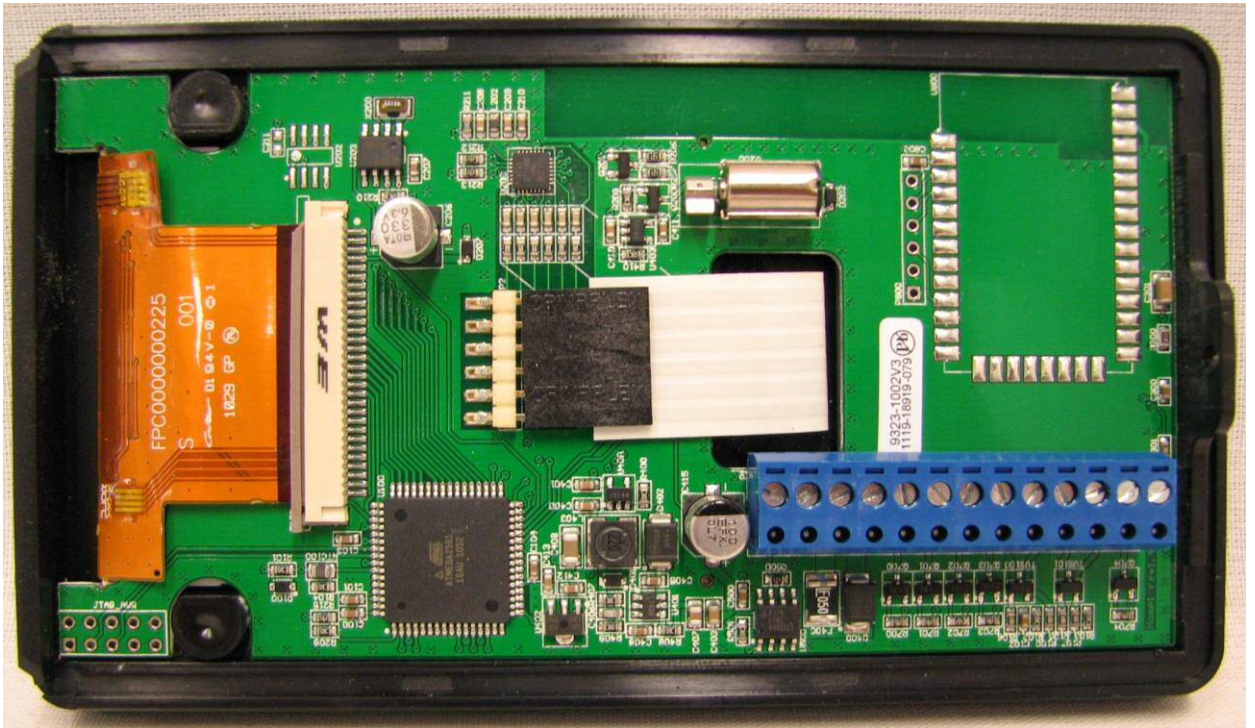
Description	Manufacturer	Type	Inv. no	Calibration date
Digital multimeter	Hewlett Packard	974A	5121	11.11.2011
Digital multimeter	Fluke	179	8399	13.1.2012
Earthing tester	Quadtech	1050	7820	28.8.2012
Impact test apparatus	Nemko	0,5Nm	1740	27.9.2011
Gauge	Mitutoyo	CD-15CP	5231	13.3.2012
Oven	Heraeus	T5042E	3900	-
Datalogger	Agilent	34970A	7025	27.9.2011
Datalogger	Agilent	34970A	8665	8.5.2012
High voltage tester	Sefelec	RXS500	8851	15.8.2012
Leakage current apparatus	SGS Fimko	fig. 4	8508	15.5.2012
Test finger B	SGS Fimko	60335-1	4325	ICO
Test finger 18	SGS Fimko	60335-1	5428	ICO
Glow-wire test apparatus	Testing Europe	T4-08	8538	21.8.2012
Ball pressure test device	SGS Fimko	-	568	ICO
Digital power meter	Yokogawa	2534	5048	1.10.2012



Helo Type 0315-80-040518



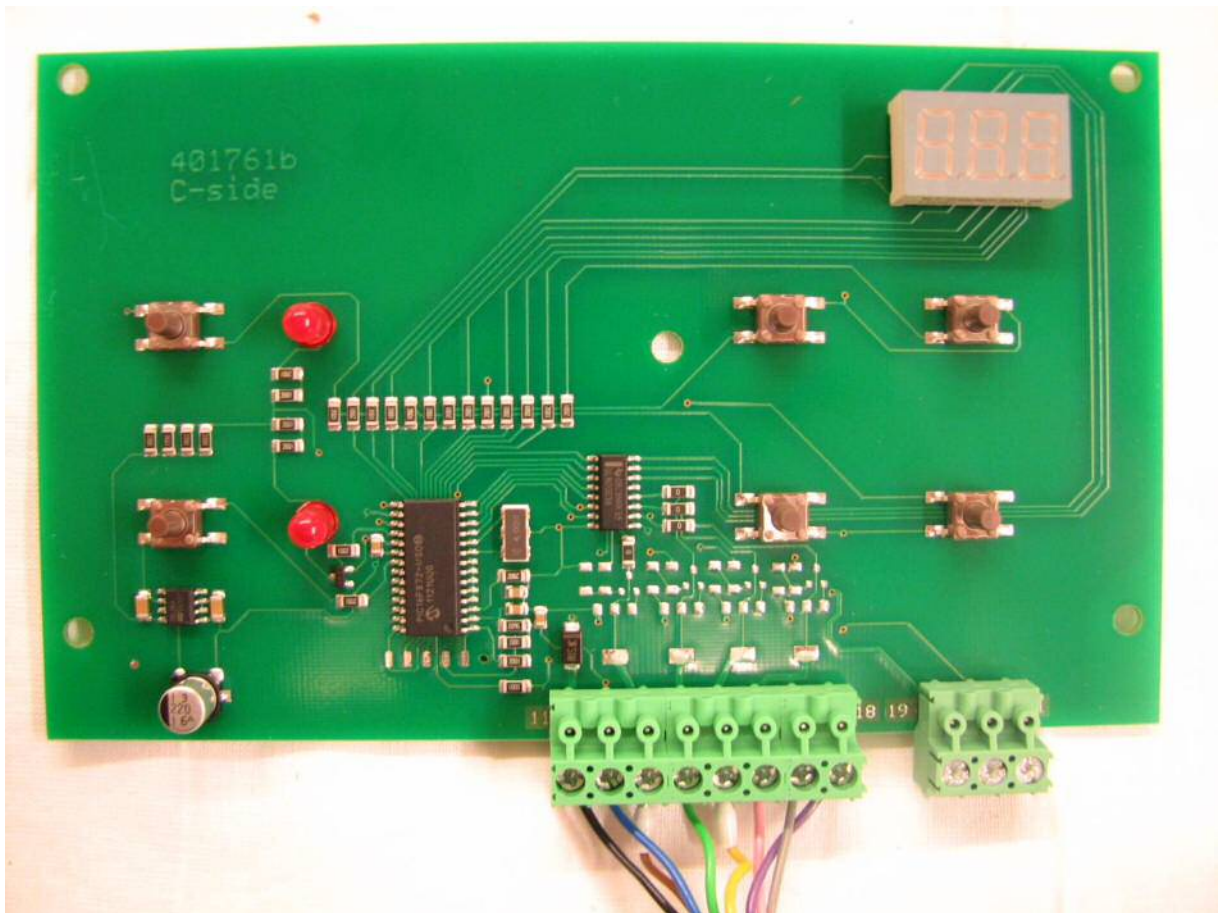
Control panel T2

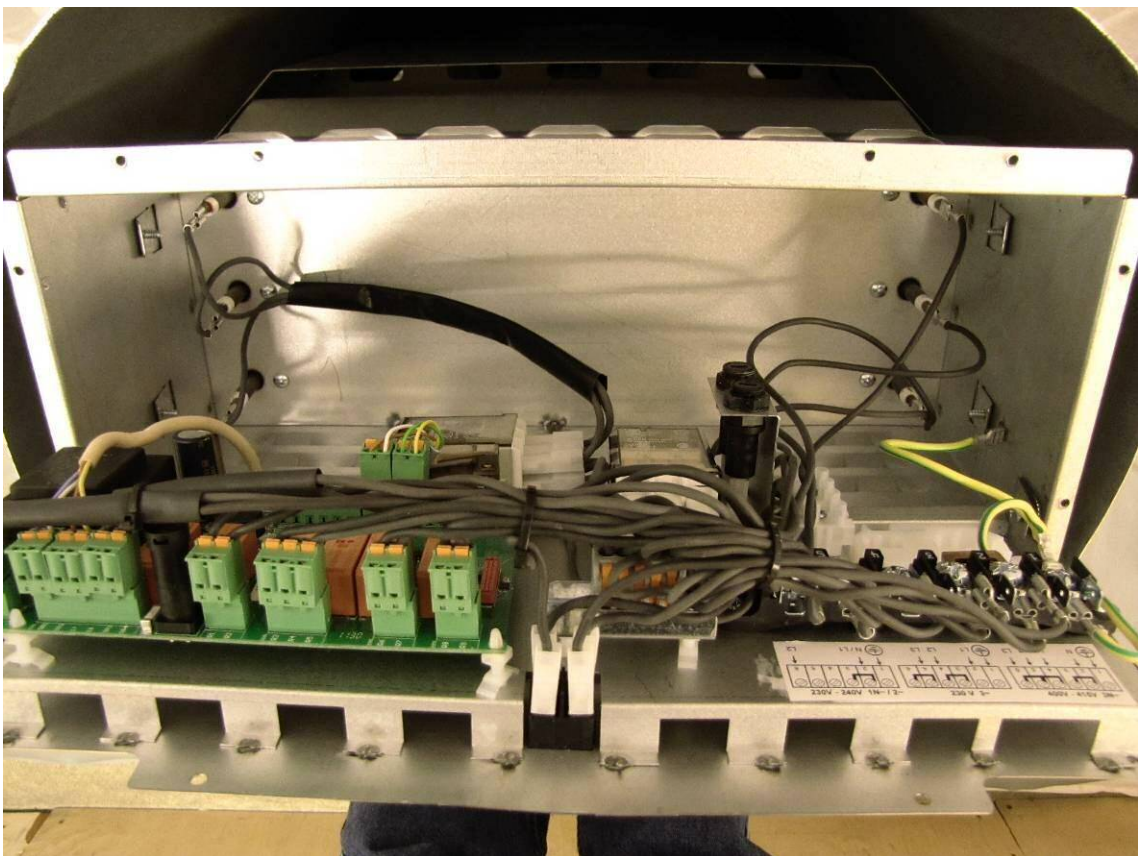
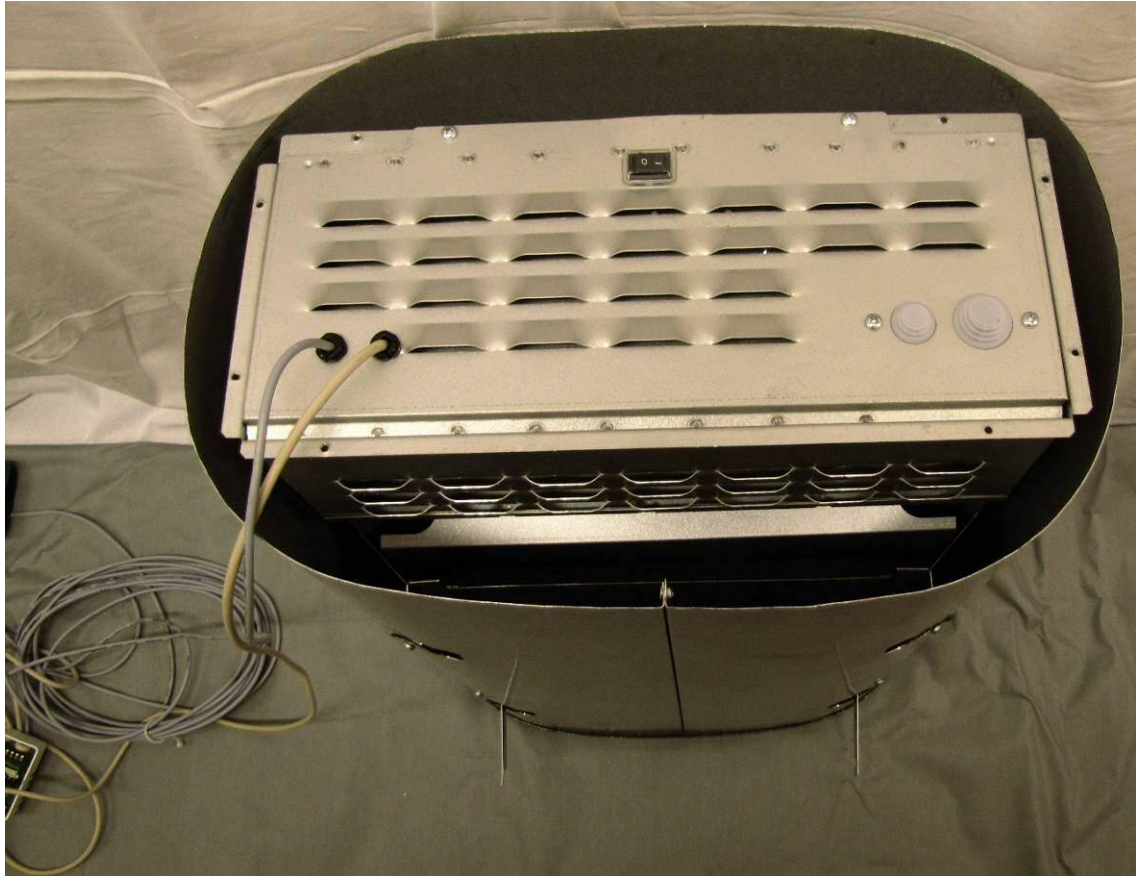


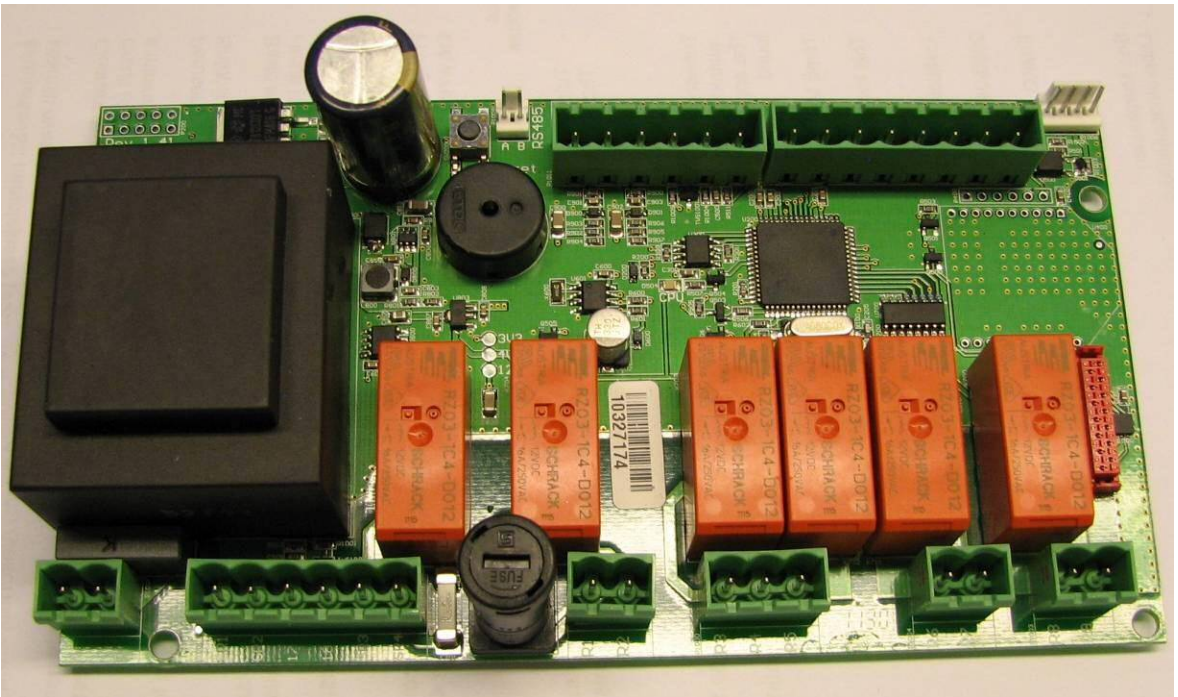




Control panel CC50









Helo Type 0315-80-1718 (timer)

