TEST REPORT
UL 1647 / CSA C22.2 No.60335-1
Motor-Operated Massage and Exercise Machines
Safety of Household and Similar Appliance - Part 1: General Requirements
Household and Similar Electrical Appliances

Report number.....:	**BKC24041891DS**
Date of issue.....:	**Apr. 29, 2024**
Testing Laboratory.....:	**Shenzhen BKC Testing Co., Ltd.**
Address.....:	Room103, 1/F, Huaya Building, Huaya Industrial Park, Yousong Community, Longhua Subdistrict, Longhua District, Shenzhen, Guangdong, China
Applicant's name.....:	Jinhua Youzhi Sports Equipment Co., Ltd
Address.....:	No.466, Donggang North Street, Jinhua City, Zhejiang Province
Test specification.....:	
Standard.....:	UL 1647 / CSA C22.2 NO. 60335-1
Test procedure.....:	UL Report
Non-standard test method…...:	N/A
Test Report Form No.:	UL 1647 / CSA C22.2 NO. 60335-1
Test Report Form(s) Originator .	BKC
Master TRF.....:	Dated 2019
Test item description.....:	TREADMILL
Trademark.....:	N/A
Manufacturer.....:	Jinhua Youzhi Sports Equipment Co., Ltd No.466, Donggang North Street, Jinhua City, Zhejiang Province
Model/Type reference.....:	See the page 3
Ratings.....:	See the page 4

General disclaimer:

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

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):	
☒ **Testing Laboratory:**	Shenzhen BKC Testing Co.,Ltd
Testing location/ address.....:	Room103, 1/F, Huaya Building, Huaya Industrial Park, Yousong Community, Longhua Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tested by.....: Henry Wei / Test Engineer	Henry Wei
Checked by.....: Casey Wang / Project Engineer	Casey Wang
Approved by.....: Jerry Liao / Project Manager	SHENZHEN BKC TESTING CO.,LTD BKC APPROVED

Model(s):

Q20-4, KRD-JK100, KRD-JK101, KRD-JK102, KRD-JK103, KRD-JK105, KRD-JK106, KRD-JK107, KRD-JK108, KRD-JK109, KRD-JK325, KRD-JK360, KRD-JK370,KRD-JK0801, KRD-JK0802, KRD-JK0803, KRD-JK0805, KRD-JK0806, KRD-JK0807, KRD-JK0808, KRD-JK0809,KRD-JK1601, KRD-JK1602, KRD-JK1603, KRD-JK1605, KRD-JK1606, KRD-JK1607, KRD-JK1608, KRD-JK1609, KRD-0201, KRD-JK0301, KRD-GR1, KRD-JK02, KRD-JK03, KRD-JK05, KRD-JK06, KRD-JK08, KRD-JK09,KRD-JK10, KRD-JK12, KRD-JK13, KRD-JK15, KRD-JK16, KRD-JK17, KRD-JK18, KRD-JK19,KRD-JK20, KRD-JK28, KRD-JK39, KRD-JK30, KRD-JK31, KRD-JK43, KRD-JK50, KRD-JK68, KRD-JK69, KRD-JK88, KRD-JK98,KRD-JK122, KRD-JK123, KRD-JK125,SL-Q16, SL-Q17, SL-Q18, SL-Q19, SL-Q20, SL-Q21, SL-Q22, SL-Q23, SL-Q24, SL-Q25, KRD-JK8801, KRD-JK8802, KRD-JK8803, KRD-JK8804, KRD-JK8805, KRD-JK8806, KRD-JK8807, KRD-JK8808, KRD-JK8809,KRD-JK9902, KRD-JK1000, KRD-JK3000, KRD-JK5000,KRD-JK1200, KRD-JK1201, KRD-JK1202, KRD-JK1203, KRD-JK1204, KRD-JK1205, KRD-JK1206, KRD-JK1207, KRD-JK1208, KRD-JK1209,KRD-JK3701, KRD-JK3702, KRD-JK3703, KRD-JK3705, KRD-3706, KRD-3707, KRD-3708, KRD-JK3709,KRD-JK280, KRD-JK340, KRD-JK420, KRD-JK450, KRD-JK8866, SL-Z01, SL-Z02, SL-Z03, SL-Z04, SL-Z05, SL-Z06, SL-Z07, SL-Z08, SL-Z09, SL-Z10, SL-Z11, SL-Z12, SL-Z13, SL-Z14, SL-Z15, SL-S30, SL-S31, SL-S32, SL-S33, SL-S34, SL-S35.GP01, GP02, GP03, GP05, GP06, GP07, GP08, GP09, GP10, GP21, GP22, YZ-Z1, YZ-Z2, YZ-Z6, YZ-Z8, C1, OT-1, BT-1, U6, A1, BT-2, TS-8.

List of Attachments (including a total number of pages in each attachment):

- Attachment 1: Photo documentation. (3 pages)

Summary of testing:

Tests performed:

The submitted samples were found to comply with the requirements of:

UL 1647;CSA C22.2 No.60335-1

Artwork of marking plate(s):

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

TREADMILL

Model: YZ-Z1

Rating(s): 100-120V AC 60Hz

Jinhua Youzhi Sports Equipment Co., Ltd

No.466, Donggang North Street, Jinhua City, Zhejiang Province

Importer:XXXXXX
Address:XXXXXX

Made in China

Test item particulars:
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.....:** Apr. 15, 2024 **Date (s) of performance of tests .....:** Apr. 15, 2024 - Apr. 29, 2024
General remarks:
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. **Throughout this report a ☐ comma / ☒ point is used as the decimal separator.**
General product information: 1.The sample under test is a TREADMILL . 2.The laboratory ambient for testing: 22.0-25.0°C, 60%-73%R.H. 3.The product weight approx.: 25.7 kg. 4.All models are similar except their model name, all tests were conducted on model YZ-Z1.

UL 1647			
Clause	Requirement + Test	Result - Remark	Verdict
INTRODUCTION			
1	Scope		P
2	Units of Measurement		P
3	Undated References		P
4	Glossary		P

CONSTRUCTION			
5	Components		P
6	General		P
6.1	An appliance shall employ materials that are acceptable for the application.		P
6.2	An appliance employing a heating element is judged on the basis of its compliance with the requirements in this standard insofar as they apply, and with the applicable requirements in the Standard for Electric Heating Appliances, UL 499.	Not such appliance	N/A
6.3	Foam padding provided with an appliance having a heating pad shall comply with the requirements for HBF or better material.	Not such foam padding	N/A
6.4	Thermoplastic material used for a part of an appliance having any dimension (length, width, or height) greater than 12 in (305 mm) shall be classified HB.		P
6.5	Fabric, batting, padding, foam, and synthetic or natural leather shall not be relied upon to serve as an electrical enclosure (or barrier) for insulated live parts, including internal wiring, and uninsulated live parts. Nor shall it be used to support a live part, be in direct contact with a live part, or be within 1/32 inch (0.8mm) of a live part.		P
7	Frame and Enclosure		P
7.1	General		P
7.1.1	An appliance shall be formed and assembled so that it will have the strength and rigidity necessary	Rigid plastic enclosure.	P

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	to resist the abuses to which it is likely to be subjected, without resulting in a risk of fire, electric shock, or injury to persons due to total or partial collapse with resulting reduction of spacings, loosening or displacement of parts, or other serious defects.		
7.1.2	For unreinforced, flat surfaces in general, cast metal shall not be less than 1/8 in (3.2 mm) thick, except that malleable iron may be not less than 3/32 in (2.4 mm) and die-cast metal may be not less than 5/64 in (2.0 mm) thick. Corresponding thicknesses of not less than 3/32, 1/16 (1.6 mm), and 3/64 in (1.2 mm), respectively, may be acceptable if the surface under consideration is curved, ribbed, or otherwise reinforced, or if the shape or size, or both, of the surface is such that the necessary mechanical strength is provided.	Not such appliance	N/A
7.1.3	An enclosure of sheet metal shall be judged with respect to its size, shape, thickness of metal, and its application, considering the intended use of the complete appliance. Sheet steel having a thickness of less than 0.026 in (0.66 mm) if uncoated or 0.029 in (0.74 mm) if galvanized or of nonferrous sheet metal having a thickness of less than 0.036 in (0.91 mm) shall not be used, except for relatively small areas or for surfaces that are curved or otherwise reinforced.	Not such appliance	N/A
7.1.4	Sheet metal to which a wiring system is to be connected in the field shall have a thickness not less than 0.032 in (0.81 mm) if uncoated steel, not less than 0.034 in (0.86 mm) if galvanized steel, and not less than 0.045 in (1.14 mm) if nonferrous.	Not such appliance	N/A
7.1.5	Among the factors that shall be evaluated when determining the acceptability of magnesium or a nonmetallic material, other than a polymeric material, are resistance to:	Polymeric material is used only	N/A
	a) Mechanical damage,		N/A
	b) Impact,		N/A

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	c) Moisture absorption,		N/A
	d) Combustion, and		N/A
	e) Distortion at temperatures to which the material is subjected under conditions of normal or abnormal use.		N/A
7.1.6	The enclosure of a remotely or automatically controlled appliance shall prevent molten metal, burning insulation, flaming particles, or the like, from falling on combustible materials, including the surface upon which the appliance is supported.	Not a remotely (appliance not operated out of sight of the operator) and automatically controlled appliance.	N/A
7.1.7	The requirement in 7.1.6 will necessitate that a switch, a relay, a solenoid, or the like, be individually and completely enclosed, except for terminals, unless it can be shown that malfunction of the component would not result in a risk of fire, or there are no openings in the bottom of the appliance enclosure. It will also necessitate the use of a barrier of noncombustible material: a) Under a motor unless: 1) The structural parts of the motor or of the appliance provide the equivalent of such a barrier, 2) The protection provided with the motor is such that no burning insulation or molten material falls to the surface that supports the appliance when the motor is energized under each of the following fault conditions: i) Open main winding, ii) Open starting winding, iii) Starting switch short-circuited, and iv) Capacitor of permanent-split capacitor motor short circuited – the short-circuit is to be applied before the motor is energized, and the rotor is to be locked, 3) The motor is provided with a thermal motor	No opening	N/A

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	protector ¨C a protective device that is sensitive to temperature and current°C that will prevent the temperature of the motor windings from exceeding 125°C (257°F) under the maximum load under which the motor will run without causing the protector to cycle and from exceeding 150°C (302°F) with the rotor of the motor locked, or 4) The motor complies with the requirements in the Standard for Overheating Protection for Motors, UL 2111, and the temperature of the motor winding will not exceed 150°C during the first 72 hours of operation with the rotor of the motor locked. b) Under wiring, unless it is neoprene- or thermoplastic-insulated.		
7.1.8	The barrier mentioned in 7.1.7 shall be horizontal, shall be located as illustrated in Figure 7.1, and shall not have an area less than that described in that illustration. Openings for drainage, ventilation, and the like, may be employed in the barrier, provided such openings would not permit molten metal, burning insulation, or the like, to fall on combustible material.		N/A
7.1.9	A door or a cover of an enclosure that provides access to any overload-protective device that requires resetting or renewal shall be hinged or otherwise attached in an equivalent manner.	No such door or cover on the plastic enclosure.	N/A
7.1.10	Means shall be provided for holding the door or cover over a fuseholder in a closed position, and the door or cover shall be tight-fitting.	No such door or cover on the plastic enclosure.	N/A
7.1.11	A cord-connected appliance that is provided with keyhole slots, notches, hanger holes, or the like, for hanging on a wall shall be constructed in such a manner that the hanging means is not accessible without removing the appliance from the supporting means.	No such construction.	N/A

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7.1.12	To determine whether a product complies with the requirement in 7.1.11, any part of the enclosure or barrier that can be removed without the use of tools to gain access to the hanging means is to be removed.	No such construction	N/A
7.1.13	An opening in the appliance provided for hanging shall be located or guarded so that a nail, hook, or the like does not displace a part that would create a risk of fire or electric shock and does not contact one of the following: a) An uninsulated live metal part. b) Magnet wire. c) Internal wiring. d) Moving parts. e) Any other part likely to create a risk of fire or electric shock.	No such construction	N/A
7.2	**Polymeric material enclosure**		-
7.2.1	A polymeric material used to enclose uninsulated live parts, or enclose live parts having insulation less than 0.028 in (0.71 mm) thick or equivalent, shall comply with Polymeric Enclosure Tests, Section 54, and shall have a flammability class determined in accordance with the Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94, as follows:	Considered. UL listed material	P
	a) Class 5VA for a fixed or stationary appliance or for an appliance that is permanently installed,	Not such appliance	N/A
	Exception No. 1: A polymeric material classed HB minimum is capable of being used for a stationary appliance intended for household use, and that is cord connected, attended, and intermittent duty when it complies with all the following:		N/A
	1) All motors shall be provided with motor-overload		N/A

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	protection complying with 21.2.2,		
	2) Transformers shall comply with the Standard for Class 2 and Class 3 Transformers, UL 1585 or the Standard for Low Voltage Transformers: General Requirements, UL 5085-1 and the Standard for Low Voltage Transformers: Class 2 and Class 3 Transformers, UL 5085-3; Transformers and Motor Transformers for Use in Audio-,Radio-, and Television-Type Appliances, UL 1411; or Class 2 Power Units, UL 1310; And		N/A
	3) The appliance shall be provided with wheels or casters to facilitate movement from one location to another.		N/A
	Exception No. 2: A polymeric material classed V-2 minimum is capable of being used for a stationary appliance intended for commercial use and that is cord connected, attended, and intermittent duty when it complies with all of the following:		N/A
	1) All motors shall be provided with motor-overload protection complying with 21.2.2,		N/A
	2) Transformers shall comply with the Standard for Class 2 and Class 3 Transformers, UL 1585 or the Standard for Low Voltage Transformers: General Requirements, UL 5085-1 and the Standard for Low Voltage Transformers: Class 2 and Class 3 Transformers, UL 5085-3; Transformers and Motor Transformers for Use in Audio-, Radio-, and Television-Type Appliances, UL 1411; or Class 2 Power Units, UL 1310, And		N/A
	3) The appliance shall be provided with wheels or	The appliance is for household	N/A

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	casters to facilitate movement from one location to another.	use only	
	b) Class HB minimum for a portable, attended, intermittent duty, household appliance, or	The appliance is for household use. UL 94 considered	P
	c) Class V-2 minimum for an appliance other than mentioned in (a) and (b).		N/A
7.2.2	The polymeric housing of a component is not considered to be an appliance enclosure unless this part is the sole insulation (excluding air) between a live part and an external surface of the appliance.		N/A
7.2.3	A polymeric material used to enclose insulated live parts having insulation 0.028 in (0.71 mm) thick minimum or equivalent, internal wiring, or moving parts shall have a flammability class of HB minimum, and shall comply with Mold Stress-Relief Distortion, Section 66.1, and Impact, Section 66.2.	Considered.	P
7.2.4	The volume resistivity of a polymeric material used in an enclosure as specified in 7.2.1, determined in accordance with the Standard for Polymeric Materials – Short Term Property Evaluations, UL 746A, shall not be less than: a) 50 MW-cm after conditioning for 40 h at 23 ±2°C (73 ±4°F) and 50 ±5 percent relative humidity, and b) 10 MW-cm after exposure for 96 hours to moist air having a relative humidity of 90 ±5 percent at a temperature of 35 ±2°C (95 ±4°F). Exception No. 1: A polymeric material having a volume resistivity lower than specified in (a) and (b) is capable of being used when the enclosure is determined to be a noncurrent-carrying metal part, and the product complies with Spacings, Section 29, and Spacings to Polymeric Enclosures, Section 29.2. Exception No. 2: In lieu of volume resistivity, compliance with the end-product leakage-current	Considered	P

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	requirements in Leakage Current Test, Section 45, and Leakage Current Following Humidity Conditioning, Section 46, is considered to comply with this requirement.		
7.2.5	For a portable appliance, a polymeric material used to enclose uninsulated or insulated live parts shall have a hot wire ignition (HWI) performance level category (PLC) not greater than 4 – see Table 15.1 – as a result of the HWI test described in the Standard for Polymeric Materials – Short Term Property Evaluations, UL 746A.	No live part	N/A
	Exception: No.1 The material is not required to have a hot wire ignition rating when the live parts, including all internal wiring, are spaced 1/2 in (12.7 mm) or more from the material.	No live part	N/A
	No.2 A material with a PLC for HWI greater than as specified in Table 15.1 is may be used when the material complies with a) The Abnormal Overload Test, Section 69; or b) The Glow-Wire End-Product Test (GWEPT) in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C.	No live part	N/A
7.2.6	For a stationary or fixed appliance, a polymeric material used to enclose uninsulated or insulated live parts shall have a hot wire ignition (HWI) performance level category (PLC) not greater than 3 – see Table 14.1 – as a result of the HWI test, described in the Standard for Polymeric Materials – Short Term Property Evaluations, UL 746A.	Considered	P
	Exception: The material is not required to have a hot wire ignition rating when the live parts, including all internal wiring, are spaced 1/2 in (12.7 mm) or more from the material.	No live part	P
	No.2 A material with a PLC for HWI greater than		P

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	specified in Table 15.1 may be used when the material complies with one of the following: a) The Abnormal Overload Test, Section 69; or b) The Glow-Wire End-Product Test (GWEPT) in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C.		
7.3	A motion simulation appliance		N/A
7.3.1	A motion simulation appliance as specified in 4.21 shall comply with the State of California Department of Consumer Affairs Bureau of Home Furnishings and Thermal Insulation, Technical Bulletin 117, Requirements, Test Procedure and Apparatus for Testing the Flame Retardance of Resilient Filling Materials Used in Upholstered Furniture (March 2000) or Technical Bulletin 133,Flammability Test Procedure for Seating Furniture for use in Public Occupancies (January 1991). The furnishing shall be marked in accordance with 81.1.8.		N/A
8	**Adhesives Used to Secure Parts**	Not use adhesive	N/A
8.1	An adhesive that is relied upon to reduce a risk of electric shock, fire, or injury to persons shall comply with the requirements for adhesives in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C.		N/A
8.2	The requirement in 8.1 also applies to an adhesive used to secure a conductive part, including a nameplate, that may, if loosened or dislodged:		N/A
	a) Energize an accessible dead metal part,		N/A
	b) Make a live part accessible,		N/A
	c) Reduce spacings below the minimum acceptable values, or		N/A
	d) Short-circuit live parts.		N/A
9	**Mechanical Assembly**		P
9.1	An appliance shall be assembled so that it will not be	The appliance sufficiently	P

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Clause	Requirement + Test	Result - Remark	Verdict
	adversely affected by the vibration of intended operation. Brush caps shall be tightly threaded or otherwise constructed to prevent loosening.	assembled.	
9.2	A switch other than a through-cord switch, a lampholder, a plug adapter, a motor-attachment plug, or similar component shall be mounted securely and shall be prevented from turning. See 9.4.	No such components	N/A
	Exception No. 1: A switch need not be prevented from turning if all four of the following conditions are met:		N/A
	The switch is of a plunger or other type that does not tend to rotate when operated. A toggle switch is considered to be subject to forces that tend to turn the switch during intended operation of the switch.		N/A
	b) The means for mounting the switch makes it unlikely that operation of the switch will loosen it.		N/A
	c) The spacings are not reduced below the minimum required values if the switch rotates.		N/A
	d) The intended operation of the switch is by mechanical means rather than by direct contact by persons.		N/A
	Exception No. 2: A lampholder of the type in which the lamp cannot be replaced, such as a neon pilot or indicator light in which the lamp is sealed in a nonremovable jewel, need not be prevented from turning if rotation cannot reduce spacings below the minimum required values.		N/A
9.3	Uninsulated live parts shall be secured to the base or mounting surface so that they will be prevented from turning or shifting in position, if such motion may result in a reduction of spacings below the minimum acceptable values.	No live part	N/A
9.4	The means for preventing the turning or shifting mentioned in 9.2 and 9.3 is to consist of more than	Not such appliance	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	friction between surfaces – for example, a properly applied lock washer, is acceptable as the means for preventing a small stem-mounted switch or other device having a single-hole mounting means, from turning.		
10	**Mechanical Securement of Fluid-Handling Tubing**	No such kind of construction	N/A
10.1	For a massage type footbath, fluid-handling tubing shall be mechanically secured at connections if there is a risk of fire or electric shock should the tubing become disconnected. This mechanical securement shall not rely upon friction between surfaces alone. See the Fluid-Handling Tubing Tests,Section 56.		N/A
11	**Protection Against Corrosion**		P
11.1	Iron and steel parts shall be protected against corrosion by enameling, galvanizing, plating, or other equivalent means, if corrosion of such unprotected parts would be likely to result in a risk of fire, electric shock, or injury to persons.	Not such part	N/A
	Exception No. 1: Surfaces of sheet-steel and cast-iron parts within an enclosure may not be required to be protected against corrosion if the oxidation of the metal due to the exposure to air and moisture is not likely to be appreciable. The thickness of metal and temperature are also to be considered.		N/A
	Exception No. 2: This requirement does not apply to bearings, laminations, or minor parts of iron or steel, such as washers, screws, and the like.		N/A
11.2	If deterioration of a liquid container provided as a part of an appliance would result in a risk of fire or electric shock, the container shall be of a material that is resistant to corrosion by the liquid intended to be used therein.	No liquid container provided	N/A
12	**Accessibility of Uninsulated Live Parts and Film-Coated Wire**	Not such appliance	N/A

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12.1	To reduce the likelihood of unintentional contact that may involve a risk of electric shock from an uninsulated live part or film-coated wire, an opening in an enclosure shall comply with either (a) or (b):	Not such appliance	N/A
	For an opening that has a minor dimension (see 9.3) less than 1 in (25.4 mm), such a part or wire shall not be contacted by the probe illustrated in Figure 12.1.	No opening	N/A
	b) For an opening that has a minor dimension of 1 in or more, such a part or wire shall be spaced from the opening as specified in 12.5 and Figure 12.2.	No opening	N/A
12.2	The probe mentioned in 12.1 and illustrated in Figure 12.1 shall be applied to any depth that the opening will permit, and shall be rotated or angled before, during, and after insertion through the opening to any position that is necessary to examine the enclosure. The probe shall be applied in any possible configuration, and, if necessary, the configuration shall be changed after insertion through the opening.	No opening	N/A
12.3	With reference to the requirements in 12.1, the minor dimension of an opening is the diameter of the largest cylindrical probe having a hemispherical tip that can be inserted through the opening.		N/A
12.4	During the examination of an appliance to determine whether it complies with the requirements in 12.1, a part of the enclosure that may be opened or removed by the user without using a tool (to attach an accessory, to make an operating adjustment, or for other reasons) is to be opened or removed.	No parts of the enclosure are to be opened or removed by the user.	N/A
12.5	An opening as specified in 12.1(b) and illustrated in Figure 12.2 is acceptable if, within the enclosure, there is no uninsulated live part or film-coated wire:	No opening	N/A
	a) Less than X distance from the perimeter of the opening, as well as,		N/A

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	b) Within the volume generated by five times the diameter of the largest round rod that can be inserted through the opening, but not less than 4 in (102 mm).		N/A
	In evaluating an opening, any barrier located within the volume usually is ignored unless it intersects the boundaries of the volume in a continuous, closed line.		N/A
12.6	During the examination of an appliance to determine whether it complies with the requirements in 12.1, the materials mentioned in 6.6 shall be removed.		N/A
13	**Supply Connections**	AC inlet	P
13.1	Cord-connected appliances		P
13.1.1	Cords and plugs		P
13.1.1.1	An appliance intended to be connected to the power-supply circuit by means of a flexible cord shall be provided with a flexible cord and an attachment plug for connection to the supply circuit.		P
13.1.1.2	The attachment plug of an appliance intended to be connected to a nominal 120 V circuit, and employing devices required to be connected to a specific supply conductor as specified in 21.1, 25.2, and 26.6 shall be a polarized type. The connections to the attachment plug shall be in accordance with Figure 13.1. The polarity identification of the supply cord shall be in accordance with Table 13.1. See 84.3.		P
13.1.1.3	An appliance that is required to employ a polarized attachment plug as specified in 13.1.1.2, and that is provided with a separate or detachable cord set as specified in the exception to 13.1.1.6 and 13.1.1.8 shall also employ an appliance connector of the polarized type.	Not such appliance	N/A
13.1.1.4	The ampacity of the cord and the current rating of the attachment plug shall not be less than the maximum normal load current of the appliance. The voltage rating of the cord shall not be less than that of	Not such appliance	P

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Clause	Requirement + Test	Result - Remark	Verdict
	the appliance. The voltage rating of the attachment plug shall be equal to that of the appliance.		
13.1.1.5	The flexible cord shall be as specified in Table 13.2, or shall be of a type at least equally serviceable for the application.		P
13.1.1.6	The flexible cord shall not be less than 6 ft (1.83 m) long and shall be attached to the appliance.		P
	Exception: An appliance that is not required to be provided with a grounding conductor may be provided with a separate cord-set having means for connection to the appliance and a length of not less than 6 ft.		N/A
13.1.1.7	The length of an attached flexible cord includes the attachment plug. The length of a cord-set includes the fittings.		P
13.1.1.8	A household appliance intended for use with a detachable cord-set shall not be provided with terminal pins that will accommodate a standard flatiron or appliance plug.		N/A
13.1.1.9	If an appliance can be adapted for use on two or more different values of voltage by field alteration of internal connections, the attachment plug provided with the appliance shall be acceptable for the voltage for which the appliance is connected when shipped from the factory. See 81.1.3.		N/A
13.1.1.10	A massage type footbath shall employ a flexible cord that is attached to the appliance.		N/A
13.1.2	Strain relief	Not such appliance	N/A
13.1.3	Bushings	Not such appliance	N/A
13.1.3.1	At a point where a flexible cord passes through an opening in a wall, barrier, or enclosing case, there shall be a bushing or the equivalent that shall be reliably secured in place, and shall have a smooth, rounded surface against which the cord may bear.		N/A
13.1.3.2	An insulating bushing shall be provided if:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	a) Type SP-1, SPE-1, SPT-1, SP-2, SPE-2, SPT-2, or other cord lighter than Type SV or SVE is employed,		N/A
	b) The wall or barrier is of metal, or		N/A
	c) The construction is such that the cord may be subjected to strain or motion.		N/A
	Exception: An insulated metal grommet having insulating material that is not less than 1/32 in (0.8 mm) thick and fills completely the space between the grommet and the metal in which it is mounted may be used instead of an insulating bushing.		N/A
13.1.3.3	A cord hole in wood, porcelain, phenolic composition, or other nonconducting material and having a smooth, rounded surface is considered to be equivalent to a bushing.		N/A
13.1.3.4	Ceramic materials and some molded compositions are acceptable for insulating bushings.		N/A
13.1.3.5	A separate bushing shall not be made of wood or of hot-molded shellac-and-tar compositions.		N/A
13.1.3.6	A vulcanized fiber bushing shall not be less than 3/16 in (4.8 mm) thick and shall be formed and secured in place so that it will not be adversely affected by conditions of ordinary moisture.		N/A
13.1.3.7	A separate soft-rubber, neoprene, or polyvinyl chloride bushing shall not be employed in the appliance.		N/A
	Exception No. 1: A separate soft-rubber, neoprene, or polyvinyl chloride bushing may be employed in the frame of a motor or in the enclosure of a capacitor attached to a motor provided that:		N/A
	a) The bushing is not less than 3/64 in (1.2 mm) thick, and		N/A
	b) The bushing is located so that it will not be exposed to oil, grease, oily vapor, or other		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	substances having a deleterious effect on the compound employed.		
	Exception No. 2: A bushing of any of the materials mentioned in 13.1.3.7 may be employed at any point in an appliance if used in conjunction with a type of cord for which an insulating bushing is not required. If a bushing of one of these materials is used anywhere in the appliance, the edges of the hole in which the bushing is mounted are to be smooth and free from burrs, fins, and the like.		N/A
13.1.3.8	At any point in an appliance, a bushing of the same material as, and molded integrally with, the supply cord is acceptable on a Type SP-1 or heavier cord if the built-up section is not less than 1/16 in (1.6 mm) thick at the point where the cord passes through the enclosure.		N/A
13.2	Permanently connected appliances	Not permanently connected appliance	N/A
13.2.1	General		N/A
13.2.1.1	Except as noted in 13.2.1.2, an appliance intended for permanent connection to the power supply shall have provision for connection of one of the wiring systems that would be acceptable for the appliance.		N/A
13.2.1.2	A stationary appliance may be acceptable if provided with not more than 8 ft (2.44 m) of Type S, SE, SO, SOO, ST, STO, or STOO cord and an attachment plug for supply connection. The investigation of such a feature will include consideration of the utility of the appliance and the necessity of having it readily detachable from its source of supply by means of a plug.		N/A
13.2.2	Terminal compartment		N/A
13.2.2.1	A terminal box or compartment in which power-supply connections to a permanently connected appliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	are to be made shall be located so that the connections may be readily inspected after the appliance is installed as intended.		
13.2.2.2	A terminal compartment intended for connection of a supply raceway shall be attached to the appliance so as to be prevented from turning.		N/A
13.2.2.3	The terminal compartment on a motor that is intended to be connected directly to the supply shall comply with the requirements for terminal compartments in the Standard for Rotating Electric Machines – General Requirements , UL 1004-1.		N/A
13.2.3	Wiring terminals and leads		N/A
13.2.3.1	A permanently connected appliance shall be provided with wiring terminals for the connection of conductors having an ampacity acceptable for the appliance, or the appliance shall be provided with leads for such connection.		N/A
13.2.3.2	A field-wiring terminal is considered to be a terminal to which a wire may be connected in the field, unless the wire and a means of making the connection – a pressure terminal connector, soldering lug, soldered loop, crimped eyelet, and the like – factory-assembled to the wire, are provided as a part of the appliance.		N/A
13.2.3.3	Wiring terminals for the supply conductors– excluding the grounding conductor – shall be provided with a pressure wire connector securely fastened in place, for example, firmly bolted or held by a screw.		N/A
	Exception No. 1: A soldering lug may be used.		N/A
	Exception No. 2: A wire binding screw may be employed at a wiring terminal intended to accommodate a 10 AWG (5.3 mm2) or smaller conductor if upturned lugs or the equivalent are provided to hold the wire in place.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
13.2.3.4	A wiring terminal shall be prevented from turning.		N/A
13.2.3.5	The free length of a lead inside an outlet box or wiring compartment shall be 6 in (152 mm) or more if the lead is intended for field connection to an external circuit.		N/A
	Exception: The lead may be less than 6 in long if it is evident that the use of a longer lead may result in a risk of fire or electric shock.		N/A
13.2.3.6	A wire-binding screw at a wiring terminal shall not be smaller than No. 10.		N/A
	Exception No. 1: A No. 8 screw may be used at a terminal intended only for the connection of a 14 AWG (2.1 mm2) conductor.		N/A
	Exception No. 2: A No. 6 screw may be used for the connection of a 16 or 18 AWG (1.3 or 0.8 mm2) conductor. See 13.2.3.7.		N/A
13.2.3.7	According to the National Electrical Code, ANSI/NFPA 70, 14 AWG (2.1 mm2) is the smallest conductor that may be used for branch-circuit wiring, and therefore is the smallest conductor that may be anticipated at a terminal for connection of a power-supply wire.		N/A
13.2.3.8	A wire-binding screw shall thread into metal.		N/A
13.2.3.9	A terminal plate tapped for a wire-binding screw shall be of metal not less than 0.050 in (1.27 mm) thick and shall not have less than two full threads in the metal.		N/A
	Exception: An alloy plate may be not less than 0.030 in (0.76 mm) thick if the tapped threads have the necessary mechanical strength.		N/A
13.2.3.10	A terminal plate formed from stock having the thickness specified in 13.2.3.9 may have the metal extruded at the tapped hole to provide two full threads for the binding screw.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
13.2.3.11	Upturned lugs or a cupped washer shall be capable of retaining a supply conductor of the size specified in 13.2.3.1 under the head of the screw or washer.		N/A
13.2.4	Identified terminals and leads		N/A
13.2.4.1	A permanently connected appliance rated 135 or 135/250 V (3-wire) or less and employing a lampholder of the Edison-screw-shell type, or a single-pole switch or overcurrent-protective device other than an automatic control without a marked off position, shall have one terminal or lead identified for the connection of the grounded conductor of the supply circuit.		N/A
13.2.4.2	A terminal intended for the connection of a grounded supply conductor shall be of or plated with metal that is substantially white in color and shall be readily distinguishable from the other terminals, or proper identification of that terminal shall be clearly shown in some other manner, such as on an attached wiring diagram.		N/A
13.2.4.3	A lead intended for the connection of a grounded power-supply conductor shall be finished white or gray color and shall be readily distinguishable from the other leads.		N/A
14	**Current-Carrying Parts**		P
14.1	A current-carrying part shall be of silver, copper, a copper alloy, stainless steel, or other similar metal.	Current-carrying parts was of copper, copper alloy and stainless steel.	
14.2	Ordinary iron or steel shall not be used as a current-carrying part.	Not use ordinary iron and steel	P
	Exception: Ordinary iron or steel provided with a corrosion-resistant coating, may be used for a current-carrying part if acceptable in accordance with the requirements in General, Section 5.1, or within a motor or associated governor.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
15	**Electrical Insulation**		P
15.1	Material for mounting an uninsulated live part shall be porcelain, phenolic composition, or other equivalent material.	Not such appliance	N/A
15.2	Ordinary vulcanized fiber may be used for insulating bushings, washers, separators, and barriers, but not as the sole support for uninsulated live parts where shrinkage, current leakage, or warpage may introduce a risk of fire or electric shock.	No vulcanized fiber	N/A
15.3	A polymeric material used to support a live part, in direct contact with a live part, or within 1/32 in (0.8 mm) of a live part shall be rated for use at the operating temperature involved and shall have the following material properties, determined in accordance with the Standard for Polymeric Materials ¨C Short Term Property Evaluations, UL 746A: a) Volume resistivity not less than 50 MW-cm, Exception: In lieu of volume resistivity, compliance with the end-product leakage-current requirements in Leakage Current Test, Section 45 is considered to comply with this requirement. b) Comparative tracking index (CTI) performance level category (PLC) not greater than 4, and c) A PLC for high-current arc ignition (HAI) and hot wire ignition (HWI) not greater than specified in Table 14.1. Exception No. 1: A material with a PLC for HAI greater than specified in Table 15.1 is capable of being used when the spacing over the surface of the material is not less than 1/2 in (12.7 mm): 1) Between live parts of opposite polarity, 2) Between live parts and grounded noncurrent-carrying metal, and 3) Between live parts and exposed noncurrent-carrying metal.	Not live part	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Exception No. 2: A material with a PLC for HAI greater than specified in Table 15.1 is capable of being used when the material complies with End-Product Arc Resistance, Section 56. Exception No. 3: A material with a PLC for HWI greater than specified in Table 15.1 is capable of being used when the material complies with a) Abnormal Overload, Section 56. b) The Glow-Wire End-Product Test (GWEPT) in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C.		
15.4	A thermoplastic material used to support a live part shall be subjected to the conditioning described in 66.1.2. As a result of the conditioning, the spacings specified in Spacings, Section 29, and Spacings to Polymeric Enclosures, Section 29.2, shall be maintained and live parts shall remain reliably secured in place.		P
15.5	A small molded part, such as a brush cap, shall be constructed to have the necessary mechanical strength and rigidity to withstand the stresses of actual service. A brush cap shall be secured or located so that it is protected from mechanical damage that may result during intended use.	Not such appliance	N/A
16	**Internal Wiring**		P
16.1	Mechanical protection		P
16.1.1	Wiring and connection between parts of an appliance shall be protected or enclosed.	All internal wiring is protected and enclosed.	P
	Exception: A length of flexible cord may be employed for external connections if flexibility is essential.		N/A
16.1.2	Wires within an enclosure, a compartment, a raceway, or the like, shall be routed or otherwise protected so that damage to conductor insulation cannot result from contact with any rough, sharp, or moving part.	Not touch any rough, sharp or moving part	P

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Clause	Requirement + Test	Result - Remark	Verdict
16.1.3	A hole through which insulated wires pass in a sheet-metal wall within the overall enclosure of an appliance shall be provided with a smooth, rounded bushing or shall have smooth, rounded surfaces upon which the wires may bear.	Smooth and rounded surface	P
16.1.4	A flexible cord used for external interconnection as mentioned in the exception to 16.1.1 shall be provided with strain relief and bushings in accordance with the requirements in 13.1.2.1 – 13.1.3.8, and Section 60, Strain-Relief Test, unless the construction is such that the cord will be protected from stress and motion.	Not such appliance	N/A
16.1.5	Insulated wires may be bunched and passed through a single opening in a metal wall within the enclosure of an appliance.	Not such construction	N/A
16.1.6	A conductor utilizing beads for insulation shall not be employed outside an enclosure.	Not use	P
16.1.7	Internal wiring shall consist of wires of a type or types that are acceptable for the application, when considered with respect to the temperature and voltage to which the wiring is likely to be subjected and with respect to its exposure to oil, grease, or other conditions of service to which it is likely to be subjected.	Internal wires of or types that are acceptable with respect to the temperature and voltage. Wires not exposed to oil or grease.	P
16.1.9	With reference to exposure of insulated wiring through an opening in the enclosure of an appliance, the protection of such wiring required by 16.1.1 is considered to exist if, when judged as though it were film-coated wire, the wiring would be acceptable according to 12.1. Internal wiring not so protected may be accepted if it is secured within the enclosure so that it is unlikely to be subjected to stress or mechanical damage.	Insulated wiring through openings in the enclosure are protected sufficiently.	P
16.1.10	Wiring that may be located in proximity to combustible material or may be subjected to mechanical damage shall be in armored cable, rigid		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	metal conduit, electrical metallic tubing, metal raceway, or be otherwise equivalently protected.		
16.2	Splices and connections		P
16.2.1	Each splice and connection shall be mechanically secure and shall provide reliable electrical contact. A soldered connection shall be mechanically secured before being soldered if breaking or loosening of the connection may result in a risk of fire or electric shock.	Soldered connections are additionally mechanically secured	P
16.2.2	For an appliance in which vibration is likely to occur – such as a vibrator – the requirement in 16.2.1 will necessitate the use of lock washers or other equivalent means to prevent wire-binding screws and nuts from becoming loosened.		P
16.2.3	A splice shall be provided with insulation equivalent to that of the wires involved if permanence of spacing between the splice and other metal parts may not be maintained.		N/A
16.2.4	Aluminum conductors, insulated or uninsulated, used as internal wiring, such as for internal connection between current-carrying parts or as motor windings, shall be terminated by a method acceptable for the combination of metals involved at the point of connection.	No aluminum conductor	N/A
16.2.5	With reference to the requirements in 16.2.4, a wire-binding screw or a pressure wire connector used as a terminating device shall be acceptable for use with aluminum under the conditions involved – for example, temperature, heat cycling, vibration, and the like.	No aluminum conductor	N/A
16.2.6	Insulation consisting of two layers of friction tape, two layers of thermoplastic tape, or of one layer of friction tape on top of one layer of rubber tape, is acceptable on a splice. In determining if splice insulation consisting of coated-fabric,	Not such appliance	N/A

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	thermoplastic, or other type of tubing is acceptable, consideration is to be given to such factors as its dielectric properties, heat- and moisture-resistant characteristics, and the like. Thermoplastic tape wrapped over a sharp edge is not acceptable.		
16.2.7	If stranded internal wiring is connected to a wire-binding screw, loose strands of wire shall be prevented from contacting other uninsulated live parts that are not always of the same polarity as the wire and from contacting dead metal parts. This may be accomplished by use of pressure terminal connectors, soldering lugs, crimped eyelets, soldering all strands of the wire together, or other reliable means.	No wire-binding screw	N/A
17	**Separation of Circuits**		P
17.1	Conductors of circuits operating at different potentials shall be reliably separated from each other unless the conductors are each provided with insulation rated for the highest potential involved.	The conductors are each provided with sufficient insulation rated for the highest potential involved.	P
17.2	An insulated conductor shall be retained so that it is not capable of contact with an uninsulated live part of a circuit operating at a different potential.	conductors are retained so that they can not contact uninsulated live parts.	P
18	**Capacitors**	Not capacitor used	N/A
18.1	A capacitor provided as a part of a motor and a capacitor connected across the line, such as a capacitor for radio-interference elimination or power-factor correction, shall be housed within an enclosure or container that will protect the plates against mechanical damage and that will prevent the emission of flame or molten material resulting from malfunction or breakdown of the capacitor. The container shall comply with the requirements in 7.1.2 and 7.1.3.	Not capacitor used	N/A
	Exception: The individual container of a capacitor may be of sheet metal less than specified in 7.1.3 or may be of material other than metal if the capacitor is		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	mounted in an enclosure that houses other parts of the appliance and provided that such housing is acceptable for the enclosure of live parts.		
18.2	If a capacitor that is not a part of a capacitor motor or a capacitor-start motor is connected in an appliance that is intended to be automatically or remotely controlled so that malfunction or breakdown of the capacitor would result in a risk of fire, electric shock, or injury to persons, thermal or overcurrent protection shall be provided in the appliance to prevent such a condition.	Not capacitor used	N/A
18.3	A capacitor connected from one side of the line to the frame or enclosure of an appliance shall have a capacitance rating of not more than 0.10 mF. See 45.2.	Not capacitor used	N/A
18.4	An appliance that is intended to be controlled by or operated in conjunction with a capacitor or a capacitor/transformer unit shall be supplied with such capacitor or unit.		N/A
18.5	Under both normal and abnormal conditions of use, a capacitor employing a dielectric medium more combustible than askarel shall not cause a risk of fire or electric shock and shall be protected against expulsion of the dielectric medium.	Not capacitor used	N/A
19	**Grounding**		P
19.1	General		P
19.1.1	An appliance of one or more of the following types shall have provision for grounding:		P
	a) An appliance for use in damp or wet locations and intended to be used in other than residential occupancies.		N/A
	b) An appliance intended to be used on a circuit operating at more than 150 V to ground – see 19.1.3.		N/A
	c) An appliance intended for permanent connection to the electrical supply.		N/A

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	d) An appliance intended for outdoor use.		N/A
	e) An appliance intended for use with water or other liquid.		N/A
	Exception: A cord-connected appliance may be provided with an acceptable means of double insulation in accordance with the applicable requirements in the Standard for Double Insulation Systems for Use in Electrical Equipment, UL 1097, in lieu of grounding. See 20.3.		N/A
19.1.2	A product marked as being provided with double insulation shall not be provided with a means for grounding. See 81.1.7.		N/A
19.1.3	With reference to 19.1.1(b), a two-wire appliance intended to operate at a nominal potential of 240 V and any other potential greater than 150 V, is to be provided with means for grounding in accordance with 19.1.5 and 19.1.6 unless the marked rating on the appliance is 120/240 V or the appliance is otherwise marked to indicate that it is to be connected to a circuit operating at 150 V or less to ground.		N/A
19.1.4	If a grounding means is provided, whether required or not, it shall be in accordance with 19.1.5. If the appliance is cord connected, the grounding means shall also comply with the requirements in 19.1.8. All exposed dead metal parts and all dead metal parts within the enclosure that are exposed to contact during any user servicing operation and are likely to become energized shall be reliably connected to the means for grounding.		P
19.1.5	The following are acceptable means for grounding:		P
	a) In an appliance intended to be permanently connected by a metal-enclosed wiring system, a knockout or equivalent opening in the metal enclosure of the appliance.		N/A
	b) In an appliance intended to be permanently		N/A

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	connected by a nonmetal-enclosed wiring system, such as nonmetallic-sheathed cable, an equipment-grounding terminal or lead. See 19.1.10 and 19.1.11.		
	c) In a cord-connected appliance, an equipment-grounding conductor in the cord.		P
19.1.6	The grounding conductor of a supply cord shall be secured to the frame or enclosure of the appliance by means of a screw that is not likely to be removed during any servicing operation not involving the power-supply cord, or by other equivalent means. Solder alone shall not be used for securing the grounding conductor. Servicing as mentioned in this paragraph includes repair of the appliance by a qualified service person.		P
19.1.7	The grounding conductor of a cord-connected appliance shall be connected to the grounding member of an attachment plug. The grounding member shall be fixed.		P
	Exception: The grounding member of the attachment plug on a portable hand-guided or –supported appliance may be of the movable, self-restoring type.		N/A
19.1.8	A separable connection, such as that provided by an attachment plug and a mating connector or receptacle, shall be such that the equipment-grounding connection is made before connection to and broken after disconnection from the supply conductors.		P
	Exception: Interlocked plugs, receptacles, and connectors that are not energized when the equipment-grounding connection is made or broken are acceptable.		N/A
19.1.9	If an appliance is intended to be grounded and is provided with means for separate connection to more than one power supply, each such connection		N/A

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	shall be provided with a means for grounding.		
19.1.10	A terminal intended solely for the connection of an equipment-grounding conductor shall be capable of securing a conductor of the size necessary for the application. A connection device that depends on solder alone shall not be provided for connecting the equipment-grounding conductor.		N/A
19.1.11	A wire-binding screw or pressure wire connector intended for the connection of an equipment-grounding conductor shall be located so that it is unlikely to be removed during normal servicing of the appliance.		P
19.2	Grounding identification		P
19.2.1	The surface of the insulation of a grounding conductor of a flexible cord shall be green with or without one or more yellow stripes.		P
19.2.2	The surface of an insulated lead intended solely for the connection of an equipment-grounding conductor shall be green with or without one or more yellow stripes, and no other lead shall be so identified.		P
19.2.3	A wire-binding screw intended for the connection of an equipment-grounding conductor shall have a green-colored head that is hexagonal or slotted, or both. A pressure wire connector intended for connection of such a conductor shall be plainly identified, such as by being marked “G “, “GR “, “Ground “, or “ Grounding “, or by a marking on a wiring diagram provided on the appliance.		P
20	**Heating Elements and Heating Wire**		N/A
20.1	The voltage rating of a heating element, including an insulated resistance heating wire, employed in an appliance shall not be less than that specified in Table 20.1.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
20.2	An insulated resistance heating wire shall be suitable for the application and shall also comply with the requirements for Internal Wiring, Section 16.		N/A
20.3	In a double insulated appliance using insulated resistance heating wire, reinforced insulation is acceptable in place of double insulation for the heating wire's insulation anywhere in the appliance, if the reinforced insulation consists of one or more layers with a total thickness of not less than 3/16 inch (5mm); this total thickness shall not include the thickness of the heating wire insulation. In a multilayer assembly, contact between adjacent layers is acceptable.		N/A
21	**Lampholders**	No lamp holder	N/A
21.1	The screw shell of an Edison-base lampholder in a permanently connected appliance, or an appliance equipped with a polarized attachment plug shall be connected to the terminal or lead that is intended to be connected to the grounded conductor of the power-supply circuit.		N/A
22	**Motors**		P
22.1	Construction		P
22.1.1	A motor shall be acceptable for the application, and shall be capable of handling the maximum normal load of the appliance as described in 49.2 without creating a risk of fire, electric shock, or injury to persons.	See 40.2.1 & 40.2.4	P
22.1.2	A motor winding shall resist the absorption of moisture.		P
22.1.3	With reference to the requirement in 22.1.2, film-coated wire is not required to be additionally treated to resist absorption of moisture, but fiber slot liners, cloth coil wrap, and similar moisture-absorptive materials are to be provided with impregnation or otherwise treated to prevent moisture absorption.	Impregnation treated	P

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22.1.4	The diameter of a motor is the diameter of the circle circumscribing the stator frame measured in the plane of the laminations, excluding lugs, fins, boxes, and the like, used solely for motor mounting, cooling, assembly, or connection.		P
22.1.5	A brush-holder assembly shall be constructed so that when a brush is worn out – no longer capable of performing its function – the brush, spring, and other parts of the assembly are retained to the degree necessary to keep:		N/A
	a) Accessible dead metal parts from becoming energized, and		N/A
	b) Live parts from becoming accessible.		N/A
22.2	Overload protection		P
22.2.1	An appliance employing a motor shall incorporate thermal or overload protection in accordance with 22.2.2 when it is remotely or automatically controlled, or when the appliance is permanently connected, continuous-duty, manually started, and the motor is rated 1 hp (746 W) output or less.		P
22.2.2	Motor-overload protection required for an appliance shall consist of one of the following:		P
	a) Thermal protection complying with the applicable requirements in the Standard for Overheating Protection for Motors, UL 2111.		N/A
	Exception No. 1: For an appliance that includes a control that positively and reliably limits the length of the time the appliance can operate, the duration of the temperature test and the endurance test, both under locked-rotor conditions, may be less than that specified but shall not be less than the time the appliance can operate.		P
	Exception No. 2: A motor intended to move air only by means of an air-moving fan that is	No fan motor	N/A

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	integrally attached, keyed, or otherwise fixed to the motor shaft is not required to have running-overload protection.		
	Exception No. 3: A shaded-pole motor with a 2:1 or smaller ratio between locked-rotor and no-load currents and a 1-A or smaller difference between no-load and locked-rotor currents is considered to have acceptable overload protection if it is protected against locked-rotor conditions only.	No shaded-pole motor	N/A
	b) Impedance protection complying with the requirements in the Standard for Overheating Protection for Motors, UL 2111, when the motor is tested as used in the appliance under stalled-rotor conditions.	Impedance protection	P
22.2.3	For a multispeed motor, the requirement in 22.2.1 applies to all speeds at which the motor is intended to operate.	Single speed motor	N/A
22.2.4	If a requirement in this standard refers to the horsepower rating of a motor and the motor is not rated in horsepower, use is to be made of the appropriate table of the National Electrical Code, ANSI/NFPA 70, that gives the relationships between horsepower and full-load currents for motors. For a universal motor, the table applying to a single-phase, alternating-current motor is to be used if the appliance is marked for use on alternating current only, otherwise the table applying to direct-current motors is to be used.		N/A
22.2.5	The functioning of a motor-protective device provided as part of an appliance, whether such device is required or not, shall not result in a risk of fire or injury to persons.		N/A
22.3	Insulation systems		P
22.3.1	Class A insulation systems shall consist of a		P

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	combination of magnet wire and major component insulation materials evaluated and found to operate as intended in its end use. Thermoset materials and materials specified in Table 22.3 at the thicknesses specified are permitted to be used without further evaluation.		
22.3.2	For Class A insulation systems employing other materials or thinner materials than those indicated in Table 22.3 or a combination of materials, the materials, whether polymeric or not polymeric (treated cloth, for example), shall comply with the requirements in 22.3.3.		N/A
22.3.3	A polymeric material employed in a Class 105 (A) insulation system that isolates the windings from dead metal parts shall be unfilled or glass-reinforced nylon, polycarbonate, polybutylene terephthalate, polyethylene terephthalate, phenolic or acetal, and shall have a relative or generic thermal index for electrical properties of 105°C minimum. Leads shall be rated 90°C minimum. Motors employing thermoplastic materials shall be subjected to the tests in Thermoplastic Motor Insulation Systems, Section 76. Exception: Other polymeric materials used in a Class 105 (A) insulation system shall comply with the requirements in Thermal Aging Test, Section 76.4.		N/A
22.2.4	Materials used in an insulation system that operates above Class 105 (A) temperatures shall comply with the Standard for Systems of Insulating Materials – General, UL 1446.		N/A
22.3.5	All insulation systems employing integral ground insulation shall comply with the requirements specified in the Standard for Systems of Insulating Materials – General, UL 1446.		N/A

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23	**Overload- or Thermal-Protective Devices**		P
23.1	An overload- or thermal-protective device shall have a current and voltage rating not less than the load that it controls.	Thermal-protective device used	P
23.2	A protective device that requires resetting or replacement after it opens shall be readily accessible.		N/A
	Exception: The protective device need not be readily accessible provided:	No user accessible fuse holder	P
	a) The appliance, with the protective device shunted out of the circuit, complies with all applicable requirements in this standard, and		P
	b) The presence of the protective device would ordinarily be unknown to the user of the appliance because of its location and the omission of reference to the device in the operating instructions, circuit diagrams, and the like, for the appliance.		N/A
23.3	A protective device shall be wholly inaccessible from outside the appliance without opening a door or cover.		P
	Exception: The operating handle of a circuit breaker, the operating button of a manually operable motor protector, and similar parts may project outside the appliance enclosure.		N/A
23.4	A fuseholder shall be constructed and installed so that no uninsulated live part other than the screw shell or clips will be exposed to contact by persons removing or replacing fuses.	No fuseholder used	N/A
	Exception: The requirement does not apply if the presence of the protective device would ordinarily be unknown to the user of the appliance because of its location and the omission of reference to the device in the operating instructions, circuit diagrams, and the like, for the appliance.		N/A
23.5	The screw shell of a plug-type fuseholder shall be connected toward the load.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
24	**Arc-Fault, and Leakage Current Detectors/Interrupters**		N/A
24.1	When required by this end-product standard, or when provided as part of an end-product, an AFCI or LCDI shall comply with 5.11 and 24.2 – 24.4.		N/A
24.2	An arc-fault circuit-interrupter (AFCI) or leakage-current detector-interrupter (LCDI) shall be installed as an integral part of the attachment plug or located in the supply cord within 102 mm (4 inches) of the attachment plug.		N/A
24.3	Arc fault detection testing shall include the applicable UL 1699 tests required for cord-type arc-fault circuit-interrupters. Exception: The carbonized path arc clearing time test is not applicable for LCDIs that are provided with shielded power-supply cords.		N/A
24.4	An AFCI or LCDI provided as part of an appliance intended for outdoor use shall comply with the applicable outdoor use requirements of this end product standard.		N/A
25	**Receptacles**	No receptacle	N/A
25.1	A 15- or 20-A general-use attachment-plug receptacle in an appliance provided with a means for grounding – a permanently wired appliance or a cord-connected appliance with a grounding conductor in the cord – shall be of the grounding type. The grounding contact of the receptacle shall be electrically connected to dead metal that will be grounded when the appliance is in use.		N/A
25.2	A general purpose receptacle rated for use on a nominal 120 V circuit shall be of a polarized type. The grounded supply conductor shall be connected to the terminal that is substantially white in color or otherwise marked to indicate that it is intended for connection to		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	the grounded supply conductor.		
25.3	Each circuit having an attachment-plug receptacle intended for general use, shall have overcurrent protection of not more than 20 A provided as a part of the appliance if the overcurrent protection of the branch circuit to which the appliance will properly be connected exceeds that acceptable for the receptacles. The overcurrent protection provided shall be of the time-delay type.		N/A
25.4	A fuseholder provided in accordance with 25.3 shall be of Type S construction or shall be of the Edison-base type with a factory-installed nonremovable adapter of Type S construction.		N/A
25.5	The face of a receptacle shall:		N/A
	a) Be flush with or project beyond a nonconductive surrounding surface, or		N/A
	b) Project at least 0.015 in (0.38 mm) beyond a conductive surrounding surface.		N/A
26	**Switches and Controls**		P
26.1	A switch or other control device shall have a current and voltage rating not less than that of the load that it controls.		P
26.2	With reference to the requirement in 26.1, the current rating of a switch that controls an inductive load other than a motor, such as a transformer or an electric-discharge-lamp ballast, shall not be less than twice the rated full-load current of the transformer or ballast unless the switch has been investigated and found acceptable for the application.		N/A
26.3	In a permanently connected appliance rated 125 or 125/250 V (3-wire) or less, no switch or overcurrent-protective device of the single-pole type other than an automatic control without a marked off position shall be electrically connected to a terminal or lead intended for connection to the grounded	Not permanently connected appliance	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	conductor of the supply circuit.		
26.4	A manually operated motor-control switch shall be provided in a cord-connected appliance that employs a motor rated more than 1/3 hp (250 W output).	No manually operated motor-control switch	N/A
26.5	A switch that controls a medium-base lampholder of other than a pilot or indicating light shall be acceptable for use with tungsten-filament lamps.		N/A
26.6	A manually operated, line-connected, single pole switch for appliance on/off operation shall be connected to the ungrounded conductor of the supply cord.		N/A
27	**Controls – End Product Test Parameters**		P
27.1	General		P
27.1.1	Spacings of controls shall comply with the electrical spacing, or clearances and clearance distance requirements of the applicable control standard as determined in Controls, Section 5.6.		P
27.1.2	Where reference is made to declared deviation and drift, this indicates the manufacturer's declaration of the control's tolerance before and after certain conditioning tests.		P
27.2	Auxiliary controls	No auxiliary controls	N/A
27.2.1	Auxiliary controls shall not introduce a risk of risk of fire, electric shock, or injury to persons		N/A
27.2.2	Auxiliary controls shall comply with the requirements of this end product standard.		N/A
	Exception: An auxiliary control that complies with a component standard(s) specified in Controls, Section 5.6 is considered to comply with this requirement.		N/A
27.3	Operating controls (regulating controls)		N/A
27.3.1	The following test parameters shall be among the items considered when judging the acceptability of an operating control investigated in accordance with		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	the Standard for Automatic Electrical Controls for Household and Similar Use; Part 1: General Requirements, UL 60730-1:		
27.3.2	The following test requirements shall be among the items considered when judging the acceptability of an operating control investigated in accordance with other than the Standard for Automatic Electrical Controls for Household and Similar Use; Part 1: General Requirements, UL 60730-1:		N/A
27.4	Protective controls (limiting controls)		N/A
27.4.1	An electronic control that performs a protective function shall comply with the requirements in Controls, Section 5.6 while tested in accordance with the parameters in this section. Examples of protective controls are: a control used to sense abnormal temperatures of components within the appliance; an interlock function to de-energize a motor; temperature protection of the motor due to locked rotor, running overload, loss of phase; or other function intended to reduce the risk of fire, electric shock, or injury to persons.		N/A
27.4.2	The following test parameters shall be among the items considered when judging the acceptability of an electronic protective control investigated in accordance with the Standard for Automatic Electrical Controls for Household and Similar Use; Part 1: General Requirements, UL 60730-1		N/A
27.4.3	The test parameters and conditions used in the investigation of the circuit specified in 27.4.1 shall be as specified in the Standard for Tests for Safety-Related Controls Employing Solid-State Devices, UL 991, in accordance with the following test parameters		N/A
27.4.4	Unless otherwise specified in this end product standard, protective controls shall be evaluated for		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	100,000 cycles for Type 2 devices and 6,000 cycles for Type 1 devices with rated current. See 40.2.3,Overload, Section 59.3, and Endurance, Section 59.4.		
27.5	Controls using a temperature sensing device		N/A
27.5.1	A temperature sensing positive temperature coefficient (PTC) or negative temperature coefficient (NTC) thermistor, that performs the same function as an operating or protective control, shall be tested using the following number of cycles when testing a sensing device in accordance with the EnduranceTest:		N/A
28	**Attachments**	No attachment.	N/A
28.1	Functional attachments that are made available or recommended by the manufacturer for use with the basic appliance shall be included in the evaluation of the appliance. Unless recommended by the manufacturer, not more than one attachment shall be evaluated at a time with the appliance.		N/A
28.2	The literature accompanying a package containing a basic appliance and attachments intended to be marketed as a complete unit shall indicate what attachments are intended for use with the basic appliance.		N/A
28.3	If an attachment is packaged and marketed separately from the basic appliance and recommended for use with it by the manufacturer of the basic appliance, it shall have an assigned catalog number (or equivalent). Also, information packaged with the basic appliance shall identify by catalog number, the attachments which are intended for use with the basic appliance or the catalog number of the basic appliance with which the attachment is intended to be used shall appear in at least one of the following locations:		N/A
	a) On the attachment,		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) On the package housing		N/A
	c) In information furnished with the attachment.		N/A
29	**Spacings**		P
29.1	General	No live part	P
29.1.1	Other than at field-wiring terminals, the spacing between uninsulated live parts of opposite polarity and between an uninsulated live part and a dead metal part that is exposed to contact by persons or that may be grounded shall not be less than the value specified in Table 29.1.		P
	Exception No. 1: The inherent spacings of a component of the appliance, such as a snap switch, are judged on the basis of the requirements for the component in question.		N/A
	Exception No. 2: An isolated dead metal part may be spaced as provided in 29.1.5.		N/A
29.1.2	Spacings in a motor shall comply with the spacing requirements in the Rotating Electric Machines – General Requirements, UL 1004-1.		N/A
29.1.3	If an uninsulated live part is not rigidly fixed in position by means other than friction between surfaces, or if a movable dead metal part is in proximity to an uninsulated live part, the construction shall be such that the required minimum spacing will be maintained.	Considered	P
29.1.4	In an appliance incorporating two or more motors of different horsepower rating, the spacings in the appliance are to be judged on the basis of the rating of the largest motor in the appliance.		P
29.1.5	If an isolated dead metal part is interposed between or is in close proximity:	No such construction	N/A
	a) To live parts of opposite polarity,		N/A
	b) To a live part and an exposed dead metal part, or		N/A
	c) To a live part and a dead metal part that may be		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	grounded,		
	the spacing may be not less than 3/64 in (1.2 mm) between the isolated dead metal part and any one of the other parts previously mentioned, provided the total spacing between the isolated dead metal part and the two other parts is not less than the value specified in Table 29.1.		N/A
29.1.6	An insulating lining or barrier of vulcanized fiber or similar materials employed where spacing would otherwise be insufficient shall not be less than 1/32 in (0.8 mm) thick, and shall be so located or of such material that it will not be adversely affected by arcing, except that vulcanized fiber not less than 1/64 in (0.4 mm) thick may be used in conjunction with an air spacing of not less than 50 percent of the spacing required for air alone.	Enough spacing, no insulating lining or barrier	N/A
	Exception: Thinner insulating material may be used, if upon investigation, it is found to be acceptable for the application.		N/A
29.1.7	All uninsulated live parts connected to different line- or low-voltage circuits shall be spaced from one another as though they were parts of opposite polarity, in accordance with the requirements in 29.1.1 and 29.1.9 and shall be judged on the basis of the highest voltage involved.	Considered	P
29.1.8	The spacing between uninsulated live parts of opposite polarity and between such parts and dead metal that may be grounded in service is not specified for parts of low-voltage circuits.		P
29.1.9	The spacing between wiring terminals of opposite polarity, and the spacing between a wiring terminal and any other uninsulated metal part – dead or live – not of the same polarity, shall not be less than that specified in Table 29.2. See 13.2.3.2.		P
29.1.10	At terminal screws and studs to which connection may be made in the field by means of the wire		P

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Clause	Requirement + Test	Result - Remark	Verdict
	connectors, eyelets, and the like, as described in 13.2.3.2, spacings shall not be less than those specified in Table 29.1 when such connectors, eyelets, and the like, are in such position that minimum spacings – opposite polarity and to dead metal – exist.		
29.2	Spacings to polymeric enclosures		P
29.2.1	The spacing between a polymeric enclosure and a nonarcing uninsulated live part (a bus bar, a connecting strap, a terminal, or similar part) shall not be less than 1/32 in (0.8 mm).	Spacing >>0.8 mm	P
	Exception: A spacing less than 1/32 in is capable of being used when the enclosure material complies with the requirements for support of a live part prescribed in 15.3.		N/A
29.2.2	The spacing between a polymeric enclosure and an arching part (at a commutator, unenclosed switch contacts, or similar part) shall not be less than 1/2 in (12.7 mm).	Supply by external power supply unit	N/A
	Exception No. 1: A spacing less than 1/2 in (12.7 mm) but not less than 1/32 in (0.8 mm) is acceptable when the material has a PLC for high-current arc ignition (HAI) not greater than specified in Table 15.1.		N/A
	Exception No. 2: A spacing is not required when the material complies with the requirements for support of a live part prescribed in 15.3.		N/A
29.2.3	With reference to 29.2.2, the spacing is to be measured from the source of the arc – that is, from the interface of the brush and the commutator, from the interface of the switch contacts, or similar parts.		N/A
29.3	Spacings on printed wiring boards		P
29.3.1	As an alternative to the spacing requirements of Table 29.1, the spacing requirements in the Standard for Insulation Coordination Including Clearances and Creepage Distances for Electrical		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Equipment, UL 840, may be applied. The spacing requirements in UL 840 shall not be used for field wiring terminals and spacings to a dead metal enclosure.		
29.3.2	The following end use factors from this end product standard shall be applied in the evaluation of alternative spacings: a) For the applicable Overvoltage Category, see Table 27.1 b) For the applicable Material Group, see Table 27.2 c) For the applicable Pollution Degree, see Table 27.3		P
29.3.4	In order to apply Clearance B (controlled overvoltage) clearances, control of overvoltage shall be achieved by providing an overvoltage device or system as an integral part of the product. This voltage limiting device or system shall comply with the Standard for Surge Protective Devices, UL 1449.		P
29.3.5	All printed wiring boards are identified as having a minimum comparative tracking index (CTI) of 100 without further investigation, for evaluation to Standard for Insulation Coordination Including Clearances and Creepage Distances for Electrical Equipment, UL 840.		P
29.4	Spacings in Class 2 circuits		N/A
	The electrical spacings between uninsulated live parts of opposite polarity and between uninsulated live parts and dead metal parts shall not be less than: a) 1/64 in (0.4 mm) for a circuit of 15 V rms of less; or b) 1/32 in (0.8 mm) for a circuit of more than 15 V rms but not more than 30 V rms.		N/A
30	**Class 2 Power Units or Power Supplies**	Not such appliance	N/A
30.1	A Class 2 direct plug-in power supply shall comply with one of the following: a) Standard for Class 2 Power Units, UL 1310; or		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) Standard for Information Technology Equipment, Part 1: General Requirements, UL 60950-1, with an output marked ″Class 2″, or that complies with the limited power source (LPS) requirements and is marked ″LPS″.		
31	**Primary Lithium Batteries**		N/A
31.1	A lithium battery provided with an agility trainer shall comply with the Standard for Lithium Batteries,UL 1642.		N/A
PROTECTION AGAINST INJURY TO PERSONS			
32	**General**		P
32.1	If the operation and maintenance of an appliance by the user involves the risk of injury to persons, means shall be provided to reduce the risk.	Access to hazardous moving parts prevented by construction.	P
32.2	When judging an appliance with respect to the requirement in 32.1, consideration shall be given to reasonably foreseeable misuse of the appliance.	Considered	P
32.3	A functional attachment that is made available or recommended by the manufacturer for use with the basic appliance shall be included in the evaluation of the appliance. Unless the manufacturer recommends the use of two or more attachments at the same time, only one attachment at a time is to be evaluated with the appliance.	No functional attachment	N/A
32.4	The adequacy of a guard, a release, an interlock, or the like, and whether such a device is required are to be determined from an investigation of the complete appliance, its operating characteristics, and the likelihood of a risk of injury to persons resulting from a cause other than gross negligence. The investigation is to include consideration of the results of breakdown or malfunction of any one component, but not more than one component at a time, unless one event contributes to another. If the investigation shows that breakdown or malfunction of a particular component can result in a risk of injury to persons, that	Access to hazardous moving parts prevented by construction.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	component is to be investigated for reliability.		
32.5	Specific constructions, tests, markings, guards, and the like, are detailed for some common constructions. Specific features and appliances not covered herein are to be given appropriate consideration.	Considered	P
33	**Sharp Edges**	No sharp edges	P
33.1	An enclosure, a frame, a guard, a handle, or the like, shall not be sufficiently sharp to constitute a risk of injury to persons in normal maintenance and use.	Rounded and smooth	P
34	**Enclosures and Guards**		P
34.1	The rotor of a motor, a pulley, a belt, a gear, a fan, or other moving part that could cause injury to persons shall be enclosed or provided with other means to reduce the likelihood of unintentional contact therewith, and such a part shall not be contacted by the probe illustrated in Figure 12.1.	Moving part was enclosed or not be contacted by probe.	P
	Exception: A part or portion of a part that is necessarily exposed to perform the work function need not be enclosed but, when necessary, guarding shall be provided. See 34.4.		N/A
34.2	During the examination of an appliance to determine whether it complies with the requirements in 34.1, a part of the enclosure that may be removed without the use of a tool (to attach an accessory, to make an operating adjustment, or for other reasons) is to be opened or removed.		P
	Exception: A part need not be opened or removed provided it is marked in accordance with 39.6.		N/A
34.3	Among the factors to be considered in judging the acceptability of an exposed moving part are:	No exposed moving part	N/A
	a) The degree of exposure necessary to perform the intended function,		N/A
	b) The sharpness of the moving part,		N/A
	c) The likelihood of unintentional contact therewith,		N/A

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	d) The speed of the moving part, and		N/A
	e) The likelihood that a part of the body could be endangered by the moving part or that clothing could be entangled by the moving part, resulting in a risk of injury to persons.		N/A
	These factors are to be considered with respect to both intended operation of the appliance and any reasonably foreseeable misuse.		N/A
34.4	Some guards are required to be of the self-restoring type. Other features of guards that are to be considered include:	No such guard	N/A
	a) Removability without the use of tools,		N/A
	b) Removability for servicing,		N/A
	c) Strength and rigidity,		N/A
	d) Completeness,		N/A
	e) Creation of additional risk of injury to persons, such as pinch points, and the necessity for additional handling because of the increased need for servicing, such as for cleaning, unjamming, and the like, and		N/A
	f) Usage – household or commercial.		N/A
34.5	An enclosure or guard over a rotating part shall retain a part that, because of breakage or other reasons, may become loose or may separate from a rotating part, and retain a foreign object that may be struck and propelled by the rotating part.		N/A
34.6	If complete guarding of a moving part that could obviously cause injury to persons would defeat the utility of an appliance, a control, such as a momentary contact switch, shall be provided, and an appropriate marking shall be provided in the instruction manual warning the user of the potential risk.	No such construction	N/A
34.7	The rotating massage heads of a shiatsu-type massager shall be such that the distance between the		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	heads is 2 in (50.8 mm) or more at any position of rotation.		
	Exception No. 1: A distance between the heads less than 2 in (50.8 mm) complies with the requirement when a guard is provided that does not allow body parts to contact the massage heads when the massage heads are less than 2 in apart. The guard shall extend above the plane of the point where the heads come closest together.		N/A
	Exception No. 2: A distance between the heads less than 2 in (50.8 mm) complies with the requirement when the massager complies with Shiatsu-Type Massager Entrapment Test, Section 70.		N/A
35	**Materials**		P
35.1	The material of a part, such as an enclosure, a frame, a guard, or the like, the breakage or deterioration of which might result in a risk of injury to persons, shall have such properties as to meet the demand of expected loading conditions.	materials meet the demand of expected loading conditions.	P
35.2	The requirement in 35.1 applies to those portions of a part adjacent to a moving part considered to involve a risk of injury to persons.		P
36	**Rotating or Moving Members**		P
36.1	A rotating or moving part that, if it should become disengaged, could create a risk of injury to persons shall be provided with a means to retain the part in place under conditions of use.	moving parts covered by sufficient enclosure	P
36.2	A rotating member, the breakage of which might create a risk of injury to persons, shall be constructed so as to reduce the likelihood of its breakage, or the release or loosening of a part that could become a risk of injury to persons.	rotating members are sufficiently constructed	P
36.3	To determine whether an appliance employing a series motor complies with the requirement in 36.2, it is to be tested as described in 36.4. Parts that can		P

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Clause	Requirement + Test	Result - Remark	Verdict
	become a risk of injury to persons shall not work loose as a result of the test.		
36.4	For the test discussed in 36.3, an appliance employing a series motor is to be operated for 1 minute at the no-load speed resulting from application of 1.3 times rated voltage. An appliance in which the rotating load may be varied is to be tested for each condition of loading that can occur.		P
37	**Switches, Controls, and Interlocks**		P
37.1	An appliance shall be constructed so as to reduce the likelihood of unexpected operation of any parts capable of causing injury to persons.	No unexpected operation of any parts capable of causing injury occurred	P
37.2	Each function of a multiple-function appliance is to be taken into consideration in determining whether the appliance complies with the requirement in 37.1.	Each function considered	P
37.3	If, when energized, an appliance has a moving part that may cause injury to persons, a motor control switch, other than a momentary-contact switch, on the appliance shall have a plainly identified ″OFF″ position, or ″ON″ and ″OFF″ positions, and be marked in accordance with 37.4 or 37.5, as applicable. If the international symbols ″I″ and ″O″ are used, the significance of these symbols shall be explained in the instruction manual provided with the product (see 82.8).	No such moving parts	N/A
37.4	With reference to the requirement in 37.3, the ″OFF″ position of the switch shall be marked with either one or both of the following: a) The word ″OFF,″ or its equivalent (for example, ″STOP″); or b) The international symbol ″O″.		N/A
37.5	With reference to the requirement in 37.3, the ″ON″ position of the switch, when identified, shall be marked with one or both of the following, as		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	determined by the marking of the ″OFF″ position of the switch: a) The word ″ON,″ or its equivalent (for example, ″START″) when the ″OFF″ position of the switch is marked with the word ″OFF,″ or its equivalent (for example, ″STOP″) or “OFF/RESET”; or b) The international symbol ″I,″ when the ″OFF″ position of the switch is marked with the international symbol ″O″.		
37.6	If unintentional operation of a switch can result in a risk of injury to persons, the actuator of the switch shall be located or guarded so that such operation is unlikely.	unintentional operation of any switch can not result in a risk of injury	N/A
37.7	The actuator of a switch may be guarded by recessing, ribs, barriers, or the like.		N/A
37.8	A floor- or ground-supported appliance that can travel or rotate to an extent that could result in a risk of injury to persons if left unattended shall be provided with a momentary contact switch that cannot be locked in the on position.	Can not travel or rotate	N/A
37.9	A device that automatically starts an appliance, such as a timer, an automatically reset overload-protective device, or the like, shall not be employed unless it can be demonstrated that automatic starting will not result in a risk of injury to persons.	No such timer	N/A
37.10	The requirement in 37.9 will necessitate the use of an interlock if moving parts or the like could result in a risk of injury to persons upon the automatic starting or restarting of the motor.	No interlock device	N/A
37.11	The actuator of an interlock switch shall be located so that unintentional operation is unlikely. See 37.7.	No interlock device	N/A
37.12	Operation of an interlock during intended use shall not inconvenience the operator so as to encourage deliberate defeat of the interlock.	No interlock device	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
37.13	An interlock shall not be capable of being defeated by materials that could accumulate in intended use.	No interlock device	N/A
37.14	An interlock shall be such that it cannot be defeated readily:	No interlock device	N/A
	a) Without damaging the appliance,		N/A
	b) Without making wiring connections or alterations, or		N/A
	c) By using materials that are readily available.		N/A
37.15	If an interlock is actuated by movement of a guard, the arrangement shall be such that the guard is in place when the interlock is in the position that permits operation of the parts being guarded. With the guard removed, the interlock shall comply with the requirement in 37.11.	No interlock device	N/A
38	**Stability**		P
38.1	If a portable appliance overturns when tested as described in 38.2 and 38.4, a risk of injury to persons shall not result.		P
	Exception: An appliance that is completely hand supported in intended use need not be tested.		N/A
38.2	The appliance is not to be energized during the stability test. The test is to be conducted under conditions most likely to cause the appliance to overturn. The following conditions are to be such as to result in the least stability:		P
	a) The position of all doors, drawers, casters, and other movable or adjustable parts, including that of the supply cord resting on the surface supporting the appliance,		P
	b) Connection of or omission of any attachment made available by or recommended by the manufacturer,		P
	c) Provision of or omission of any normal load if the appliance is intended to contain a liquid or other mechanical load, and		N/A
	d) Direction in which the appliance is tipped or the		P

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Clause	Requirement + Test	Result - Remark	Verdict
	supporting surface is inclined. See 38.3.		
38.3	In conducting the stability test, the appliance is to be:		P
	a) Placed on a plane inclined at an angle of 10 degrees from the horizontal, or		P
	b) Tipped through an angle of 10 degrees from an at rest position on a horizontal plane.		N/A
38.4	With reference to the requirement in 38.3(b), for an appliance that is constructed so that while being tipped through an angle of 10 degrees a part or surface of the appliance not normally in contact with the horizontal supporting surface touches the supporting surface before the appliance has been tipped through an angle of 10 degrees, the tipping is to be continued until the surface or plane of the surface of the appliance originally in contact with the horizontal supporting surface is at an angle of 10 degrees from the horizontal supporting surface.		P
38.5	With reference to the requirement in 38.2(c), a massage type footbath shall be tested with water at the maximum fill line, and with the water vessel empty.		N/A
38.6	An appliance not intended to move from its de-energized position to perform its intended function that, when operated, moves from its de-energized position shall be provided with an anchoring means.		N/A
39	**Markings**		P
39.1	An appliance having a hidden or unexpected risk of injury to persons shall be marked to inform the user of the risk.	Users manual provides information to prevent injury due misuse.	P
39.2	A cautionary marking shall be permanent and legible and shall be located on a permanent part of the appliance.		P
39.3	A cautionary marking intended to instruct the operator, shall be legible and visible from the position normally assumed by the operator when starting the appliance or from the position normally assumed for the specific	Making are provided at legible and visible location.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	operation involved. Other such markings for servicing or making settings and adjustments shall be legible and visible to the individual when such work is being accomplished.		
39.4	A marking intended to inform the user of a risk of injury to persons shall be prefixed by a signal word "CAUTION ", "WARNING ", or "DANGER." The marking shall be in letters not less than 3/32 in (2.4 mm) high. The signal word shall be more prominent than any other required marking on the appliance.	Considered.	P
39.5	If, when energized, an appliance has a moving part that may cause injury to persons, a switch that controls the motor that drives the part shall have a plainly marked off position.	No moving part that may cause injury	N/A
39.6	A part of an enclosure as described in the exception to 34.2 and 42.1.9 shall be marked to indicate that such servicing is to be done with the appliance disconnected from the supply circuit.		N/A
39.7	A treadmill shall be marked on the top of the handrail, on the control console, or in a place that is readily visible to the user before operation with the word "CAUTION" and the following or equivalent wording: "Risk of Injury to Persons – To Avoid Injury, Stand on the Siderails Before Starting Treadmill. Read Instruction Manual Before Using."	Not a treadmill	N/A
40	**Treadmills**		P
40.1	Switches and controls		P
40.1.1	In addition to the manually operated motor control switch required by 26.4, a deliberate user action, such as a push button switch on the control panel, shall be required to initiate movement of the treadmill belt such that there is no unexpected operation.		P
40.1.2	The control panel for the operation of the treadmill shall be readily accessible to the user. The control panel shall be provided with an obvious and		P

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Clause	Requirement + Test	Result - Remark	Verdict
	readily accessible switch that is used to stop the treadmill belt.		
40.1.3	If the treadmill is provided with a motor-operated incline system, the motor control switch required by 26.4 shall also stop the motion of the incline system.		N/A
40.1.4	The switch described in 40.1.2 shall be plainly marked "OFF"," STOP" or with international symbols "O" and "I" in accordance with 37.4 or 37.5, as applicable. If the international symbols "O" and "I" are used, the significance of these symbols O and I shall be explained in the instruction manual provided with the product (see 82.8).		P
40.1.5	The switch described in 40.1.2 that controls the "OFF", "STOP", " PAUSE" or "END" functions of the treadmill belt shall be suitably rated with respect to voltage (ac or dc), current, and the load being switched (such as a motor load, a relay coil load, low voltage inductive, or low voltage resistive load). The switch shall also be suitable for 6000 cycles of operation for household-use treadmills, and 50,000 cycles of operation for commercial-use treadmills, or be tested in accordance with 70.1.		P
40.1.6	If more than one switch or switching device is used to control the "OFF", "STOP", "PAUSE", or "END" functions then each switch or device shall comply with 40.1.2 – 40.1.5.		N/A
40.1.7	The motor or speed control that controls the speed and acceleration of the treadmill belt.		P
40.2	Emergency stop switch		N/A
40.2.1	A treadmill shall be provided with an emergency stop switch. This switch may be either a push-button type or pull-cord type.		N/A
40.2.2	The actuator of a push-button type switch shall be either the palm or mushroom-head design, and		N/A

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	shall be a color that contrasts with its background. The safety key, or the like of a pull-cord switch, shall be a color that contrasts with its background.		
40.2.3	The switch shall be suitably rated with respect to voltage (ac or dc), current, and the load being switched (such as a motor load, a relay coil load, low voltage inductive, or low voltage resistive load), and shall be suitable for 6000 cycles of operation for household-use treadmills, or 50,000 cycles for commercial-use treadmills, or tested in accordance with the Emergency Stop Switch Endurance Test, Section 71.		N/A
40.2.4	For a pull-cord type switch, the entire pull-cord system shall be suitable for the number of cycles of operation as indicated in 40.2.3 when tested in accordance with the Emergency Stop Switch Endurance Test, Section 71. The pull-cord system may be comprised of a safety key, cord, strap, mechanical connections, and the like.		N/A
40.2.5	When the emergency stop switch is actuated, the power to the belt motor (and to the motor-operated incline system, if applicable) shall be directly disconnected without using the treadmill's software, and the treadmill belt shall be decelerated until it comes to a complete stop. Power to the user interface or display need not be disconnected when the emergency switch is actuated.		N/A
40.2.6	After actuation of the emergency stop switch, it shall not be possible to restart the treadmill until the user manually resets the emergency stop switch.		N/A
40.3	Treadmill belt speed and acceleration rates		P
40.3.1	The initial starting speed of the treadmill belt shall not exceed 1.5 mph (2.4 kph) when tested in accordance with 72.1.		P
40.3.2	The acceleration of the belt shall not exceed 2.0		P

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Clause	Requirement + Test	Result - Remark	Verdict
	mph/s (3.2 kph/s) with the treadmill operating at no-load, when tested in accordance with Maximum Acceleration, Section 72.2.		
40.3.3	The treadmill design shall comply with the initial starting speed, and acceleration rates in the as-received condition, and after the Abnormal Operation – Electronic Components Test, Section 40.4).		N/A
40.4	Abnormal operation – electronic components test		P
40.4.1	A treadmill that uses electronic controls and circuit components in its design (such as a resistor, capacitor, solid state device, and the like), the failure of which may increase the likelihood of unexpected operation, or an unexpected increase in the speed of the treadmill belt at a rate exceeding the acceleration rate specified in 40.3.2, shall be subjected to the Abnormal Operation – Electronic Components Test specified in Electronic Components, Section 64.2.		P
40.4.2	A treadmill provided with an automatic speed control shall comply with 40.1.7(a).		P
40.4.3	Single-fault analysis of the motor speed control circuit and testing on each critical component located in the speed control circuit shall be conducted, as applicable.		N/A
	As a result of the testing, the treadmill shall: a) Not unexpectedly operate; and b) Comply with the treadmill belt speed and acceleration rate requirements in Treadmill Belt Speed And Acceleration Rates, Section 40.3.		N/A
41	**Inversion Tables**		N/A
42	**Dog Treadmills**		N/A
43	**Motion Simulation Appliances**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
PERFORMANCE			
44	**General**		P
45	**Leakage-Current Test**		P
46	**Leakage Current Following Humidity Conditioning**		N/A
47	**Starting-Current Test**	Normal operation checked. Appliance starts and operates as intended.	P
48	**Input Test**		P
49	**Temperature Test**		P
49.1	**General**		P
49.2	**Maximum normal load**	Testing with maximum normal load	P
50	**Surface Temperatures**		P
51	**Surface-Temperature Test**		P
52	**Dielectric Voltage-Withstand Test**		P
53	**Resistance to Moisture Test**		P
54	**Resistance to Moisture Tests for Massage Type Footbaths**		N/A
55	**Flooding of Live Parts Test**		N/A
56	**Fluid-Handling Tubing Tests**		N/A
57	**Backflow Prevention Test**		N/A
58	**Switch and Control Test**		P
59	**Thermostat Test**		N/A
59.1	**General**		N/A
59.2	**Original calibration**		N/A
59.3	**Overload**		N/A
59.4	**Endurance**		N/A
59.5	**Recalibration**		N/A
60	**Strain-Relief Test**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
61	**Strain-Relief Clamp Test**		N/A
62	**Flexing and Twisting Test**		P
62.1	**Flexing**		P
62.2	**Twisting**		N/A
63	**Operational Test**		P
64	**Abnormal-Operation Test**		P
65	**Permanence of Marking Test**		P
66	**Polymeric Enclosure Tests**		P
66.1	**Mold stress-relief distortion**		P
66.2	**Impact**		P
66.3	**Drop impact**		N/A
66.4	**Ball impact**		P
66.5	**Stain-relief after mold stress-relief distortion**		P
66.6	**Abnormal operation**		P
66.7	**Crushing resistance**		N/A
66.8	**Thermal aging**		N/A
67	**Polymeric Materials Used as Structural Support**	Polymeric material not used as structural support.	N/A
68	**End-Product Arc Resistance**		N/A
69	**Abnormal Overload**		N/A
70	**Shiatsu-Type Massager Entrapment Test**		N/A
71	**Emergency Stop Switch Endurance Test**		N/A
71.1	**Push-button type switch**		N/A
71.2	**Pull-cord type switch system**		N/A
72	**Treadmill Belt Speed Test**		P
72.1	**Maximum initial starting speed**		P
72.2	**Maximum acceleration**		P
73	**Dog Treadmill – Safety Key Control Test**		N/A
74	**Solenoids**		N/A
75	**General Purpose Transformers**		P

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Clause	Requirement + Test	Result - Remark	Verdict
76	**Thermoplastic Motor Insulation Systems**		P
77	**Treadmills – Interoperability**		N/A
	MANUFACTURING AND PRODUCTION TESTS		N/A
78	**Dielectric Voltage-Withstand Test**	Compliance has to be checked at production facility.	P
79	**Grounding-Continuity Test**		P
	RATING		P
80	**Details**		P
	MARKING		P
81	**Details**		P
81.1	General		P
81.1.1	An appliance shall be plainly and permanently marked where it will be readily visible – after installation, in the case of a permanently connected appliance – with:	Marking label provided on the back or the side	P
	c) The manufacturer's name, trade name, or trademark, or other descriptive marking by which the organization responsible for the product may be identified,	Refer to rating label	P
	Exception: When the product is identified by the brand or trademark owned by a private labeler, the manufacturer's identification by means of a traceable code meets the intent of the requirement.		N/A
	b) A distinctive catalog number or the equivalent,	Refer to rating label	P
	c) The electrical rating, and	Refer to rating label	P
	d) The date or other dating period of manufacture not exceeding any three consecutive months.	Considered	P
	Exception: The date of manufacture in abbreviated form, in a nationally accepted conventional code, or in a code affirmed by the manufacturer meets the intent of the requirement when the code:	Considered	P

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	d) Does not repeat in less than 10 years for a household product or less than 20 years for a commercial product, and	Considered	P
	e) Does not require reference to the production records of the manufacturer to determine when the product was manufactured.	Considered	P
81.1.2	An appliance that employs a single motor as its only electric-energy-consuming component need not show the electrical rating given on the motor nameplate elsewhere on the appliance if this nameplate is readily visible after the motor has been installed in the appliance.		N/A
81.1.3	If the motor nameplate of a dual-voltage motor is employed to give the electrical rating of the appliance as provided in 81.1.2, the appliance shall be additionally and permanently marked to indicate the particular voltage for which it is connected when shipped from the factory. If the appliance employs an attachment plug, instructions shall be provided to indicate the type of plug that should be used if the appliance is reconnected for the alternate voltage. See 13.1.1.9.		N/A
81.1.4	If a manufacturer produces or assembles motor-operated appliances at more than one factory, each finished appliance shall have a distinctive permanent marking by means of which it may be identified as the product of a particular factory.	One factory only	N/A
81.1.5	If the construction of an appliance contemplates cleaning or servicing, such as the replacement of pilot lamps or fuses, by the user, and if such cleaning or servicing would involve the exposure of a normally enclosed or protected live part to unintentional contact, the appliance shall be plainly and permanently marked to indicate that such servicing or cleaning be done with the appliance disconnected	No such servicing necessary	N/A

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	from the supply circuit.		
81.1.6	An appliance that will not start and attain intended running speed when connected to a circuit protected by an ordinary – not a time-delay – fuse as described in 47.1 shall be plainly and permanently marked with the words “If connected to a circuit protected by fuses, use time-delay fuses with this appliance,” or with an equivalent wording.		N/A
81.1.7	An appliance shall not be marked with a double insulation symbol – a square within a square, or the words “Double Insulation “, or the equivalent unless it complies with the applicable requirements in the Standard for Double Insulation Systems for Use in Electrical Appliances, UL 1097.		N/A
81.1.8	A motion simulation appliance as described in 4.21 and that has been investigated and found suitable for household use shall be permanently marked on the appliance to inform the user that the appliance is for household use only. The following or equivalent wording shall be used, ″For Household/Residential Use Only″. This marking shall also be on any container and be visible while displayed.		N/A
81.1.9	A motion simulation appliance as described in 4.21 shall be permanently marked with the following or equivalent wording: a) The maximum rated user weight (load); and b) ″WARNING – To reduce the risk of personal injury, read and understand all the instructions before using this product.″		N/A
81.2	Permanently connected appliances	Not a Permanently connected appliance	N/A
81.2.1	If any point within a terminal box or wiring compartment of a permanently connected appliance in which the power-supply conductors are intended to be connected, including such conductors themselves,		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	attains a temperature rise of more than 35°C (63°F) during the temperature test, the appliance shall be permanently marked “For supply connection, use wires acceptable for at least __°C (__°F),” or with an equivalent statement, and the temperature value shall be in accordance with Table 81.1. This statement shall be located at or near the point where the supply connections are to be made, and shall be clearly visible both during and after installation of the appliance.		
81.2.2	A permanently connected appliance having one motor and other loads or more than one motor with or without other loads shall be permanently marked in a location that will be visible when connections to the power-supply circuit are made and inspected with:		N/A
	f) The minimum supply-circuit conductor ampacity based on the maximum input in accordance with 39.1,		N/A
	g) The maximum rating of the supply-circuit overcurrent-protective device, which is not to exceed the rating of the fuse employed in the short-circuit test of the motor-overload-protective device employed in the appliance, and		N/A
	h) The type of supply-circuit overcurrent-protective device – for example, oontime delay fuse or dual-element time-delay fuse.		N/A
81.2.3	An appliance intended for permanent connection to a wiring system other than rigid metal conduit or armored cable shall be permanently marked to indicate the system or systems for which it is acceptable. The marking shall be located so that it will be visible when power-supply connections to the appliance are being made.		N/A
81.3	Components		N/A

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81.3.1	A heating element rated more than 1 A and intended to be replaceable in the field shall be permanently marked with its rating in volts and amperes or in volts and watts, or the manufacturer's part number, or other means of identification.	No such heating element	N/A
81.3.2	An appliance that is intended to be controlled by or operated in conjunction with a capacitor / transformer unit shall be supplied with such capacitor or unit. A capacitor or a unit that is not physically a part of the appliance shall be permanently marked with an identification symbol. This symbol shall also appear on the nameplate of the motor.		N/A
81.4	Appliances with heating pads		N/A
81.4.1	An appliance employing a heating pad and constructed with a covering of cloth-backed vinyl, fabric, or other similar material shall be marked:		N/A
	WARNING BURNS WILL RESULT FROM IMPROPER USE READ INSTRUCTIONS BEFORE USING DO NOT WET-DO NOT USE PINS NEVER REMOVE COVER		N/A
81.4.2	The marking specified in 81.4.1 shall be readily visible and permanent. It shall also be marked on such appliances as a heated vibrating chair, heated footstool vibrator, or the like. The lettering shall be in accordance with 39.4.		N/A
81.5	Treadmills		P
81.5.1	If the treadmill is intended to be cleaned or serviced by the user (such as replacement of belts and the like) and this cleaning or servicing involves the exposure of any normally enclosed or protected uninsulated live parts to unintentional contact, or involves exposure to moving parts, the appliance shall be clearly and permanently marked with the following, or equivalent wording. These statements shall also be included in the Important Safety Instructions; See		p

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	Instructions Pertaining to a Risk of Fire, Electric Shock, or Injury to Persons, Section 83.		
81.6	**Massage type footbaths**		N/A
81.7	**Inversion tables**		N/A
81.8	**Dog treadmills**		N/A
81.9	**Agility trainers**		N/A
INSTRUCTION MANUAL			
82	**General**		P
82.1	An appliance shall be provided with legible instructions pertaining to:	Instruction manual provided.	P
	a) The risk of fire, electric shock, or injury to persons that may be associated with the use of the appliance, b) Operation, c) User-maintenance and storage, and, as applicable, d) Grounding or double-insulation.	Provided in instruction manual.	P
82.2	The instructions shall indicate whether the appliance is intended for household or commercial use.	For household use	P
82.3	The instructions shall include the markings, or equivalent, specified in Section 39, Markings.	Provided in manual	P
82.4	The text of all required instructions shall be in the words specified or words that are equivalent, clear, and understandable. Exception: If an appliance is such that the specified wording is unnecessary or conflicting, the wording may be omitted or modified, as appropriate.	Instructions are clear and understandable.	P
82.5	With reference to the requirement in 82.4, there shall be no substitute for the cautionary prefixes “DANGER” and “WARNING”.	no substitutes	P
82.6	Instructions or illustrations shall be provided to identify important parts of the appliance, such as a stroke- or power-adjustment means or heat settings. An illustration may be used with a required instruction to	Instructions identify important parts like power connection etc.	P

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	clarify the intent, but shall not replace the written instruction.		
82.7	Wording in parentheses in Instructions Pertaining To A Risk of Fire, Electric Shock, Or Injury To Persons, Section 83, Operating Instructions, Section 84, User-Maintenance Instructions, Section 85, Grounding/Double Insulation Instructions, Section 86 is explanatory, indicating options, alternatives, or cross-references. Wherever the word ″appliance″ is used, the name of the specific appliance may be substituted in the final text.	wording “The massage” is used to identify the product.	P
82.8	With reference to the requirements in 37.3, the international symbols specified may be used only when the significance of these symbols is explained in the instructions provided with the appliance.		N/A
82.9	With reference to the requirements in 37.3, the international symbols specified may be used only when the significance of these symbols is explained in the instructions provided with the appliance.		N/A
83	**Instructions Pertaining to a Risk of Fire, Electric Shock, or Injury to Persons**		P
83.1	Instructions pertaining to a risk of fire, electric shock, or injury to persons shall warn the user of reasonably foreseeable risks and state the precautions that should be taken to reduce such risks.	precautions stated to reduce risks of fire , or injury to persons	P
83.2	The instructions pertaining to a risk of fire, electric shock, or injury to persons shall be:	Provided in instruction manual.	P
	a) In the first part of the manual,	Provided in first part of the manual	P
	b) Before the operating instructions,		P
	c) Separate in format from other instructions related to assembly, operation, maintenance, and storage, and		P
	d) A permanent part of the manual.		P
83.3	The height of lettering in the text and illustrations of the instructions specified in 83.5 and 83.6 shall be as		P

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	follows:		
	a) Upper case letters – not less than 5/83inch (1.9 mm); b) Lower case letters – not less than 1/16 inch (1.6 mm); and c) The statements required by 83.4, and cautionary prefixes, “DANGER” and “WARNING”, required by 83.5 and 67.1 – not less than 3/16 inch (4.8 mm).		P
83.4	The statement “IMPORTANT SAFETY INSTRUCTION” or the equivalent shall precede the list of instructions required by 83.5 and 83.6, and the statement “SAVE THESE INSTRUCTION” or the equivalent shall either precede or follow the list.	Provided in instruction manual.	P
83.5	The instructions required by 83.1 shall include the items in the following list, as applicable, and any other instructions that the manufacturer deems necessary for the appliance. The list shall not include the items mentioned in 83.2 or in Sections 65 – 67. The statement “Read all instructions before using” shall precede the list of items following the word “DANGER.”. The items may be numbered. IMPORTANT SAFETY INSTRUCTIONS When using an electrical appliance, basic precautions should always be followed, including the following: Read all instructions before using (this appliance). DANGER – To reduce the risk of electric shock:	Provided in instruction manual.	P
	1) Always unplug this appliance from the electrical outlet immediately after using and before cleaning. WARNING – To reduce the risk of burns, fire, electric shock, or injury to persons:		P
	1) An appliance should never be left unattended when plugged in. Unplug from outlet when not in use, and before putting on or taking off parts.		P
	2) Do not operate under blanket or pillow. Excessive heating can occur and cause fire, electric shock, or		P

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Clause	Requirement + Test	Result - Remark	Verdict
	injury to persons.		
	3) Close supervision is necessary when this appliance is used by, on, or near children, invalids, or disabled persons.		P
	4) Use this appliance only for its intended use as described in this manual. Do not use attachments not recommended by the manufacturer.		P
	5) Never operate this appliance if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or dropped into water. Return the appliance to a service center for examination and repair.		P
	6) Do not carry this appliance by supply cord or use cord as a handle.		P
	7) Keep the cord away from heated surfaces.		P
	8) Never operate the appliance with the air openings blocked. Keep the air openings free of lint, hair, and the like.		P
	9) Never drop or insert any object into any opening.		P
	10) Do not use outdoors.		P
	11) Do not operate where aerosol (spray) products are being used or where oxygen is being administered.		P
	12) To disconnect, turn all controls to the off position, then remove plug from outlet. SAVE THESE INSTRUCTIONS		P
83.6	The following instructions shall be included in the list of items in addition to the items in 83.5 for the appliances indicated. If more than one item applies to the appliance, all applicable items for the appliance type shall be included.		P
	a) Hand-Held or Hand-Supported Appliances – 1) The following items shall be included following the heading “DANGER.” i) Do not reach for an appliance that has fallen into		P

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Clause	Requirement + Test	Result - Remark	Verdict
	water. Unplug immediately. ii) Do not use while bathing or in a shower. iii) Do not place or store appliance where it can fall or be pulled into a tub or sink. Do not place in or drop into water or other liquid.		
	2) The following item shall be added to (8) following the heading ²WARNING:" i) Never operate on a soft surface such as a bed or couch where the air openings may be blocked.		P
	b) Appliances with a heated surface other than those mentioned in (c) – 1) The following item shall be included following the heading "WARNING:" i) Use heated surfaces carefully. May cause serious burns. Do not use over insensitive skin areas or in the presence of poor circulation. The unattended use of heat by children or incapacitated persons may be dangerous.	Not heated surface	N/A
	c) Appliances With Heating Pads – 1) For an appliance employing a heating pad and constructed with a covering of cloth backed vinyl, fabric or other similar material, the following items shall be provided following the heading ²DANGER:" i) Never use pins or other metallic fasteners with this appliance. ii) Carefully examine the covering before each use. Discard the appliance if the covering shows any sign of deterioration, such as checking, blistering, or cracking. iii) Keep Dry – Do not operate in a wet or moist condition. 2) The following items shall be added following the heading ²WARNING:" i) Temperatures sufficiently high to cause burns may occur regardless of the control setting. Do not use on an infant or invalid or on a sleeping or unconscious		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	person. Do not use on insensitive skin or on a person with poor blood circulation. Check the skin in contact with the heated area of the appliance frequently to reduce the risk of blistering. ii) Do Not Crush – Avoid sharp folds.		
	d) Tub type foot massagers – 1) The following item shall be included following the heading ²WARNING: i) Do not stand on or in appliance. Use only while seated.		N/A
	e) Chairs, and the like, with movable parts such as foot supports 1) The following item shall be added to (3) of the list following the heading ²WARNING: i) Keep children away from extended foot support (or other similar parts).		N/A
	f. Grounded Products – 1) The following item shall be included following the heading “WARNING:” i) Connect this appliance to a properly grounded outlet only. See Grounding Instructions		N/A
	g)Massage type footbaths – 1) The following items shall be included following the heading ″DANGER:″ i) Do not reach for a product that has fallen into water. Unplug immediately. ii) Do not place or store appliance where it can fall or be pulled into a tub or sink. iii) Do not place in or drop into water or other liquid. 2) The following items shall be included following the heading ″WARNING:″ i) Do handle plug with wet hands.		N/A
	h) Inversion Tables – 1) The markings required by 81.5.1 shall be included in the important safety instructions.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	i) Dog Treadmills 1) ″Warning – Risk of Choking – Do not attach leash or harness to the treadmill frame.″ 2) If the treadmill is provided with a safety speed control (see 42.1.8), ″Warning – Risk of Choking – Attach the Safety Key to the leash or harness. Always use the Safety Key when using the treadmill.″ 3) ″Warning – Risk of Injury – Do not leave dog unattended on treadmill. Constant supervision is required to prevent injury.″ 4) ″Warning – Risk of Injury – This dog treadmill is not designed or intended for persons to use. Do not allow a child to use this treadmill. Keep children away.″ 5) The applicable caution and warning statements from Dog Treadmills, Section 81.8.		N/A
	j) Agility trainers provided with a footboard: 1) To reduce the risk of injury, place the footboard on a flat, horizontal, and stable surface. Do not place or use the footboard on a slippery surface. 2) To reduce the risk of injury, do not use the footboard with wet shoes, wet feet, or socks. 3) To reduce the risk of injury, do not use the footboard if the surface is wet. If the footboard surface becomes wet, dry the surface before using.		N/A
84	**Operating Instructions**		P
84.1	Operating instructions shall include all information needed to operate the appliance as intended	Provided.	P
84.2	If an appliance having a dual-voltage motor is provided with an attachment plug, instructions shall be provided to indicate the type of plug that should be used if the appliance is reconnected for the alternate voltage.	No dual voltage motors.	N/A
84.3	An appliance provided with a 2-blade, polarized attachment plug shall be provided with the following instructions or the equivalent: To reduce the risk of electric shock, this appliance has a polarized plug	No such part.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	(one blade is wider than the other). This plug will fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install the proper outlet. Do not change the plug in any way.		
84.4	A massage type footbath shall be provided with instructions to the user not to exceed the maximum fill line while filling the appliance.		N/A
84.5	If a dog treadmill can be folded-up for the purpose of storage, the operating instruction shall clearly instruct the user regarding how to fold, lock and store the treadmill. See 81.8.2.		N/A
84.6	For a dog treadmill, the instruction manual shall instruct the user regarding the proper operation and functioning of the power on/off switch, circuit breaker, start/stop switch and other controls on the control panel, safety key, and the emergency stop switch.		N/A
84.7	An agility trainer shall include use instructions regarding connecting the appropriate devices to the connectors provided on the control panel.		N/A
85	**User-Maintenance Instructions**		P
85.1	User-maintenance instructions shall include: a) Instructions for cleaning and user maintenance operations recommended by the manufacturer, such as lubrication or non lubrication; and a statement to the user that any other servicing should be performed by an authorized service representative or that the appliance has no user serviceable parts.	Provided in instruction manual.	P
	b) Instructions for an appliance employing an automatically reset thermal limiter that shuts off the entire appliance shall inform the user what to expect if the thermal limiter operates.		N/A
	c) Specific instructions for the proper method of storage of the cord, the total appliance, and the like, when the appliance is not in use; and for care of the	Provided in instruction manual.	P

UL 1647			
Clause	Requirement + Test	Result - Remark	Verdict
	cord while in use (for example, for a hand-supported product, untwisting).		
	d) In the case of an appliance intended to be used with water additives, conditioners, or other solutions with or without water, specific instructions regarding the proper liquid or additive to use and the amount to be used in conjunction with the appliance.		N/A
86	**Grounding/Double Insulation Instructions**		P
86.1	For a grounded appliance, the instructions shall include those instructions in (a) – (d) applicable to the appliance. For a double insulated appliance the instructions shall include (e).		P
	a) For all grounded, cord-connected products: GROUNDING INSTRUCTIONS This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances. DANGER – Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product – if it will not fit the outlet, have a proper outlet installed by a qualified electrician.	Provided in instruction manual.	P
	b) For a grounded, cord-connected product rated less than 15 amperes and intended for use on a nominal 120-volt supply circuit, the instructions in either (1) or (2): 1) This product is for use on a nominal 120-volt circuit, and has a grounding plug that looks like the plug	Provided in instruction manual.	P

UL 1647			
Clause	Requirement + Test	Result - Remark	Verdict
	illustrated in sketch A in Figure 58.1. A temporary adapter that looks like the adapter illustrated in sketches B and C may be used to connect this plug to a 2-pole receptacle as shown in sketch B if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet (sketch A) can be installed by a qualified electrician. The green colored rigid ear, lug, or the like extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box cover. Whenever the adapter is used, it must be held in place by a metal screw. 2) This product is for use on a nominal 120-volt circuit and has a grounding plug that looks like the plug illustrated in sketch A in Figure 58.1. Make sure that the product is connected to an outlet having the same configuration as the plug. No adapter should be used with this product.		
	c) For all other grounded, cord-connected products: This product is for use on a circuit having a nominal rating more than 120 volts (or “This product is rated more than 15 amperes and is for use on a circuit having a nominal rating of 120 volt²) and is factory-equipped with a specific electric cord and plug to permit connection to a proper electric circuit. Make sure that the product is connected to an outlet having the same configuration as the plug. No adapter should be used with this product. If the product must be reconnected for use on a different type of electric circuit, the reconnection should be made by qualified service personnel.		N/A
	d) For a permanently connected product: GROUNDING INSTRUCTIONS This product must be connected to a grounded metal, permanent wiring system; or an equipment-grounding conductor must be run with the circuit conductors and connected to the	not a permanent connected appliance.	N/A

UL 1647			
Clause	Requirement + Test	Result - Remark	Verdict
	equipment-grounding terminal or lead on the product.		
	e) For a double-insulated, cord-connected product: SERVICING OF DOUBLE-INSULATED PRODUCTS In a double-insulated product, two systems of insulation are provided instead of grounding. No grounding means is provided on a double-insulated product, nor should a means for grounding be added to the product. Servicing a double-insulated product requires extreme care and knowledge of the system, and should be done only by qualified service personnel. Replacement parts for a double-insulated product must be identical to the parts they replace. A double-insulated product is marked with the words DOUBLE INSULATION or DOUBLE INSULATED. The symbol (square within a square) may also be marked on the product.		N/A

1	**SCOPE**	**P**

2	**NORMATIVE REFERENCES**	**P**

3	**DEFINITIONS**	**P**

4	**GENERAL REQUIREMENT**	**P**

5	**GENERAL CONDITIONS FOR THE TESTS**		**P**
	Tests performed according to clause 5, e.g. nature of supply, sequence of testing, etc.		P

6	**CLASSIFICATION**		**P**
6.1	Protection against electric shock: Class 0, I, II, III..... :	Class I	P
6.1DV.1	Class 0I appliances are not allowed	No such appliance	P
6.2	Protection against harmful ingress of water	Indoor used only	N/A

7	**MARKING AND INSTRUCTIONS**		**P**
7.1	Rated voltage or voltage range (V) .... :	(see copy of marking plate)	P
	Symbol for nature of supply, or .... :	(see copy of marking plate)	P
	Rated frequency (Hz) .... :	(see copy of marking plate)	P
	Rated power input (W), or .... :	(see copy of marking plate)	P
	Rated current (A) .... :		N/A
	Manufacturer's or responsible vendor's name, trademark or identification mark .... :	(see copy of marking plate)	P
	Model or type reference .... :	(see copy of marking plate)	P
	Symbol IEC 60417-5172, for class II appliances	Class I	N/A
	IP number, other than IPX0..... ..... :	IPX0	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
7.1DV.2	Temperature rise of the insulation of the fixed wiring supplying an appliance for permanent connection to the supply mains exceeds the temperature rise		N/A
7.2	Warning for stationary appliances for multiple supply		N/A
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen		P
	Different rated values marked with the values separated by an oblique stroke		N/A
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible		N/A
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		P
	the power input is related to the arithmetic mean value of the rated voltage range		N/A
	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
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply, unless		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)		N/A
	- marking of protective earthing terminals (symbol IEC 60417-5019)		P
	- marking not placed on removable parts		N/A
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 .... :		P
	This applies also to switches which are part of a control		N/A
	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
7.13	Instructions and other texts in an official language	English and French	P
7.14	Marking clearly legible and durable, rubbing test as specified		P
7.15	Markings on a main part		P
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		N/A
7.17DV	Appliances requiring the usage of time delay overcurrent protective devices in accordance with 9DV.2 shall be so marked to indicate the use of time delay fuses only		N/A
7.18DV	Appliances equipped with output terminals supplied from a LIMITED POWER SOURCE shall be marked to indicate Class 2 wiring		N/A

8	**PROTECTION AGAINST ACCESS TO LIVE PARTS**		**P**
8.1	Adequate protection against accidental contact with live parts		P
8.2	Class II appliances and class II constructions	Class I appliance	N/A

9	**STARTING OF MOTOR-OPERATED APPLIANCES**	**N/A**

10	**POWER INPUT AND CURRENT**		**P**
10.1	Power input deviations		P
10.2	Deviations of current at normal operating temperature		N/A

11	**HEATING**		**P**
11.1	No excessive temperatures in normal use		P
11.2	The appliance is held, placed or fixed in position as described ..... :		P
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		N/A
	the windings are non-uniform or it is difficult to make the necessary connections		N/A
11.4	Heating appliances operated under normal operation at 1.15times rated power input (W) ..... :		N/A
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06times rated voltage (V) ..... :		P
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06times rated voltage (V) ..... :		N/A
11.7	Operation duration corresponding to the most unfavourable conditions of normal use		P
11.8	Temperature rises monitored continuously and not exceeding the values in table 3 with 11.8DV		P
	If the temperature rise of a motor winding exceeds the value of table 3, or		N/A
	if there is doubt with regard to classification of insulation,		N/A
	tests of Annex C are carried out		N/A
	Sealing compound does not flow out		P
	Protective devices do not operate, except		P
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		N/A

13	**LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE**		**P**
13.1	Leakage current not excessive and electric strength adequate		P

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 ..... :		P
13.3	The appliance is disconnected from the supply		P
	Electric strength tests according to table 4 ..... :		P
	No breakdown during the tests		P

14	**TRANSIENT OVERVOLTAGES**		N/A
	Appliances withstand the transient over-voltages to which they may be subjected		N/A

15	**MOISTURE RESISTANCE** *Indoor used only*	**N/A**

16	**LEAKAGE CURRENT AND ELECTRIC STRENGTH**		**P**
16.1	Leakage current not excessive and electric strength adequate		P
16.2	Single-phase appliances		P
16.3	Electric strength tests according to table 7 ..... :		P

17	**OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS** *Not transformer used*	**N/A**

18	**ENDURANCE**		**N/A**
	Requirements and tests are specified in part 2 when necessary		N/A

19	**ABNORMAL OPERATION**		**P**
19.1	The risk of fire, mechanical damage or electric shock under abnormal or careless operation obviated		P

19.2	Test of appliances with heating elements with restricted heat dissipation; test voltage (V), power input of 0.85 times rated power input (W) ..... :		N/A
19.3	Test of 19.2 repeated; test voltage (V), power input of 1.24 times rated power input (W) ..... :		N/A
19.4	Test conditions as in clause 11, any control limiting the temperature during tests of clause 11 short-circuited		N/A
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the sheath		N/A
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N/A
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque, or	Locked motor	P
	locking moving parts of other appliances		P
19.8	Multi-phase motors operated at rated voltage with one phase disconnected		N/A
19.9	Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously		N/A
19.10	Series motor operated at 1.3times rated voltage for 1min (V). 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 they comply with the conditions specified in 19.11.1		P
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		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 a) to g) 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
19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to g) of 19.11.2		N/A
19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or		N/A
	a device that can be placed in the stand-by mode,		N/A
	subjected to the tests of 19.11.4.1 to 19.11.4.7, the device being set in the off position or in the stand-by mode		N/A
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A) ..... :		N/A
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Temperature rises not exceeding the values shown in table 9..... :		P
	Compliance with clause 8 not impaired		P
	If the appliance can still be operated it complies with 20.2		N/A
	Insulation, other than of class III appliances or class III constructions that do not contain live parts, withstands the electric strength test of 16.3, the test voltage as specified in table 4:		P
	- basic insulation (V)..... :	1000V	P
	- supplementary insulation (V) ..... :	1750V	P
	- reinforced insulation (V) ..... :	3000V	P

	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstand the electric strength test of 16.3, the test voltage being twice the working voltage		P
	The appliance does not undergo a dangerous malfunction, and		P
	no failure of protective electronic circuits, if the appliance is still operable		N/A
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		N/A
	- do not become operational, or		N/A
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N/A
	If the appliance contains lids or doors that are controlled by one or more interlocks, one of the interlocks may be released provided that:		N/A
	- the lid or door does not move automatically to an open position when the interlock is released, and		N/A
	- the appliance does not start after the cycle in which the interlock was released		N/A
19.14	Appliances operated under the conditions of clause 11, any contactor or relay contact operating under the conditions of clause 11 being short-circuited		P

20	**STABILITY AND MECHANICAL HAZARDS**		**P**
20.1	Appliances having adequate stability		P
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		P

21	**MECHANICAL STRENGTH**		**P**
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		P

22	**CONSTRUCTION**		**P**

22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled		N/A
22.2	Stationary appliance: means to ensure all-pole disconnection from the supply being provided	No such appliance	N/A
22.2DV	D2 Modification to add the following: Disconnection of the neutral is not necessary for all single phase stationary appliances		N/A
22.3	Appliance provided with pins: no undue strain on socket-outlets	No such appliance	N/A
22.3DV	DC Modification to replace the 2nd and 3rd paragraph, and the note, with the following: A socket outlet-supported appliance shall meet the tipping moment requirements of Annex DVC		N/A
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets	No such appliance	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 0.1μF, the appliance being disconnected from the supply at the instant of voltage peak		P
22.6	Electrical insulation not affected by condensing water or leaking liquid		P
	Electrical insulation of Class II appliances and class II constructions not affected if a hose ruptures or seal leaks		N/A
22.7	Adequate safeguards against the risk of excessive pressure in appliances containing liquid or gases or having steam-producing devices	No such appliance	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		N/A
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts		P
	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
22.11DV	Modification to add 22.11DV.1-22.11DV.8		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
22.12DV	D1 Modification to add the following sentence to the note: Friction fits are not considered reliable with respect to protection against a hazard		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	No storage hooks	N/A
22.16	Automatic cord reels	No automatic cord reels	N/A
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		N/A
22.18	Current-carrying parts and other metal parts resistant to corrosion		P

22.19	Driving belts not relied upon to provide the required level of insulation, unless	No driving belt included.	N/A
	constructed to prevent inappropriate replacement		N/A
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		P
	impregnated		N/A
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N/A
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
22.24	Bare heating elements shall be supported so that heating conductor is unlikely to come into contact with accessible metal parts if they rupture		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	No such appliance	N/A

22.30	Parts of class II construction which serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or	Enclosure cannot be removed without being seriously damaged.	P
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		P
22.31	Neither clearances nor creepage distances over supplementary and reinforced insulation reduced below values specified in clause 29 as a result of wear		P
	Neither clearances nor creepage distances between live parts and accessible parts reduced below values for supplementary insulation if wires, screws etc. become loose		P
22.32	Supplementary and reinforced insulation constructed or protected against pollution so that clearances or creepage distances are not reduced below the values in clause 29		P
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2		N/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 96h and 16h 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	Not liquids used	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
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
22.35	For other than class III constructions, handles, levers and knobs, held or actuated in normal use, not becoming live in the event of a failure of basic insulation		N/A
	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	Not used	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	No lamp holder used	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	No such appliance	N/A
	If the appliance cannot operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch for stopping the operation. The actuating member of the switch being easily visible and accessible		N/A
22.41	No components, other than lamps, containing mercury	No mercury included	N/A
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	No such appliance	N/A
22.44	Appliances not having an enclosure that is shaped or decorated like a toy		P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.3 due to deformation as a result of an external force applied to the enclosure		P

22.46	For programmable protective electronic circuits used to ensure compliance with the standard, the software contains measures to control the fault/error conditions in table R.1	No such circuits	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	No such appliance	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	No such appliance	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
	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	No such appliance	N/A
22.53DV	D1 Addition: General use socket outlets, if provided, should be considered in the applicable part 2 standards		N/A

23	**INTERNAL WIRING**		**P**
23.1	Wireways smooth and free from sharp edges		P
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges		N/A
	Beads inside flexible metal conduits contained within an insulating sleeve		N/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		P
	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		P
	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		P
	Not more than 10% of the strands of any conductor broken, and		P
	not more than 30% for wiring supplying circuits that consume no more than 15W		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
23.6	Sleeving used as supplementary insulation on internal wiring retained in position		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** *(see CDF)*	**P**

25	**SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS**		P
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		P
	- supply cord fitted with a plug,		N/A
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance, or		P
	- pins for insertion into socket-outlets		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 1250V for 1min between each means of connection causes no breakdown		N/A
25.3	Appliance intended to be permanently connected to fixed wiring provided with one of the following means for connection to the supply mains:		N/A
	- a set of terminals allowing the connection of a flexible cord		N/A
	- a fitted supply cord		N/A
	- a set of supply leads accommodated in a suitable compartment		N/A
	- a set of terminals for the connection of cables of fixed wiring, cross-sectional areas specified in 26.6, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A

	- a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate types of cable or conduit, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A
	For a fixed appliance constructed so that parts can be removed to facilitate easy installation, this requirement is met if it is possible to connect the fixed wiring without difficulty after a part of the appliance has been fixed to its support		N/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16A, dimension according to table 10 (mm). :		N/A
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in clause 29		N/A
25.5	Method for assembling the supply cord to the appliance:		P
	- type X attachment		N/A
	- type Y attachment		P
	- 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
25.6	Plugs fitted with only one flexible cord		P
25.7	Supply cords		P
25.8	Nominal cross-sectional area of supply cords not less than table 11; rated current (A); cross-sectional area (mm^2)..... :		P
25.8DV.1	DR Modification to replace 25.8 with 25.8DV.1.1 – 25.8DV.1.2 (Canada and US Only)		N/A
25.9	Supply cords not in contact with sharp points or edges		P
25.10	Supply cord of class I appliances have a green/yellow core for earthing		P
25.11	Conductors of supply cords not consolidated by soldering where they are subject to contact pressure, unless		P
	the contact pressure is provided by spring terminals		N/A

25.12	Insulation of the supply cord not damaged when moulding the cord to part of the enclosure		N/A
25.13	Inlet openings so constructed as to prevent damage to the supply cord		N/A
25.14	Supply cords moved while in operation adequately protected against excessive flexing		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		N/A
25.16	Cord anchorages for type X attachments		N/A
25.17	Adequate cord anchorages for type Y and Z attachment		P
25.18	Cord anchorages		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
25.20	The insulated conductors of the supply cord for type Y and Z attachment additionally insulated from accessible metal parts		P
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed:		N/A
	- to permit checking of conductors with respect to correct positioning and connection before fitting any cover		N/A
	- so there is no risk of damage to the conductors or their insulation when fitting the cover		N/A
	- for portable appliances, so that the uninsulated end of a conductor, if it becomes free from the terminal, prevented from contact with accessible metal parts		N/A
	2 N test to the conductor for portable appliances; no contact with accessible metal parts		N/A
25.22	Appliance inlets		P
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**		N/A
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		N/A
26.2	Appliances with type X attachment and appliances for the connection of cables to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless		N/A
	the connections are soldered		N/A
	Screws and nuts not used to fix any other component, except		N/A
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N/A
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone, unless		N/A
	barriers provided so that neither clearances nor creepage distances between live parts and other metal parts reduced below the values for supplementary insulation if the conductor becomes free at the soldered joint		N/A

26.3	Terminals for type X attachment and for connection of cables of fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure but without damaging the conductor		N/A
	Terminals fixed so that when the clamping means is tightened or loosened:		N/A
	- the terminal does not become loose		N/A
	- internal wiring is not subjected to stress		N/A
	- neither clearances nor creepage distances are reduced below the values in clause 29		N/A
	Compliance checked by inspection and by the test of subclause 9.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified (Nm) ..... :		N/A
	No deep or sharp indentations of the conductors		N/A
26.4	Terminals for type X attachment, except those having a specially prepared cord and those for the connection of cables of fixed wiring, no special preparation of conductors such as by soldering, use of cable lugs, eyelets or similar, and		N/A
	so constructed or placed that conductors prevented from slipping out when clamping screws or nuts are tightened		N/A
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		N/A
	Stranded conductor test, 8 mm insulation removed		N/A
	No contact between live parts and accessible metal parts and,		N/A
	for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N/A
26.6	Terminals for type X attachment and for connection of cables of fixed wiring suitable for connection of conductors with cross-sectional area in accordance with the national electrical codes; rated current (A); nominal cross-sectional area (mm^2)		N/A

	If a specially prepared cord is used, terminals need only be suitable for that cord		N/A
26.6DV.1	DR Modification: Replace the wording “shown in Table 13” in the first paragraph by “in accordance with the national electrical codes”		N/A
26.6DV.2	DR Deletion: Delete Table 13.		N/A
26.7	Terminals for type X attachment shall be accessible after removal of a cover or part of the enclosure		N/A
26.8	Terminals for the connection of fixed wiring, including the earthing terminal, located close to each other		N/A
26.9	Terminals of the pillar type constructed and located as specified		N/A
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 5N 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
	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**

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 aluminum		P
	Diameter of screws of insulating material min. 3mm		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		N/A
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N/A
	For type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw impairs basic insulation		N/A
	For screws and nuts; torque-test as specified in table 14		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		N/A
	there is resiliency in the metallic parts to compensate for shrinkage or distortion of the insulating material		N/A
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N/A
	Thread-cutting (self-tapping) screws and thread rolling screws only used for electrical connections if they generate a full form standard machine screw thread		N/A
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer		N/A
	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		N/A
	if an alternative earthing circuit is provided		N/A
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if the connections are subjected to torsion		N/A
28.5DV	D1 Addition of 28.5DV.1 – 28.5DV.4:		N/A

29	**CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION**		**P**
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	For coatings used on printed circuits boards to protect the microenvironment (Type 1) or to provide basic insulation (Type 2), Annex J applies ..... :		N/A
	The microenvironment is pollution degree 1 under type 1 protection		N/A
	For type 2 protection, the spacing between the conductors before the protection is applied is not less than the values specified in Table 1 of IEC 60664-3		N/A
	These values apply to functional, basic, supplementary and reinforced insulation ..... :		N/A
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless..... :		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 1500V and above are increased by 0,5mm 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 appliances		N/A
	Appliances are in overvoltage category II		P
	A force of 2N is applied to bare conductors, other than heating elements		N/A
	A force of 30N is applied to accessible surfaces		N/A
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 ..... :		P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1,0mm 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..... :		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 ..... :		P
	For double insulation, with no intermediate conductive part between basic and supplementary insulation, clearances are measured between live parts and the accessible surface, and the insulation system is treated as reinforced insulation		P
29.1.4	Clearances for functional insulation are the largest values determined from:		P
	- table 16 based on the rated impulse voltage ..... :		P
	- table F.7a in IEC 60664-1, frequency not exceeding 30kHz		N/A

	- clause 4 of IEC 60664-4, frequency exceeding 30kHz		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		P
	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 30kHz		N/A
	- clause 4 of IEC 60664-4, frequency exceeding 30kHz		N/A
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1 or Clause 4 of IEC 60664-4, the clearances of supplementary insulation are not less than those specified for basic insulation		N/A
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1, the clearances of reinforced insulation dimensioned as specified in Table F.7a are to withstand 160% of the withstand voltage required for basic insulation		N/A
	If clearances for basic insulation are selected from Clause 4 of IEC 60664-4, the clearances of reinforced insulation are twice the value required for basic insulation		N/A

	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N/A
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation are based on the working voltage used as the rated voltage in table 15		N/A
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree ..... :		P
	Pollution degree 2 applies, unless		P
	- precautions taken to protect the insulation; pollution degree 1		N/A
	- insulation subjected to conductive pollution; pollution degree 3		N/A
	A force of 2N is applied to bare conductors, other than heating elements		P
	A force of 30N is applied to accessible surfaces		P
	In a double insulation system, the working voltage for both the basic and supplementary insulation is taken as the working voltage across the complete double insulation system		P
29.2.1	Creepage distances of basic insulation not less than specified in table 17 ..... :		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 ..... :		N/A

	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 ..... :		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 ..... :		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		P
29.3	Supplementary and reinforced insulation have adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		P
	Compliance checked:		P
	- by measurement, in accordance with 29.3.1, or		P
	- by an electric strength test in accordance with 29.3.2, or		N/A
	- by an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3, and		N/A
	for accessible parts of reinforced insulation consisting of a single layer, by measurement in accordance with 29.3.4, or		N/A
	- as specified in subclause 6.3 of IEC 60664-4 for insulation that is subjected to any periodic voltage having a frequency exceeding 30 kHz		N/A
29.3.1	Supplementary insulation have a thickness of at least 1mm		P
	Reinforced insulation have a thickness of at least 2mm		P
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N/A
	Supplementary insulation consist of at least 2 layers		N/A

	Reinforced insulation consist of at least 3 layers		N/A
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		N/A
	the electric strength test of 16.3		N/A
	If the temperature rise during the tests of clause 19 does not exceed the value specified in table 3, the test of IEC 60068-2-2 is not carried out		N/A
29.3.4	Thickness of accessible parts of reinforced insulation consisting of a single layer not less than specified in table 19 ..... :		N/A

30	**RESISTANCE TO HEAT AND FIRE**		**P**
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		P
	parts of thermoplastic material providing supplementary or reinforced insulation		P
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P
30.2	Parts of non-metallic material resistant to ignition and spread of fire		P
30.2.1	Parts of non-metallic material subjected to the glow-wire test of IEC 60695-2-11 at 550°C		P
30.2.2	Appliances operated while attended, parts of non-metallic material supporting current-carrying connections, and parts of non-metallic material within a distance of 3mm of such connections subjected to the glow-wire test of IEC 60695-2-11		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 0.2A during normal operation, and parts of non-metallic material, other than small parts, within a distance of 3mm subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850°C		P
30.2.3.2	Parts of non-metallic material supporting connections, and parts of non-metallic material within a distance of 3mm subjected to glow-wire test of IEC 60695-2-11		P
30.2.4	Base material of printed circuit boards subjected to the needle-flame test of Annex E		N/A
	Test not applicable to conditions as specified..... :		N/A

31	**RESISTANCE TO RUSTING**	**P**

32	**RADIATION, TOXICITY AND SIMILAR HAZARDS** *No such hazards*	**P**

A	**ANNEX A (INFORMATIVE) - ROUTINE TESTS**	**P**

B	**ANNEX B (NORMATIVE) - APPLIANCES POWERED BY RECHARGEABLE BATTERIES**	**N/A**

C	**ANNEX C (NORMATIVE) - AGEING TEST ON MOTORS**	**N/A**

D	**ANNEX D (NORMATIVE) - THERMAL MOTOR PROTECTORS**	**N/A**

E	**ANNEX E (NORMATIVE) - NEEDLE-FLAME TEST**	**N/A**

F	**ANNEX F (NORMATIVE) - CAPACITORS**	**N/A**

G	**ANNEX G (NORMATIVE) - SAFETY ISOLATING TRANSFORMERS**	**N/A**

H	**ANNEX H (NORMATIVE) – SWITCHES** *Not switch used*	**N/A**

I	**ANNEX I (NORMATIVE) - MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE**	**N/A**

J	**ANNEX J (NORMATIVE) - COATED PRINTED CIRCUIT BOARDS**	**N/A**

K	**ANNEX K (NORMATIVE)- OVERVOLTAGE CATEGORIES**		**P**
	The information on overvoltage categories is extracted from IEC 60664-1		P
	Overvoltage category is a numeral defining a transient overvoltage condition		P
	Equipment of overvoltage category IV is for use at the origin of the installation		N/A
	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**

M	**ANNEX M (NORMATIVE) - POLLUTION DEGREE**		**P**
	The information on pollution degrees is extracted from IEC 60664-1		P

	Pollution		P

N	**ANNEX N (NORMATIVE) - PROOF TRACKING TEST**	**N/A**

O	**ANNEX O (INFORMATIVE) - SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30**	**P**

P	**ANNEX P (INFORMATIVE) - GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES**	**N/A**

Q	**ANNEX Q (INFORMATIVE) - SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS**	**N/A**

R	**ANNEX R (NORMATIVE) - SOFTWARE EVALUATION**	**N/A**

Annex DVA	**Annex DVA (informative) - Component Standards Cross Reference**	**N/A**

Annex DVB	**Annex DVB (Normative) - Mexican Standards and Relevant Requirements**	**N/A**

Annex DVC	**Annex DVC (Normative) - Mechanical requirements for direct plug in appliances**	**N/A**

Attachment 1:

Photo-documentation

Photo 1

Photo 2

Photo 3

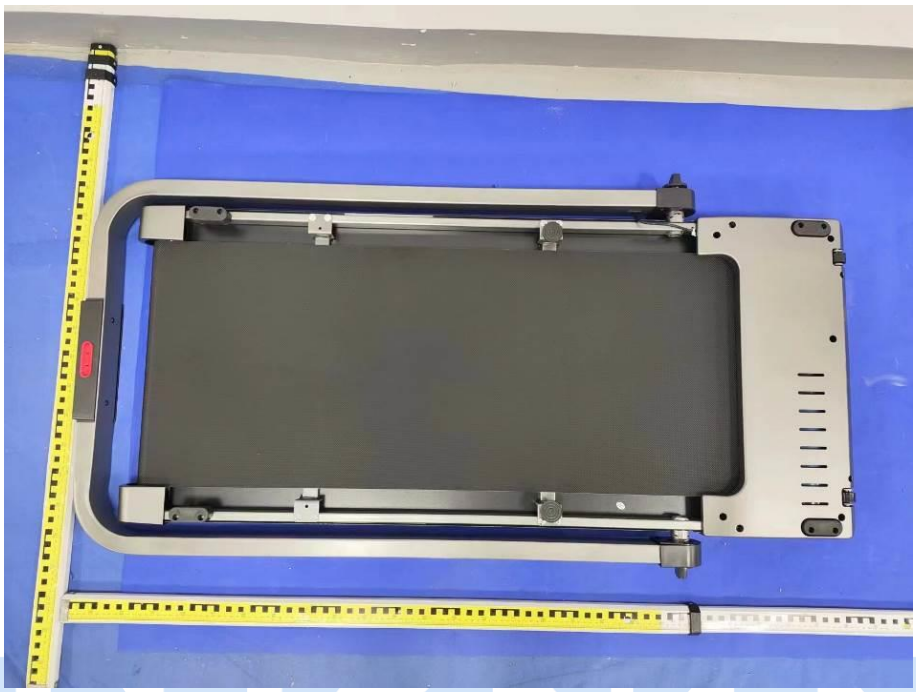

Photo 4

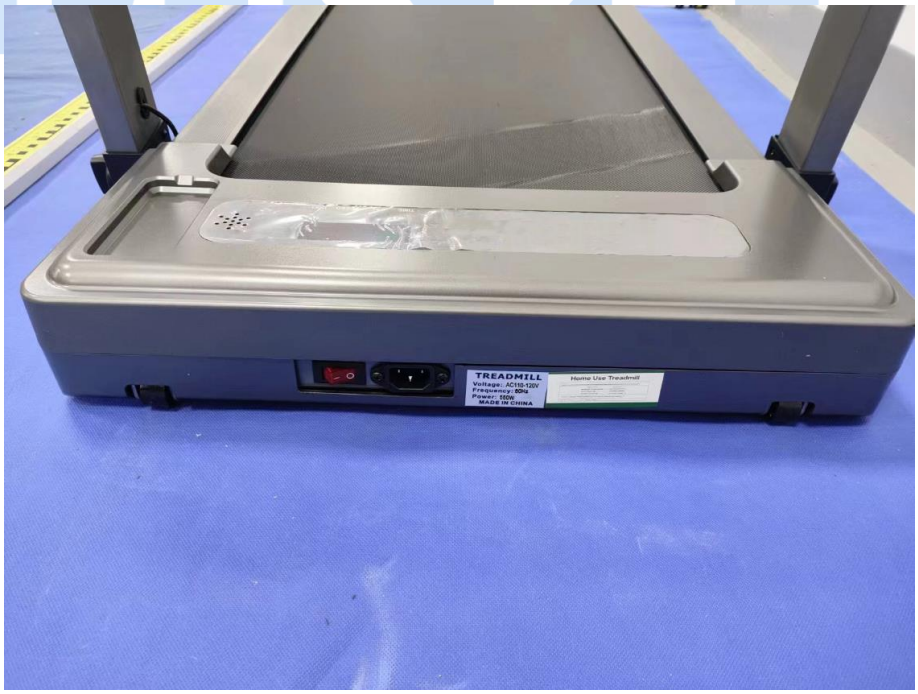

Photo 5

※※※※※ END OF REPORT ※※※※※