

UL 1026

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Electric Household Cooking and Food Serving Appliances

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1 Scope 范围	

1.1 These requirements cover electric household cooking and food serving appliances, rated at 250 V or less, other than those mentioned in 1.2, for use in ordinary locations, including appliances intended for casual and permanent outdoor use, in accordance with the National Electrical Code.

该要求包括了额定电压为 250 V 或 250 V 以下家用厨具电器，超过此范围的，包括临时及永久性户外使用的电器将在 1.2 中提及，并与国家电器编码一致。

1.2 These requirements do not cover household electric ranges, electrode type appliances, skillets and frying type appliances, fondues, woks, tempuras, corn poppers, coffee makers and brewing type appliances, commercial cooking appliances, microwave cooking appliances, or appliances that are covered in individual requirements that are separate from this standard. 该要求不包括家用电器范围、电极类电器，煮锅和炸锅类电器，干酪机、中华锅、天麸罗机、爆玉米花机及咖啡机，酿造类的电器、商用蒸煮器具、微波炉或有个别要求而背离该标准的电器制品。

1.3 In the following text, a requirement that applies to one type of equipment coming within its scope (toaster, and the like) will be so identified by a specific reference in that requirement to the type of equipment involved. In the absence of such specific reference of if the term "appliance" is employed, it is to be understood that the requirement applies to all of the types of equipment covered by the standard. 1.4 Deleted May 28, 2002 以下的章节中，某产品的要求是其范围内的一种类型，将标明用于该种产品的特别参考（如多士炉等），标准中的术语“电器”使用时无特别参考时，将理解成覆盖标准中提及的所有类型的电器。

2 Components、组成件

2.1 Except as indicated in 2.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components used in the products covered by this standard.

2.1 revised May 1, 2000除了 2.2 中所提及的, 标准所包括的组成件要符合其组成件要求, 参看附录 A 的表格, 此表格包括了本标准中提到的产品的一般组成件要求。

2.2 A component is not required to comply with a specific requirement that: 组成件不须符合特别要求的是:

a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or a)、标准中所包括的产品的组成件有该电器不须要的特征及面貌。

b) Is superseded by a requirement in this standard. 2.2 revised May 1, 2000 b)、或者是被标准中的要求取代。

2.3 A component shall be used in accordance with its rating established for the intended conditions of use. 2.3 revised May 1, 2000 2.3组成件的使用条件应与标准中规定的额定的使用条件一致。

2.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions. 2.4 revised May 1, 2000 2.4在结构方面不完美的特殊组成件具有可辨识性, 并且在执行能力方面受限制。一些组件趋向于有条件使用, 比如温度不能超过特定的限制, 并为方便辨识, 则应限制在特定的条件下使用。

3 Units of Measurement测量单位

3.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information. 3.1 revised May 1, 2000

若测量值有一个带圆括号的值, 第二个值只是近似的值, 第一个值才是所要求的。

4 References参考

4.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

4.1在标准中出现的任何代码, 若无日期标注, 则认为此代码是最近的代码。

CONSTRUCTION结构

5 General一般要求

5.1 If the operation of an appliance involves the generation and confining under pressure of steam or other gas, consideration shall be given to the possibility of an explosion risk incident to such operation. The appliance shall not be acceptable unless its strength is adequate with respect to any explosion risk that may be involved.

5.1若电器的使用条件包括了一般要求及在蒸汽压力或其它燃气压力之下限制使用, 应考虑到这种使用条件具有爆炸的危险性, 除非有足够的力量来阻止爆炸的危险, 否则该电器不能接受。

6 Frame and Enclosure支架及外壳

6.1 The frame and enclosure of an appliance shall be sufficiently strong and rigid to resist the abuses likely to be encountered during intended service. The degree of resistance inherent in the appliance shall preclude total or partial collapse with the attendant reduction of spacings, loosening or displacement of parts, and other serious defects that alone or in combination constitute an increase in the risk of fire, electric shock, or injury. 6.1电器的支架及外壳应有足够的强度, 并且在使用过程中有足够的坚固能够防止可能的不正确的使用。电器的固有的防护等级应排除整个的或局部的失效, 这些失效包括间隙减小, 零件松动或其它严重的缺陷, 可能一起发生或单独发生, 并可增加火灾、电击及人身伤害的危险程度。

6.2 An appliance shall be provided with an enclosure of material acceptable for the particular application, which shall house all electrical parts, except for a supply cord, and except for an open-wire-element unit as mentioned in 14.3 and 14.4 that may present a risk of fire, shock, or injury under any condition of use. If an appliance is intended for permanent connection to the power supply, the enclosure shall be provided with means for mounting in the intended manner and shall be furnished with any necessary fittings, such as brackets, hangers, or the like.

6.2一个电器应提供单个电器能接受的金属外壳, 并能包围住除了电源线和在14.3节14.4节中提到的可产生火灾、电击及人身安全危险的开放性电器组件之外的所有电器组件。若电器的电源连接是永久性的, 则电器应采用提供明确的安装的方式和必要的附加装置, 如固定板、吊钩等等。

6.3 In the case of an appliance employing oil or grease in its normal cooking operation, special consideration shall be given to the need for an enclosure over the cooking compartment, and to the acceptability for the purpose of the material employed for such an enclosure.

6.3在一般烹调过程中, 电器接触到油脂及油类, 应特别说明在电器外壳上方须留有一段间隔, 并且该种电器的材料应可接受。

6.4 If openings for ventilation are provided in the enclosure of an appliance or in an externally mounted component intended for permanent connection to the power supply, they shall be so located that they will not vent into concealed spaces of a

building structure such as into false-ceiling space, into hollow spaces in the wall, or the like, when the appliance is installed as intended.

6.4若电器上有通风的开口或者有特别的装配配件与电源永久性的连接，在装配电器时，则该电器不能放在不通风的地方，如放在FALSE-CEILING空间，墙壁中空的地方等等

6.5 Among the factors that shall be considered when an enclosure is being judged for acceptability are its: 6.5当确定一种外壳合格时，须考虑下列因素：

- a) Physical strength, 物理强度
- b) Resistance to impact, 抗冲击性
- c) Moisture-absorptive properties, 吸湿性
- d) Combustibility, 燃烧性
- e) Resistance to corrosion, and抗腐蚀性
- f) Resistance to distortion at temperatures to which the enclosure may be subjected under conditions of normal or abnormal use. 在一般条件或非常条件下的抗变形及屈服性

For a nonmetallic enclosure, see the enclosure requirements in the Standard for Polymeric Materials –Use in Electrical Equipment Evaluations, UL 746C. A metal enclosure or enclosure part shall be tested in accordance with Metal Enclosure Impact Test, Section 42, for resistance to impact. 对非金属外壳，参照聚合物外壳标准（电气设备评估 UL746C）中的要求，金属外壳及相关外壳部件的测试与42节中所述的“金属外壳冲击性测试”要求一致。

Exception No. 1: When considering the abnormal and severe conditions tests of UL 746C, the appliance enclosure is to be judged under the abnormal operations tests of Abnormal Operation Test, Section 44, of this standard. 特例一：考虑到UL746C的在非常条件及恶劣条件下测试，外壳的测试要求可在标准规定的非常操作测试要求之下，参照本标准的44节。

Exception No. 2: Thermoset materials need not be subjected to the relative thermal capability requirements of UL 746C. For a thermoset material operating at a temperature above its temperature rating, the 1000 hour aging test as outlined in 43.1 shall be conducted.

特例二：受热金属在UL746C中规定的相关的温度下不得屈服。对工作在其额定工作温度之上的受热金属，须按43.1节中规定的测试要求做1000次老化试验。

6.6 A thermoplastic enclosure of an appliance provided with overheating protection (Overheating Protection, Section 25) need not comply with the flammability requirements of UL 746C if a material rated HB, and possessing 60 arcs minimum resistance to high current arc ignition, and 7 second minimum resistance to hot wire ignition is employed and all enclosure parts including ribs, grills, and the like are spaced a minimum 1/2 inch (12.7 mm) from uninsulated live parts. 6.6 revised November 17, 1998 6.6 若材料标明 94HB，并且能抵抗最少 60 度的高电流电弧及最少 7 秒钟的高温线点火，所有的外壳零件包括筋、烤架等与可拆卸的活动件之间的间隔至少为 1/2 英寸（12.7mm）时，带过热保护的耐热塑料外壳（25 节）可以与 UL746C 中规定的易燃性要求不一致。

6.7 Cast- and sheet-metal portions of enclosure shall be no thinner than indicated in Table 6.1 unless the enclosure is found to be acceptable when judged under considerations such as are mentioned in 6.5 and 6.8.

6.7 除了 6.5 节及 6.8 节中提及的情况之下，外壳上的铸件及钣金件的壁厚不得低于表 6.1 中的规定的壁厚。

6.8 In addition to being considered with reference to the factors mentioned in 6.5, an enclosure of sheet metal is to be judged with respect to its size and shape, the thickness of metal and its acceptability for the particular application, considering the intended use of the appliance.

6.8 包括 6.5 中提到的参考因数之外，钣金件的确定与它的大小及形状、金属的壁厚、部分电器的可用性相关，

6.9 Electrical parts of an appliance, except the radiating portion of an open-wire element of an automatic toaster, shall be so located or enclosed that protection against unintentional contact with uninsulated live parts will be provided (see also 22.7). Insulated motor brush caps do not require additional enclosure.

6.9 电器的电气部分，除了自动多士炉的外露部分之外，对可能无意碰到的可拆卸的活动件，应当有保护措施来固定及阻挡（参照 22.7）。绝缘电机的电刷不用再加外壳。

Table 6.1
Minimum acceptable thicknesses of enclosure metal

Metal	At small, flat, unreinforced surfaces and at surfaces that are reinforced by curving, ribbing, and the like (or are otherwise of a shape and/or size) to provide equivalent physical strength		At surfaces to which a wiring system is to be connected in the field		At relatively large unreinforced flat surfaces	
	Inches	mm	Inches	mm	Inches	mm
Die-cast	3/64	1.2	—	—	5/64	2.0
Cast malleable iron	1/16	1.6	—	—	3/32	2.4
Other cast metal	3/32	2.4	—	—	1/8	3.2
Uncoated sheet steel	0.026 ^a	0.66 ^a	0.032	0.81	0.026	0.66
Galvanized sheet steel	0.029 ^a	0.74 ^a	0.034	0.086	0.029	0.74
Nonferrous sheet metal	0.036 ^a	0.91 ^a	0.045	1.14	0.036	0.91

^a Thinner sheet metal may be employed if found to be acceptable when the enclosure is judged under considerations such those mentioned in 6.5.

金属类型	在小的、光滑的、非加固的平面和通过弯曲、加筋等来（或是另外的大小及形状）来提供等同的物理强度的加固平面。		有配线连接的平面		相对大的未加固平面	
	英寸	毫米	英寸	毫米	英寸	毫米
压铸件	3/64	1.2	—	—	5/64	2.0
铸锻钢	1/16	1.6	—	—	5/64	2.4
其它铸造件	3/32	2.4	—	—	3/32	3.2
未喷涂钣金件	0.026a	0.66a	0.032	0.81	1/8	0.66
电镀板	0.029a	0.74a	0.034	0.086	0.026	0.74
有色金属板	0.036a	0.91a	0.045	1.14	0.036	0.91

该表列出了 6.5 中所提的最小的可接受的壁厚。

6.10 The enclosure shall be constructed so that molten metal, burning insulation, flaming particles, or the like will not fall on the supporting surface. 6.10外壳在结构上应保证熔化的金属、燃烧的绝缘物，灼热的微粒等不得跌落在支撑平面上。

6.11 The requirement in 6.10 necessitates that an enclosure bottom with an opening be provided with a barrier above or below the opening if the opening is: 6.11若外壳上的开口为下列情况之一，则6.10中的要求的外壳在底部有一个开口，测试杆可从开口的上、下通过。

a) Under a motor unless: a)、除下列情况之外，对马达有以下要求

1) The structural parts of the motor or of the appliance provide the equivalent of such a barrier. 1)、马达或电器的构件有类似测试杆的构件。

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:

2)、在下列缺省的情况下，马达被加电压并可以保证无熔化的金属及燃烧的绝缘物跌落在电器的支撑平面上。

i) Open main winding, 主线圈开路

ii) Open starting winding, 起动线圈开路

iii) Starting switch short-circuited; and 起动开关短路，并且

iv) For a permanent-split-capacitor motor the capacitor is short circuited. The short circuit is to be applied before the motor is energized and the rotor is to be blocked, 对固定电容器的马达，电容器被短路。马达被加压及转子停转之前有短路电流产生。

3) The motor is provided with a thermal motor protector (a protective device that is sensitive to both temperature and current) that prevents the temperature of the motor windings from becoming more than 125°C (257°F) under the maximum load under which the motor runs without causing the protector to cycle, and from becoming more than 150°C (302°F) with the

rotor of the motor locked, or3)、马达采用热保护器（对温度、电流都敏感的保护器）来保证马达满负荷运行但不会触发保护装置动作时，其线圈的工作温度不超过125EC（257EF），并在转子停止转动时温度不超过150EC（302EF）。

4) The motor complies with the requirements for impedance-protected motors4)、马达有阻抗保护的要求。

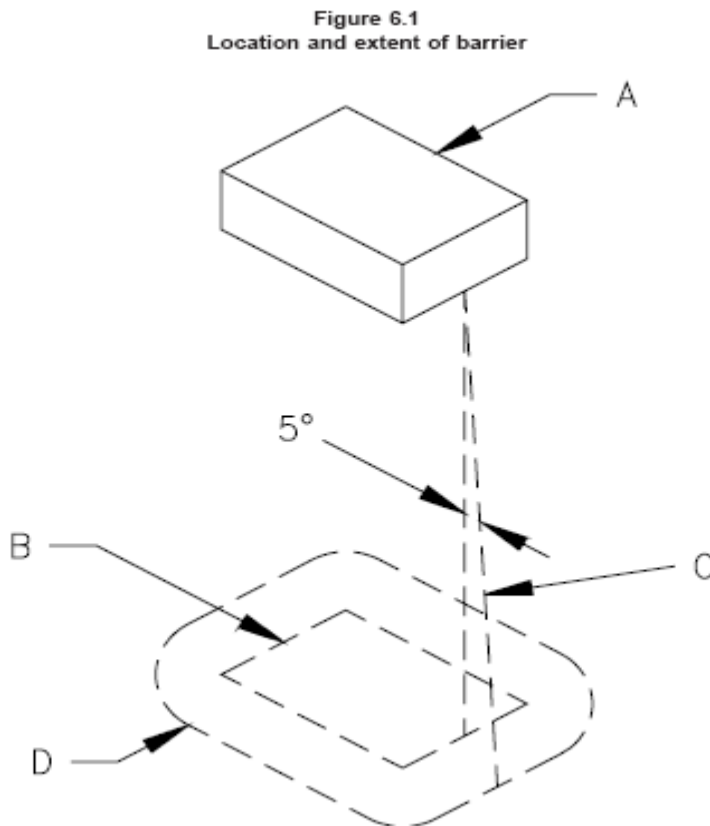
b) Under wiring, unless the wiring complies with the VW-1 flame test or the Vertical Flame Test described in the Reference Standard for Electrical Wires, Cables, and Flexible Cords, UL 1581. b)、对配套电线，须通过电线、电缆线及软线的 VW-1 燃烧测试及竖向燃烧测试，参考 UL1581 标准中有关说明。

c) Under an unenclosed switch, transformer, relay, solenoid, and the like, unless it can be shown that malfunction of the component is not likely to result in a fire. c)、对外露的开关，变压器，继电器，螺线管等，组件的故障不致引发火灾。

d) Under field- and factory-made splices and overload and overcurrent protective devices. d)、对民间或工厂造的接合片及过载、超电流保护装置。

Exception: A barrier need not be provided if the opening is not within the area under the component requiring a barrier as illustrated by Line D in Figure 6.1.

例外：或开口尺寸不在图 6.1 中 D 行中描述的障碍物的范围之内，不必使用障碍物。



A – Region to be shielded by barrier. This will consist of the entire component if it is not otherwise shielded and will consist of the unshielded portion of a component that is partially shielded by the component enclosure or equivalent. inclined line C and the horizontal plane of the barrier.

A— 被遮蔽的区域。由不遮蔽的完整部件及被外壳或类似外壳物局部遮蔽的一部分。

B – Projection of outline of component on horizontal plane.

B— 障碍物在水平面内的投影。

C – Inclined line that traces out minimum area of barrier. The line is always

C— 描绘出障碍物的最小面积的倾斜线。倾斜线有以下限制：

1) tangent to the component, 相切于障碍物

2) 5 degrees from the vertical, and 与垂直线成5°的夹角

3) so oriented that the area traced out on a horizontal plane is maximum. 如此定位在水平面内描绘出的面积最大

D – Location (horizontal) and minimum area for barrier. The area is that included inside the line of intersection traced out by the

D—障碍物的水平最小面积，面积是障碍物的水平平面和斜线 C 所描绘出的交线。

6.12 The barrier mentioned in 6.11 shall be: 6.12 在 6.11 中提到的障碍物是：

a) Of metal, ceramic, or a material that would be acceptable as an enclosure in accordance with 6.5,

a)、金属的、陶瓷的及与6.5中规定外壳可采用的金属

b) Horizontal, and b)、水平的以及

c) Located as indicated in Figure 6.1, and shall not have an area less than that described in Figure 6.1.

c)、像图6.1中所示定位，并不应小于图6.1中所述的面积大小

6.13 An opening in the enclosure that has a minor dimension of less than 1 inch (25.4 mm) is acceptable if a probe as

illustrated in Figure 6.2, inserted through the opening, cannot be made to touch any uninsulated live part or film-coated wire that involves the risk of electric shock. The probe shall be applied in all possible articulated positions before, during, and after insertion. 6.13 外壳的开口有最小尺寸限制,应不小于1英寸(25.4mm),像图6.2中的探测器能插入开口,并为避免电击,不能接触导电的部件或者薄套电线,探测器应用在所有可能接合位置之前、之间、之后

6.14 An opening that has a minor dimension of 1 inch (25.4 mm) or more, in an enclosure, as illustrated in Figure 6.3, is acceptable if, within the enclosure, there is no uninsulated live part or film-coated wire less than, R distance from the inside edge of the perimeter of the opening and X distance from the plane of the opening. T equals the enclosure thickness, R equals X minus T, and X equals five times the diameter of the largest round rod that can be inserted through the opening but not less than 6-1/16 inches (154 mm). In evaluating an opening, any barrier located within the volume is to be ignored unless it intersects the boundaries of the volume in a continuous closed line. 6.14 外壳的开口有最小尺寸限制,应不小于1英寸(25.4mm)或更多,如图6.3中所示,假若在外壳内,小于距开口周边的内边的R值及距开口平面的X值的范围内导电的零件或者薄套电线较少(T=壁厚, R=X-T, X=5φ圆杆max, 圆杆并能插入开口但不小于6-1/16英寸(154mm)),在验证一个开口时,任何一种障碍物不得与探测器相干涉,但可围绕探测器

6.15 If a marking draws attention of the user to a hole of any size in the enclosure for the adjustment of a thermostat or for a similar activity, it shall not be possible to damage insulation or contact uninsulated live parts through the hole with a 1/16-inch-diameter rod (1.6 mm).

6.15 为了调整温度控制器及类似的行为,用户在外壳内画了一个任意大小的孔记号,则用直径为1/16英寸(1.6mm)的杆穿过该孔不能破坏绝缘及触及带电体。

6.16 During the examination of an appliance in connection with the requirements in 6.9 and 6.13 – 6.15, any part of the enclosure is to be disregarded (opened or removed) – that is, it will not be assumed that the part in question affords protection against electric shock or injury to persons – if it either: 6.16 按6.9、6.13、6.15中规定的要求来检测电器时,外壳的任何部分会被忽略(打开、或移走),也就是说,这样可以避免电击及人身伤害。此外

a) Must be opened or removed, with or without the use of tools, to perform manufacturer's recommended user servicing, maintenance, operating adjustments, attachment of accessories, or other instructions, or在执行生产者的委托的用户服务、保养、使用调节、附件或其它说明的情况下,用工具或不用工具必须能打开移走,或是

b) Can be opened or removed without the use of tools. See 6.16.1. 不用工具能打开移走的。参考6.16.1

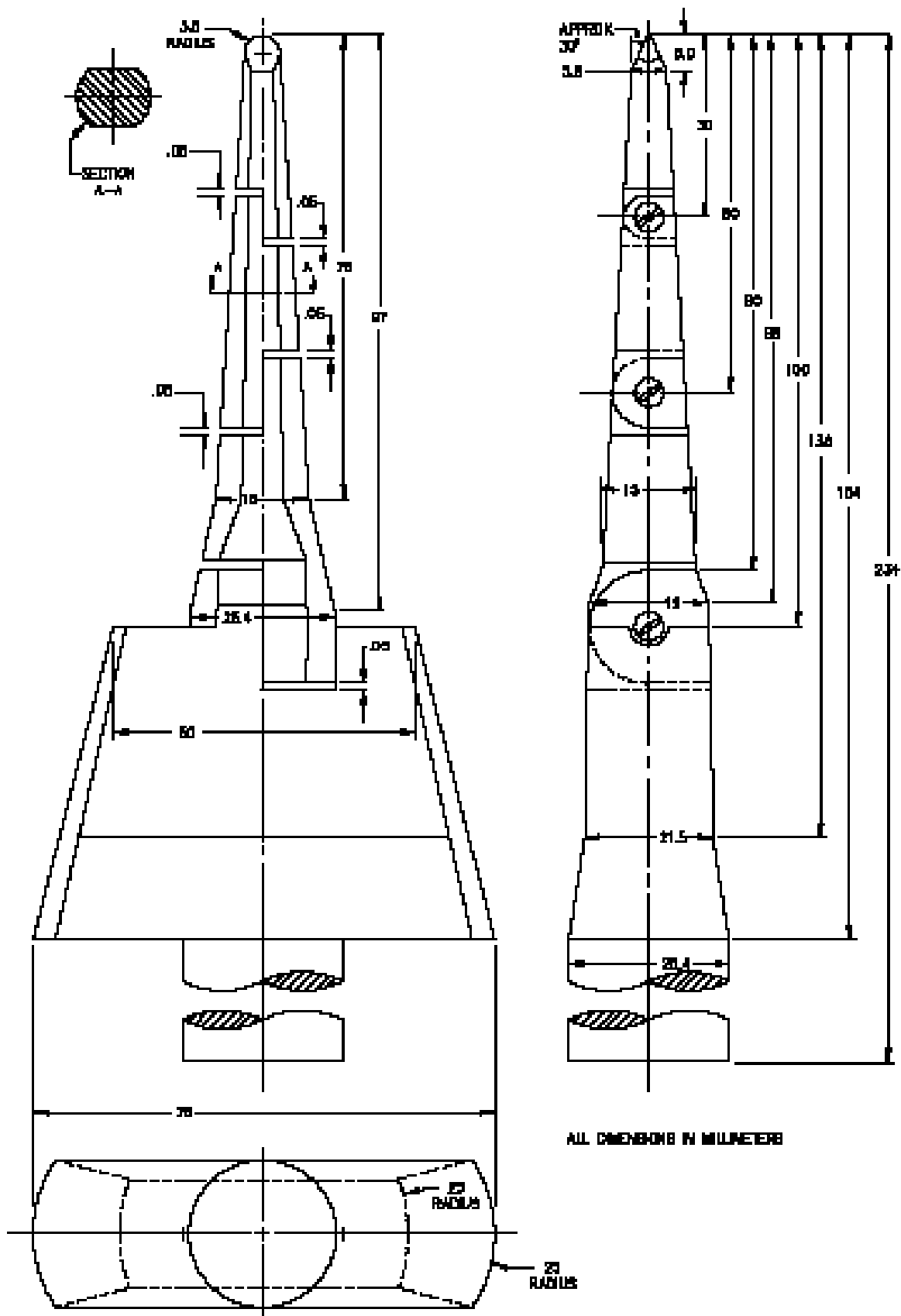
Exception: A part that requires a tool for opening or removal to perform manufacturer's recommended user servicing, maintenance, operating adjustments, attachment of accessories, or other instructions is to remain in place if the appliance is marked in accordance with 54.9. 6.16 effective March 26, 1997 例外:若电器的标记如同54.9节的一样,在执行生产者的委托的用户服务、保养、使用调节、附件或其它适当说明的情况下,零件须用工具来打开移走。

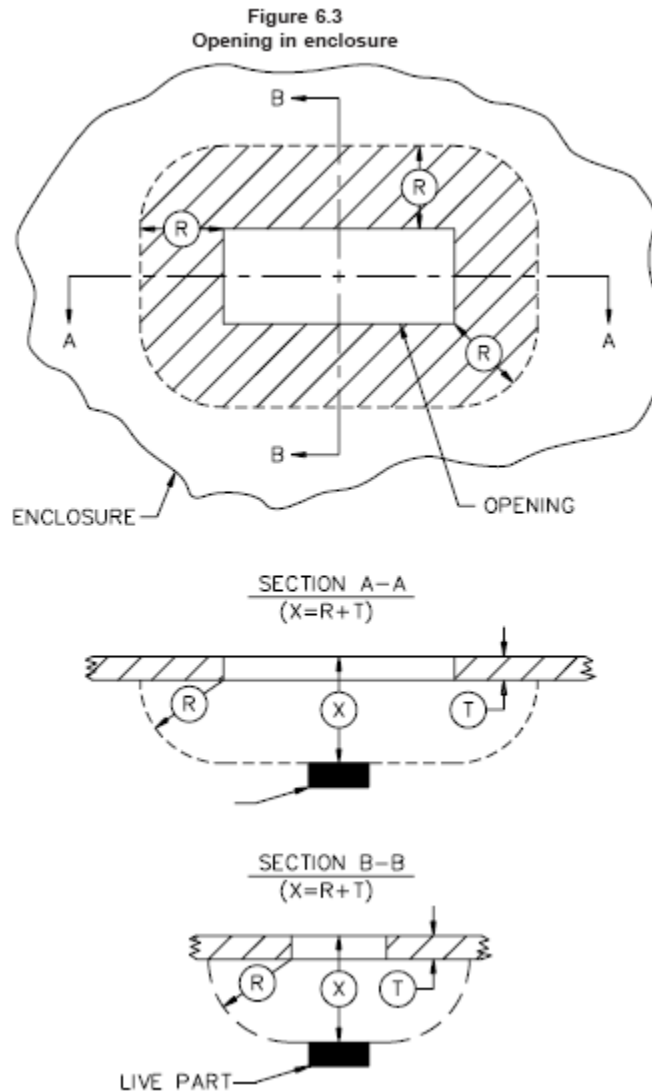
6.16.1 With reference to 6.16(b), to determine that a part of an enclosure requires the use of tools for opening or removal, the enclosure or any part of the enclosure that relies for mechanical securement on non-metallic parts, such as plastic tabs or snap-action inserts and posts, shall comply with Non-Metallic Enclosure-Fasteners Test, Section 42A. 6.16.1 参考6.16(b),来决定要求用工具来拆开的外壳件,对非金属件外壳或依赖机械可靠性的外壳部件,如塑料小板、快速动动的插件及杆件,应符合42A节中非金属外壳紧固测试要求

Exception: An enclosure or enclosure part secured entirely by metallic fasteners (such as screws or rivets) to other enclosure parts need not be subjected to this test. 6.16.1 effective March 26, 1997

例外:外壳部件及外壳之间用金属件连接的(如螺钉、铆钉),不必有此项测试

Figure 6.2
Accessibility probe





Proportions exaggerated for clarity

6.17 Any moving parts, such as rotors of motors, chains, pulleys, belts, and gears, shall be enclosed or guarded to reduce the likelihood of injury to persons. 6.17任何活动的零件，如电机转子、链条、滑轮、带子及齿轮，为避免伤人的可能，这些零件应封闭起来

6.18 With reference to the requirements in 6.17, the degree of protection required of the enclosure depends upon the general construction and intended use of the appliance. The factors to be taken into consideration in judging the acceptability of exposed moving parts are: 6.18在6.17中提到的要求,外壳保护的等级要依据电器的总体结构及趋向使用方式,当断定一个外露的活动件是否可以接受时,须考虑以下因素

- a) The degree of enclosure, 外壳的等级
- b) The sharpness of the moving parts, 活动件的锐度
- c) The likelihood of unintentional contact with the moving parts, 无意碰到活动件的可能性
- d) The speed of movement of those parts, 运动的部件和
- e) The likelihood of fingers, arms, or clothing being drawn into the moving parts (such as at points where gears mesh, where belts travel onto a pulley or where moving parts close in a pinching or shearing action). 手指、手臂、衣服被卷入活动件的可能性（如齿轮啮合处，带在滑轮上的行进处，活动件的收缩、剪切处）

6.19 The door or cover of an enclosure shall be provided with means for holding it securely in place in the closed position. 6.19外壳上的门及盖在密封的位置应采用适当的方式来收紧

6.20 The door or cover of an enclosure shall be hinged or otherwise attached in an equivalent manner if it gives access to any overload protective device whose functioning requires renewal, or if it is necessary to open the cover in connection with the operation of the protective device. Such a door or cover shall be provided with a latch or the equivalent, and shall be tight-fitting or shall overlap the surface of the enclosure around the opening. 6.20若在外壳盖及门上开口以便更换超负荷保护装置，或者开盖动作同超负荷保护装置的动作相关，在外壳盖及门上需装上铰链或者类似的机构。比如门和盖应有闭

锁机构或类似的机构，并能在开口周围紧紧封住外壳。

6.21 A component of an appliance shall be readily accessible without the use of special tools (tools not available to other than service personnel) if it is intended to be manually operated or adjusted or periodically serviced. 6.21若电器是人工操作或人工调节或定时使用，则电器的组成件在不需特别的说明方式（除了维修服务人员之外不易理解）下用户是易于理解的

6.22 The bulb and capillary tube of a thermostat shall be protected from mechanical damage if damage of the tube or bulb would increase the risk of fire.

6.22 若机械破坏温度控制器的球状毛细管可能引发火灾，则控制器的球状毛细管应防止机械破坏的装置。

7 Assembly 装配性

7.1 A switch, lampholder, attachment-plug receptacle, or plug-type receptacle, or plug-type connector provided as a part of an appliance shall be mounted securely and prevented from turning by means other than friction between surfaces. 7.1若开关、灯固定器、附属插头插座、插头型插座、插头连接器作为电器的一部分应牢固连接，并不仅依靠两平面之间的摩擦力来防止移位

7.2 A lock washer properly applied is acceptable as a means to prevent turning of a stem-mounted switch. 7.2用锁紧垫圈来锁紧旋转开关可以接受的

7.3 Uninsulated live parts shall be so secured to the base or surface that they will be prevented from turning or shifting in position as the result of stresses if such motion may result in a reduction of spacings below the minimum required in 26.1.1.1 – 26.1.1.4. 7.3带电活动的零件应紧固在底座上，或能防止移位的平面上，这是因为在压力作用下，间隙可能减少，在26.1.1.12及6.1.1.4中有最小间隙要求

7.4 Friction between surfaces is not acceptable as a means to prevent shifting or turning of live parts, but a lock washer properly applied is acceptable.

7.4 依靠两平面之间的摩擦力来是不能接受的，用锁紧垫圈来锁紧旋转开关防止移位可以接受的

8 Stability 稳定性

8.1 The stability of an appliance shall be such that it will not be overturned readily in intended use. 8.1电器在使用过程中不易于翻倒

8.2 A household cooking or warming appliance that is easily carried or conveyed by hand (such as a slow cooker, or a food warmer and the like) in which liquids are heated to a temperature greater than 115°F (46°C) shall be placed on a plane inclined at an angle of 15 degrees to the horizontal. The appliance shall be positioned and loaded with whatever combination of separable components, liquid, or other media (material) that results in the maximum tendency to overturn under conditions of intended use. The appliance shall contain a minimum of 5 ounces (148 mL) of liquid. The appliance shall be prevented from sliding on the inclined surface. The appliance shall not overturn as a result of this test.

8.2当家用烹调器、取暖器中有温度高于115°F（46°C）的液体时，应易于用手搬动（如慢煲、食物加热器等），并可放在一个与水平面成15°的斜面上，电器是稳定的并可装入在正常使用过程中不同的可分离的物体、液体或其它金属，在正常使用过程中这些东西很有可能打翻电器。电器可容纳最少5盎司（148ml）的液体，在斜面上不滑动，在测试过程中电器不能翻倒

9 Corrosion Protection 防腐蚀性

9.1 Iron and steel parts shall be protected against corrosion by enameling, galvanizing, plating, or other equivalent means, if the malfunction of such unprotected parts would increase the risk of fire or electric shock. 9.1若钢铁件腐蚀而造成火灾或电击，则钢铁件要防腐蚀，可以通过涂釉、镀锌、电镀或其它类似的方法来达到要求

Exception: In certain equipment where the oxidation of steel is not likely to be accelerated due to the exposure of metal to air and moisture or other oxidizing influence – thickness of metal and temperature also being factors – surfaces of sheet steel within an enclosure may not be required to be protected against corrosion. Cast-iron parts are not required to be protected against corrosion. A sheath employed on a heating element operating in air and terminal parts attached directly to the heating element need not be protected against corrosion. 特例：在某种设备中钢不因暴露在空气中或湿气中或其它可氧化的因数中而氧化（壁厚和温度也是影响因子），外壳的钢铁表面可以不用防锈处理，铸件不用防锈处理，在大气中工作的发热件衬套及与发热件直接连接的连接件也不用防锈处理

9.2 The aging characteristics of plating or other finish used in an appliance shall be such that deterioration of the finish will not result eventually in unacceptable performance of the appliance.

9.2 电镀及其它表面处理方式的退化特性会退化，最终导致电器不能使用。

10 Supply Connections 电源接驳

10.1 Permanently connected appliances 10.1 永久性连接电器

10.1.1 General 一般要求

10.1.1.1 Except as noted in 10.1.1.2, an appliance intended for permanent connection to the power supply shall have provision for connection of one of the wiring systems that, in accordance with the National Electrical Code, ANSI/NFPA No. 70–1993, would be acceptable for the appliance. 10.1.1.1除了10.1.1.2中所述的，与电源永久性连接的电器有布线方法的规定，应与国家电器编码（ANSI/NFPA NO 70 993）中的规定一致，这样才可接受

10.1.1.2 An appliance that is intended to be fastened in place or located in a dedicated space may be acceptable if provided

with a short length of appropriate flexible cord and an attachment plug for supply connection. The investigation of such a feature shall include consideration of the utility of the appliance and the necessity of having it readily detachable from its source of supply by means of the attachment plug. 10.1.1.2若电器本身有一段短软线和一个附加插头来连接电源，电器要求安装在适当的位置及放在专用的空间都可接受的，在这种情况下应考虑到电器的可用性及采用附加插头来分离电源的必要性

10.1.1.3 The location of a terminal box or compartment in which power-supply connections to a permanently connected appliance are to be made shall be such that these connections may be readily inspected after the appliance is installed as intended. 10.1.1.3电器按要求安装后，接线盒的位置及电器永久性的电源连接间隔应易于检查

10.1.1.4 A terminal compartment intended for the connection of a supply raceway shall be so attached to the appliance as to be prevented from turning. 10.1.1.4用电缆管连接的连接间隔应尽量靠近电器，并能防止移位

10.1.2 Field wiring terminals 10.1.2 区域布线连接

10.1.2.1 An appliance intended for permanent connection to the power supply shall be provided with wiring terminals or leads for the connection of conductors having an ampacity of not less than 125 percent of the current rating of the appliance when the load is continuous (3 hours or more) and not less than the current rating of the appliance when the load will be intermittent.

10.1.2.1与电源永久性连接的电器应提供接线端子及线头来连接导体，当电器连续工作时（3小时或更多），并要求导体有不少于1.25倍额定电流的载流量，间隔工作时，要求导体有不少于额定电流的载流量

10.1.2.2 For the purpose of these requirements, wiring terminals are considered to be terminals to which power-supply or control connections will be made in the field when the appliance is installed. 10.1.2.2这些要求的目的是，当安装电器时，要考虑到用接线端子来与电源连接或在该区域内控制连接。

10.1.2.3 A wiring terminal shall be provided with a soldering lug or with a pressure wire connector securely fastened in place (for example, firmly bolted or held by a screw), except that a wire-binding screw may be employed at a wiring terminal intended to accommodate a No. 10 AWG (5.3 mm²) or smaller conductor if upturned lugs or the equivalent are provided to hold the wire in position. 10.1.2.3为方便联机牢固，电线的连接应附带焊接连接片或压线连接器（例如扣紧或用螺钉压紧），除了采用上翻接片或类似的方法来固线，并可用联机螺钉来连接10#AWG（5.3mm²）线或更小的导线

10.1.2.4 A wiring terminal shall be prevented from turning or shifting in position by means other than friction between surfaces. This may be accomplished by two screws, or rivets, by square shoulders or mortises, by a dowel pin, lug or offset, by a connecting strap or clip fitted into an adjacent part, or by some other equivalent method. 10.1.2.4联机应采用除了用两面摩擦力之外的相应措施来防止电线移位。可用两螺钉、铆钉、方形侧翼、榫眼、销、接片或错移，也可用连接带或连接夹来紧固相应部分，或其它一些近似方法

10.1.2.5 A wire-binding screw at a wiring terminal shall not be smaller than No. 10, except that a No. 8 screw may be used at a terminal intended for the connection of a No. 14 AWG (2.1 mm²) or smaller conductor, and a No. 6 screw may be used for the connection of a No. 16 AWG (1.3 mm²) or smaller control-circuit conductor. 10.1.2.5除了8#可用来连接14#AWG

（2.1mm²）线或更小的线，6#可用来连接16#AWG（1.3mm²）线或更小的线，联机螺钉大小不可小于10#

10.1.2.6 A terminal plate tapped for a wire-binding screw shall be of metal not less than 0.050 inch (1.3 mm) thick, except that a plate not less than 0.030 inch (0.8 mm) thick is acceptable if the tapped threads provide equivalent mechanical strength. There shall be two or more full threads in the metal, which may be extruded if necessary to provide the threads.

10.1.2.6 攻丝的金属连接片的厚度不小于0.05英寸（1.3mm），除非螺纹有相同的机械强度，但连接片的厚度不小于0.03英寸（0.8mm），并且螺纹的圈数应为2圈到4圈，螺纹还可突出连接片平面。

10.1.2.7 Upturned lugs or a cupped washer shall be capable of retaining a conductor of the size mentioned in 10.1.2.1, but not smaller than No. 14 AWG (2.1 mm²), under the head of the screw or the washer. 10.1.2.7上翻的接片或凹形垫圈需保证达到10.1.2.1中所要求的导体的载流量，在垫圈和螺钉下的接头线不小于14#AWG（2.1mm²）线

10.1.2.8 A wire-binding screw shall thread into metal. 10.1.2.8连接螺钉应攻螺纹

10.1.2.9 An appliance intended for connection to a grounded power-supply conductor and employing: 10.1.2.9电器应有接地的导体，还应有

a) A lampholder or element holder of the Edison-screw-shell type, 指示灯固定器或ESS（EDISON-SCREW-SHELL）型电线固定器

b) A single-pole switch, or单极开关，或者

c) A single-pole automatic control shall have one terminal or lead identified for connection of the grounded conductor of the supply circuit. The terminal or lead so identified shall be the one that is connected to screw shells of lampholders or element holders, and with no connections to single-pole switches or single-pole automatic controls, except as noted in 24.2.

单极自动控制应有一个接线端子或接线头上标明电源接地，除了24.2中所要求的，接线端子或接线头应易于同指示灯固定器和电线固定器上的螺钉壳连接。

10.1.2.10 A terminal intended for the connection of a grounded circuit conductor shall be made of or plated with a metal 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. A lead intended for the connection of a grounded circuit conductor shall be finished to show a white or natural grey color and shall be readily

distinguishable from the other leads. 10.1.2.10接地导线端子应用纯白的金属制造或电镀成白色，并易于同其它接线端子区别，也可用其它的方式来区分接地端子，如附加电路图。接线头应处理成白色或自然的灰色，易于同其它接线头区别

10.1.2.11 Except as noted in 10.1.2.12, the free length of a lead inside an outlet box or wiring compartment shall be 6 inches (152 mm) or more if the lead is intended for field connection to an external circuit. 10.1.2.11除了10.1.2.12中所要求的，若接线头同外部电路连接，伸入引线盒的距离或布线间隔的自由长度应为6英寸（152mm）或更多

10.1.2.12 A lead may be less than 6 inches (152 mm) in length if it is evident that the use of a longer lead might result in an increased risk of fire or electric shock. 10.1.2.12若用较长的线头可能引发火灾或触电，则线头的长度可以小于6英寸（152 mm）

10.1.2.13 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 identified. 10.1.2.13与接地导体单独连接的线头的绝缘表面应是绿色的，可以带有一条到多条黄色带子，其它线头不可这样标记

10.1.2.14 A wire-binding screw intended for the connection of an equipment-grounding conductor shall have a green-colored head that is hexagonal-shaped, slotted, or both. A pressure wire connector intended for connection of such a conductor shall be plainly identified as such by being marked "G", "GR", "GND", "GROUNDING" or the like or by a marking on the wiring diagram provided on the heating appliance. The wire-binding screw or pressure wire connector shall be so located that it is unlikely to be removed during servicing of the appliance. 10.1.2.14与接地导体连接的压线螺钉头应绿色的，外形是六边形、或开槽形或开槽六边形。为方便辨识压线连接器，在电器的接线图上应有"G"、"GR"、"GND"、"GROUNDING"或类似的标记。在使用电器的过程中，压线螺钉及压线连接器不能松动

10.1.2.15 A terminal solely for connection of an equipment-grounding conductor shall be capable of securing a conductor of the proper size for the particular appliance. 10.1.2.15对部分电器而言，与接地导体单独连接的接线端子应能与适当大小的接地导体紧紧相连

10.2 Cord-connected appliances 10.2 电线连接电器

10.2.1 General 10.2.1 一般要求

10.2.1.1 A cord-connected appliance (an appliance intended to be connected to the power-supply circuit by means of a flexible cord) shall be provided with a power-supply cord for connection to the supply circuit, or shall have male pin terminals that accommodate a detachable power-supply cord. The length of attached cord or separable cord shall be within the limit indicated in Table 10.1. 10.2.1.1电线连接电器（用软导线连接的电器）应有电源线来连接电源，或者有与分离电源线相配的插头片。附带电线及分离式电线的长度应按表10.1的要求来限制

10.2.1.2 For a cord-connected appliance, the rating (both current and voltage) of the cord and the fittings, shall not be less than that of the appliance. The current rating of the attachment plug shall not be less than 125 percent of the current rating of the appliance when the load will constitute a continuous load (3 hours or more). 10.2.1.2对电线连接电器，电线及其附属物的额定值（电流及电压）应不小于电器的额定值，当电器是连续工作（3或3小时以上），附带插头的额定电流不低于电器额定电流的125%

10.2.1.3 An attached flexible cord and the cord in a detachable power-supply cord that is provided with an appliance shall be of a type indicated in Table 10.2, or shall have such properties that it will be at least equally as serviceable for the particular application. 10.2.1.3电器所提供的软电线及分离式电源线的型号应符合表10.2所示要求。对部分电器，依照表10.2，电源线应有等效的属性

10.2.1.4 In the case of a broiler attachment intended for use on a roaster, a detachable power-supply cord acceptable for the purpose shall be supplied with the roaster, and no additional detachable power-supply cord shall be provided with either the roaster or the broiler.

10.2.1.4 对于有烘烤附加装置的烘烤器，烘烤器应有分离式电源线，不会再有其它的电源线用在烘烤器或烤肉器上。

Table 10.1
Lengths of cord connection

Table 10.1 revised November 15, 1996

Type of appliance	Kind of cord connection	Minimum acceptable length ^a		Maximum acceptable length ^a	
		Feet	Meters	Feet	Meters
All counter top or table-top appliances	Attached cord or detachable power supply cord	2.0	0.6	7.0	2.1
All appliances intended for outdoor use	Attached cord or detachable power supply cord	1.0	0.3	12.0	3.6
All appliances not covered above	Attached cord or detachable power supply cord	6.0	1.8	7.0	2.1

^a Measured external to the appliance and including the fittings but excluding the blades on the attachment plug.

表 10.1
电源线的长度

电器类型	电源线种类	可接受最小长度*		可接受最大长度*	
		英尺	米	英尺	米
柜式及台式 电器	附属线及分离式电源线	2.0	0.6	7.0	2.1
室外用电器	附属线及分离式电源线	1.0	0.3	12.0	3.6
其它电器	附属线及分离式电源线	6.0	1.8	7.0	2.1

*从电器外面测量包括附件但不包括插头插片。

Table 10.2
Acceptable types of cord and applicable limitations on their use

Table 10.2 revised November 15, 1996

Appliance on which the cord is to be used	Cords acceptable where temperatures are more than 121°C (250°F) on any surface that the cord is likely to touch when the appliance is used as intended	Cords acceptable where temperatures are 121°C (250°F) or less on any surface that the cord is likely to touch when the appliance is used as intended
Except as noted below, table stoves, toasters and other appliances that are not intended for use outdoors	HPD, HPN, HSJ, or HSJO	HPD, HPN, HSJ, HSJO, SP-2, SPE-2, SPT-2, SV, SVE, SVO, SVT, SVTO, SJ, SJE, SJO, SJT or SJTO
Barbecue-spit motor	SJE, SJO, SJT, or SJTO	SJE, SJO, SJT, or SJTO
Appliances intended for outdoor use	HSJW-A or HSJOW-A	HSJW-A, HSJOW-A, SJW-A, SJEW-A, SJOW-A, SJTW-A or SJTOW-A

表 10.2
电源线的种类及使用限制*1996.11.15 修正表 10.2

用到电源线的电器	电器正常使用时，电源线可能接触到 121EC (250EF) 以上温度表面时的可接受电源线类型	电器正常使用时，电源线可能接触到 121EC (250EF) 以下温度表面时的可接受电源线类型
除了台式烤炉、多士炉及其它户外用电器之外的电器	HPD、HPN、HSJ、或 HSJO	HPD、HPN、HSJ、HSJO、SP-2、SPE-2、SPT-2、SV、SVE、SVO、SVT、SVTO、SJ、SJE、SJO、SJT、或 SJTO
电动绞肉机	SJE、SJO、SJT、或 SJTO	SJE、SJO、SJT、或 SJTO
户外用电器	HSJW-A 或 HSJOW-A	HSJW-A、HSJOW-A、SJW-A、SJEW-A、SJOW-A、SJTW-A 或 SJTOW-A

10.2.1.5 Supplementary insulation, if employed in a flexible cord, shall not extend more than 1/2 inch (13 mm) outside the appliance, unless provided with additional mechanical protection, and shall be prevented from fraying or unraveling, and shall not affect adversely the means for providing strain relief. 10.2.1.5若用软电线，应附加绝缘物，绝缘物不得超过电器外部1/2英寸（13mm），除非有额外的机械保护作用，并能防止磨损及拆开，且不能影响电线夹的固定

10.2.1.6 A 3- to 2-wire, grounding-type adapter shall not be provided with an appliance. 10.2.1.6电器不能用3线或2线的接地型适配器

10.2.1.7 The attachment plug of the power supply cord of an appliance provided with a 15- or 20- ampere general use receptacle shall be of the 3-wire grounding type. The attachment plug of the power supply cord of an appliance provided with a manually operated, line-connected, single pole switch for appliance on-off operation or an Edison-base lampholder shall be of the polarized or grounding type. 10.2.1.7 电流为 15A 或 20A 电器的电源线附带插头般要求用三线接地型插头，人工操作电器的电源线插头，连接线，电器单极开关，或 Edison-base 指示灯固定器应极化及接地

10.2.1.8 If a 3-wire grounding-type attachment plug or a 2-wire polarized attachment plug is provided, the attachment plug connection shall comply with Figure 10.1 and the polarity identification of the flexible cord shall comply with Table 10.3.

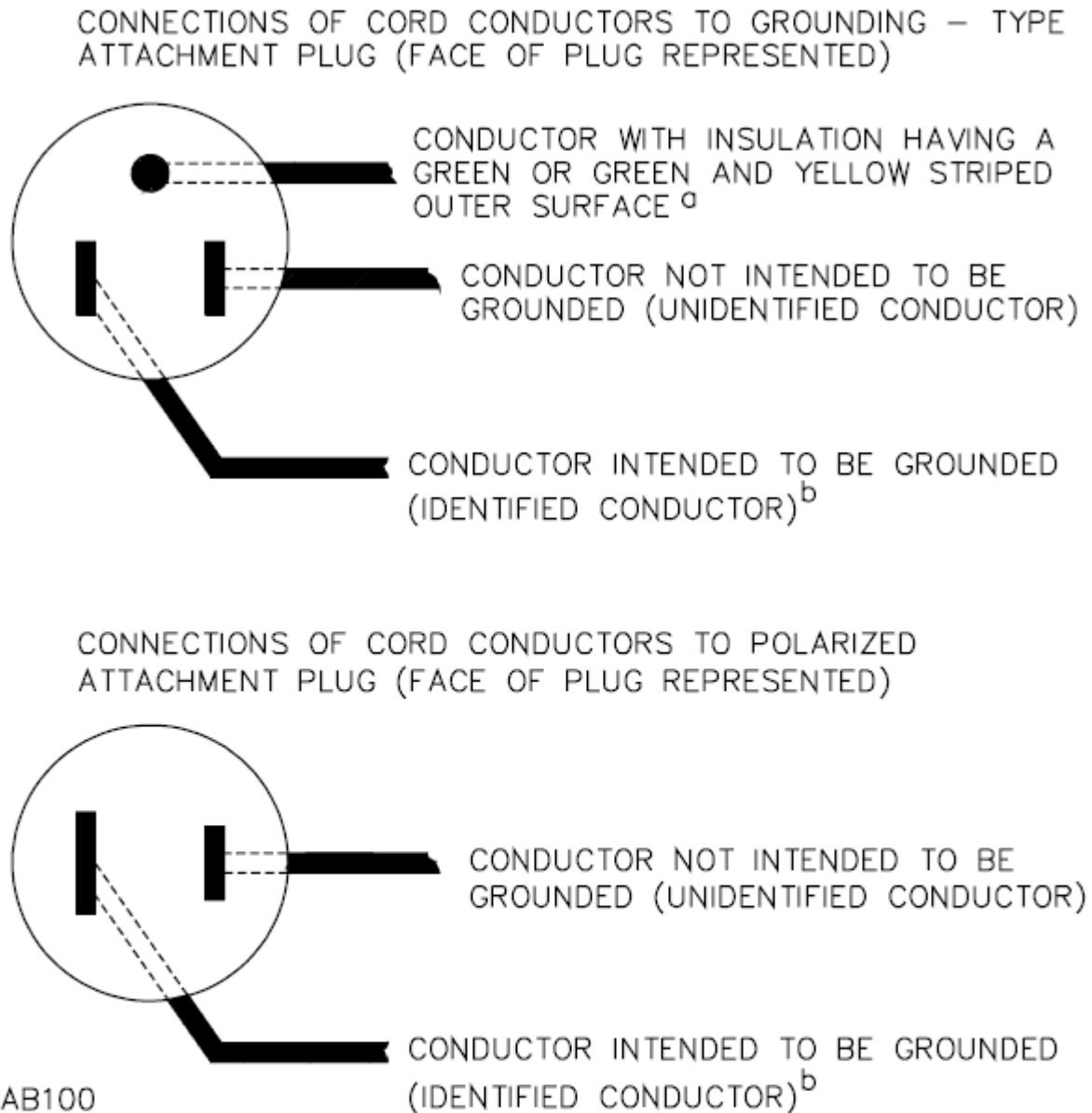
10.2.1.8若用了3线接地插头及2线插头，插头的连接方式应按图10.1的方式，并且软线的极性标记按表10.3所示

10.2.1.9 The conductor of the power supply cord that is intended to be grounded shall have the following items connected to it: 10.2.1.9 电源线上被接地的导体应有如下的要求：

a) The screw shell of an Edison-base lampholder and Edison-base 型指示灯固定器的螺钉壳和

b) The terminal or lead of a receptacle intended to be grounded. 插座的线端及线头都应接地
 Table 10.3 identifies the supply cord conductor intended to be grounded. 表10.3表明了电源线的导体应接地

Figure 10.1
Connection to attachment plug



^a In the above illustration, the blade to which the green conductor is connected may have a U-shaped or circular cross section.

^b Signifies a conductor identified in accordance with Table 10.3

Table 10.3
Polarity of identification of flexible cords

Method of identification	Acceptable combinations		
	Wire intended to be grounded ^d		All other wires ^d
Color of braids on individual conductors	A	Solid white or natural grey – without tracer	Solid color other than white or natural grey – without tracer
	B	Color other than white or natural grey with tracer in braid	Solid color other than white or natural grey – without tracer
Color of insulation on individual conductors	C ^a	Solid white or natural grey	Solid color other than white or natural grey
	C1 ^e	Light blue	Solid color other than light blue, white or natural grey
Color of separators	D ^b	White or natural grey	Color other than white or natural grey
Other means	E ^c	Tin or other white metal on all strands of the conductor	No tin or other white metal on the strands of the conductor
	F ^b	A stripe, ridge or groove on the exterior surface of the cord	

^a Only for cords – other than Type SP-1, and SPT-1 – having no braid on any individual conductor.
^b Only for Types SP-1, SP-2, SPT-1, and SPT-2 cords.
^c Only for Type SPT-1 and SPT-2 cords.
^d A wire finished to show a green cord with or without one or more yellow stripes or tracers is to be used only as an equipment grounding conductor. See 27.3 and Figure 10.1.
^e For jacketed cords.

表 10.3
软性电线的极性辨认

辨认方法	可接受组合方式		
		接地线	其它线
单条电线的外套颜色	A	不带指示剂的纯白或正常灰色	除不带指示剂的纯白或正常灰色之外的颜色
	B	除外套带指示剂的纯白或正常灰色之外的颜色	除外套不带指示剂的纯白或正常灰色之外的颜色
单条电线的绝缘物颜色	C ^a	纯白或正常灰色	除纯白或正常灰色之外的颜色
分离器的颜色	C1 ^e	浅蓝色	除浅蓝、白色和正常灰色之外的颜色
	D ^b	白色或正常灰色	除白色和正常灰色之外的颜色
其它方式	E ^c	导线线股上涂锡或其它白色金属	导线线股上不涂锡或不涂其它白色金属
	F ^b	电线外面有条纹、脊或沟	

a 仅用于除了单条线无外套的 SP-1、SPT-1 型之外的电源线
b 仅用于 SP-1、SP-2、SPT-1、SPT-2 型电源线
c) 仅用于 SPT-1、SPT-2 型电源线
d) 不论有无黄色外套或指示剂，导线是绿色的，都只用于接地，参照 27.3 及图 10.1
e) 仅用于有套管的电源线。

10.2.2 Strain relief **10.2.2 电线拉力**

10.2.2.1 Strain relief shall be provided to prevent a mechanical stress on an attached flexible supply cord from being transmitted to terminals, splices or interior wiring. **10.2.2.1 电线夹**是用来防止线接头、联机及内部导线在电源线受机械外力的作用下而发生移位元

10.2.2.2 If wood, pressed board, or other fibrous material is used to secure the strain-relief assembly, the fibrous material shall be secured to the appliance by a pin, setscrew, or other positive means. 10.2.2.2若用木板、粘合板、或纤维材料来做电线夹, 则纤维材料应用钉、固定螺钉及其它的类似的方法来固定

10.2.2.3 Means shall be provided to reduce the likelihood of an attached supply cord or lead from being pushed into the enclosure of an appliance through the cord-entry hole. To determine compliance with this requirement, the supply cord or lead shall be tested in accordance with Push-Back Relief Test, Section 40A. 10.2.2.3 revised November 17, 1998 10.2.2.3若电源线被拉入进线孔可能引起机械的破坏或电源线会处于高于其能接受温度的高温区, 或可能将间隙减小到可接受的最小间隙值以下时, 应采取措施来防止这种变化

10.2.2.4 If a knot serves as strain relief in an attached flexible cord, any surface with which the knot may come in contact shall be free from projections, sharp edges, burrs, fins, and the like that may cause abrasion of the insulation on the conductors. 10.2.2.4若电源线在电线夹处采用打结的方式, 结头处不得伸出、无锐边、毛刺、鳍状物及可能导致导体上的绝缘物磨损的类似物。

10.2.2.5 The strain-relief means provided on an attached flexible cord, when tested in accordance with 10.2.2.6, shall be capable of withstanding for 1 minute, without displacement, a pull of 35 lbf (156 N) applied to the cord, with the connection within the appliance disconnected. 10.2.2.5当按照10.2.2.6所述方法来进行拉力测试时, 须用电线夹, 并在电器断电时, 在电源线上加载35LBF (156N) 的拉力, 历时1分钟不得有位移

10.2.2.6 The specified force is to be applied to the cord and so supported by the appliance that the strain-relief means will be stressed from any angle that the construction of the appliance permits. The strain relief is not acceptable if, at the point of disconnection of the conductors, there is sufficient movement of the cord to indicate that stress on the connections would have resulted. 10.2.2.6在电器结构允许的任一角度范围内, 电线受到指定的拉力后, 电线夹仍能将其固定在电器上。若导体在某处裂开, 因拉力使电线移位较大, 这种情况不能接受

10.2.3 Pin terminals 10.2.3 插头片

10.2.3.1 If an appliance is provided with pin terminals, the construction of the appliance shall be such that no live parts will be exposed to unintentional contact both during and after the placement of the plug on the pins, in the intended manner.

10.2.3.1带插头片的电器, 在结构上应保证: 在正常情况下插、拔插头时, 可能无意碰到的活动部分不应裸露在外

10.2.3.2 A pin guard is required, such that: 10.2.3.2插头片的防护是必要的, 应如下所述

a) A straight edge placed in any position, across and in contact with edges of the plug opening without the plug in place, cannot be made to contact any current-carrying pin. 处于插头上的任一边缘, 不在插头位置但与插头的边缘贯通或连接的开口, 不能触到任一带电的插头片

b) With the plug aligned with the pins and the face of the plug in a plane located perpendicular to the end or ends of the farthest projecting current-carrying pin, the probe illustrated in Figure 6.2 should not touch any current-carrying pin while the probe is inserted through any opening with the appliance in any position. 插头同插片对齐并且插头的平面处在一平面上, 该平面与最远的带电插片的末端垂直。图6.2所示的探测头可以探入电器上任一位置的开口时, 不能接触到任一带电插片

10.2.3.3 The plug used in accordance with 10.2.3.2(b) is to be the plug supplied with the appliance. 10.2.3.3同10.2.3.2 (

b) 所述的插头一致的插头可以用在电器上

10.2.3.4 If an appliance employs three or more pin terminals intended for use with a plug that covers all the pins, the terminals shall be so spaced that they will not accommodate a flatiron or appliance plug or cord-connector body. The plug that these pins will accommodate shall be appropriate for the particular application. 10.2.3.4若电器用三个插头片或多个插头片的插头, 并且该插头遮住了所有插片, 插片之间应当有间隔而不至于集成扁平形, 或外于电源线连接器上, 插片聚集的插头只对特殊电器来说是合用的

10.2.3.5 If an appliance is provided with a user removable heating element, the heating element shall have a guard that shall: 10.2.3.5若电器的发热组件是可移动式的, 发热组件应有以下要求

a) Be securely and rigidly mounted by means other than friction alone and 除了摩擦力之外, 应用某种方式牢牢地固定起来, 并且

b) Prevent the heating element pins from being damaged, shorting to the appliance enclosure during insertion or removal, and shifting in position relative to each other. 应能防止发热组件在插入电器或移动时遭破坏, 或对外壳短路, 并改变了相对的位置

10.2.3.6 A pin terminal shall be securely and rigidly mounted and shall be prevented from shifting in position by means other than friction between surfaces. 10.2.3.6除了用两面之间摩擦力之外, 插头片应用某种方式牢牢地固定

10.2.3.7 The requirement in 10.2.3.6 is intended primarily to provide for maintenance of spacings as given in 26.1.1.1 and Tables 26.1 and 26.2 and to provide for the maintenance of proper spacings between pin terminals. Under this requirement, consideration is also to be given to the means for locking terminals in position to maintain tightness. 10.2.3.7在10.2.3.6中所述的要求首先应保证26.1.1.1节及表26.1及表26.2中的间隙要求, 以及插片之间的适当的间隔, 在这种要求之下, 就应考虑固定插片的锁紧方法

10.2.3.8 The dimensions of pins and their center-to-center spacings, including the corresponding spacings of the female contacts of general-use plugs that these arrangements of pins will accommodate, are as indicated in Table 10.4.

10.2.3.8插片的尺寸及其中对中间隔, 包括通用插头的可接受的插片排列方式, 及其插片的合适的柔性连接间隔, 都会在

表10.4中说明

10.2.3.9 An appliance provided with three pin terminals, one of which is for grounding, shall not be provided with or capable of being used with a two-conductor detachable power-supply cord. 10.2.3.9用三线插头且一个插片接地的电器，不得用可双极可分离式电源线

10.2.3.10 An appliance provided with two pin terminals shall not be provided with or capable of being used with a three-conductor detachable power-supply cord employing a grounding conductor.

10.2.3.10 用双线插头电器不得用三线且一线接地的可分离式电源线。

Table 10.4
Pins of appliance and flatiron plugs

Type and rating of plug that accommodates the pins	Configuration of pins			Dimensions of pins	
	Number	Arrangement	Spacing between centers, inch (mm)	Diameter, inch(mm)	Length, inch(mm)
Appliance plug rated 5 A at 250 V and 10 A at 125 V	2	In line	1/2 (12.7)	0.156 ±0.005 (3.97 ±0.13)	9/16 – 5/8 (14.3 – 15.9)
Flatiron plug rated 5 A at 250 V and 10 A at 125 V	2	In line	11/16 (17.5)	0.188 ±0.005 (4.76 ±0.13)	3/4 – 7/8 (19.0 – 22.2)
Jumbo appliance plug rated 10 A at 250 V and 15 A at 125 V	2	In line	1-1/16 (27.0)	0.188 ±0.005 (4.76 ±0.13)	3/4 – 7/8 (19.0 – 22.2)
Reversible plug (for two-heat control) rated 10 A at 250 V and 15 A at 125 V ^a	3	In line	7/8 (22.2)	0.188 ±0.005 (4.76 ±0.13)	3/4 – 7/8 (19.0 – 22.2)
Reversible plug (for two- or three- heat control) rated 10 A at 250 V and 15 A at 125 V ^a	3	One pin at apex of an equilateral triangle	7/8 (22.2)	0.188 ±0.005 (4.76 ±0.13)	3/4 – 7/8 (19.0 – 22.2)

^a Usually this plug is made without a contact in one of the holes.

表 10.4
电器的插片及扁形插头

插头类型及额定值	插片配置方式			插片尺寸	
	数量	排列	中心间距 inch (mm)	直径 inch (mm)	长度 inch (mm)
5A, 250V 和 10A, 125V 的电器插头	2	线形	1/2 (12.7)	0.156 .005 (3.97 .13)	9/16 5/8 (14.3 15.9)
5A, 250V 和 10A, 125V 的扁形电器插头	2	线形	11/16 (17.5)	0.188 .005 (4.76 .13)	3/4 7/8 (19.0 22.2)
10A, 250V 和 15A, 125V 的大电器插头	2	线形	1-1/16 (27)	0.188 .005 (4.76 .13)	3/4 7/8 (19.0 22.2)
10A, 250V 和 15A, 125V a 的可逆的电器插头 (双重加热控制)	3	线形	7/8 (22.2)	0.188 .005 (4.76 .13)	3/4 7/8 (19.0 22.2)
10A, 250V 和 15A, 125V a 的可逆的电器插头 (双重加热控制)	3	一个插片外于等边三角形的顶点	7/8 (22.2)	0.188 .005 (4.76 .13)	3/4 7/8 (19.0 22.2)

a.通常这些插头不会用圆形接触。

10.2.4 Bushings 10.2.4 套管

10.2.4.1 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 secured in place, and shall have a smooth, well-rounded surface against which the cord may bear. If Type SP-2, SPT-2, or other cord lighter than Type HSJ is employed, and if the wall or barrier is of metal, and if the construction is such that the cord may be subjected to strain or motion, an insulating bushing shall be provided. The heat- and moisture-resistant properties of the bushing material shall be such that the bushing is acceptable for the particular application. 10.2.4.1 当软电线穿过外壳壁的开口时，在开口外应有一个套管或类似套管物，并且套管应光滑圆弧过渡，不得划破电源线，若电源线的型号是SP-2，SPT-2若者是比HSJ型还轻的电线，或者外壳、挡板是金属的，电线的结构应设计成抗拉动，并且须用导线套管。套管材料在湿热状态下的阻力特性可为特别电器接受

10.2.4.2 If the cord hole is in wood, porcelain, phenolic composition, or other nonconducting material, a smooth, ell-rounded surface is considered to be equivalent to a bushing.

10.2.4.2 若穿线孔是木质的、瓷的、酚类物质的或其它非导电材料，则该孔被认为同套管有相同作用

10.2.4.3 Ceramic materials and some molded compositions are usually acceptable for insulating bushings, but a separate bushing of wood, hot-molded shellac and tar composition, or rubber material (other than in a motor) is not acceptable. Vulcanized fiber may be employed if the bushing is not less than 3/64 inch (1.2 mm) thick, and if it is so formed and secured in place that it will not be affected adversely by conditions of ordinary moisture.

10.2.4.3 陶瓷材料和一些模压的合成物可用来做绝缘套管，但木质的套管、热模压虫漆，柏油合成物或者橡胶材料（除马达可用）制成的套管不能用。若套管的厚度不超过3/64英寸（1.2mm）时可用硫化纤维作套管材料，并且在一般的潮湿环境之下能固定下来

10.2.4.4 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 physically attached to a motor (but not elsewhere in an appliance, except as indicated in 10.2.4.5) provided that: 10.2.4.4 软橡胶、氯丁橡胶、或PVC套管可用作马达的支架，马达附属电容（除了10.2.4.5所说的，电器的其它地方不能使用）的外壳并有以下要求

a) The bushing is not less than 3/64 inch (1.2 mm) thick, and 套管的厚度不能小于 3/64 英寸（1.2mm），并且

b) The bushing is so located that it will not be exposed to oil, grease, oily vapor, or other substance having a deleterious effect on the compound employed. 套管放置的位置若有油脂、油蒸气及其它对套管有影响的有害物质

10.2.4.5 A bushing of any of the materials mentioned in 10.2.4.4 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, and if the edges of the hole in which the bushing is mounted are smooth and free from burrs, fins, and the like. 10.2.4.5 对不需要绝缘套管的某种电源线，若套管的内孔边是光滑的，无毛刺及飞边等，在10.2.4.4中提及的任一种材料制成的套管可用在电器的任一地方

10.2.4.6 An insulated metal grommet may be accepted in place of an insulating bushing if the insulating material used is not less than 1/32 inch (0.8 mm) thick, and completely fills the space between the grommet and the metal in which it is mounted.

10.2.4.6 若绝缘材料的厚度不小于 1/32 英寸（0.8mm），内部有金属线，并且绝缘材料填满了扣眼的间隙，便可用金属扣眼代替绝缘套管。

11 Current-Carrying Parts 11. 导电体

11.1 Each current-carrying part shall be made of metal that is appropriate for the particular application.

11. 1 每个导电体应由金属制成，并且该金属对特殊电器是适用的。

11.2 Current-carrying parts made of corrosion-resistant alloys (for example, stainless steel) are acceptable regardless of temperature. Current-carrying parts made of ordinary iron and steel are not acceptable unless they are rendered corrosion-resistant by an appropriate coating and, even then, they are acceptable only as follows:

11. 2 导电体由防腐蚀合金制成的（如不锈钢），须不受温度影响，由一般钢铁制成的导电体不能接受，除非有合适的涂层，并在以下的情况下可接受：

a) Pin terminals. 针形接线端

b) Terminal parts and other parts of a motor and its governor (if any). 马达的连接端及其它零件和控制器（若有的话）

c) Parts whose normal operating temperature is higher than 100°C (212°F). 正常工作温度超过100EC（212FC）

d) Parts of a component that the requirements referred to in paragraph 2.1 indicate as being acceptable with coated iron and steel parts. 组件的零件要求如2.1节如述并有涂层的钢铁件。

11.3 If a reservoir is part of an appliance, all live parts shall be so located or protected that they will not be subjected to dripping if the reservoir fails, unless: 11. 3 或电器有一个蓄水器，若在蓄水器漏水的情况下，其它的活动零件应固定好以免受滴水的影响。除非有以下情况：

a) The reservoir is resistant to corrosion from the liquid intended for use in it, and 蓄水器可以抵挡液体的腐蚀，并且，

b) The reservoir does not develop cracks as a result of aging. 蓄水器老化时不会碎裂

12 Internal Wiring 12 内部布线

12.1 General 12.1 一般要求

12.1.1 The internal wiring of an appliance shall consist of wires of size and of a type or types that are acceptable for the particular application, when considered with respect to: 内部电线的类型及大小应能满足其使用要求，其考虑因素有：

- a) The temperature and voltage to which the wiring is likely to be subjected, 電線可能受到的溫度及電壓，
- b) Its exposure to oil or grease, and 是否受油或油脂的作用，
- c) Other conditions of service to which it is likely to be subjected. 使用時可能遇到的其它狀況。

12.1.2 There is no temperature limit applicable to unimpregnated glass fiber, beads of inorganic material, or the equivalent employed as conductor insulation. 12.1.2 revised November 17, 1998 如导体绝缘为以下材料：玻璃纤维、无机材料串珠或其它等同材料，则没有温度限制要求。在潮湿场合，不能使用浸渍石棉作绝缘。

12.1.3 Thermoplastic-insulated wire employed for the internal wiring of an appliance shall be standard building wire, fixture wire, or appliance wiring material acceptable for the particular application. 12.1.3 revised November 17, 1998 如内部电线采用热塑性塑料绝缘线或浸渍石棉绝缘线，则应为固定式电线，否则线路材料应满足其使用要求。

12.2 Protection of wiring 12.2 电线保护

12.2.1 The wiring and connections between parts of an appliance shall be protected or enclosed, except that a length of flexible cord may be employed for external connections, or for internal connections that may be exposed during servicing, if flexibility of the wiring is essential. A bare conductor or a conductor with beads for insulation shall not be used outside an enclosure. 12.2.1 关于电器各零件之间的电线应有防护或被密封，除非电线本身是软的，且软电联机。裸露导体或者带小球的导体不能用在外壳的外面。线的长度足够用来做外部联机或者裸露的内部

12.2.2 Internal wiring that is exposed through an opening in the enclosure of an appliance is considered to be protected as required in 12.2.1 if, when judged as if it were film-coated wire, the wiring would be acceptable according to 6.9 – 6.13. Internal wiring not so protected may be accepted if it is so secured within the enclosure that it is unlikely to be subjected to stress or mechanical damage. 12.2.2 当内部的电线通过电器外壳的一个外部开口时，并且是裸露的，就应按照12.2.1的要求来防护，若是覆膜电线，按6.9,6.13的要求来要求，电线固定在外壳上不因机械力的影响而被破坏，则内部联机可以不用保护。

12.2.3 If the wiring of an appliance is so located that it may be in proximity to combustible material or may be subjected to mechanical injury, it shall be armored cable or in rigid metal conduit, electrical metallic tubing, metal raceway, or shall otherwise be protected. 12.2.3 若内部的电线邻近可燃材料或者可受机械外力的破坏，则导线应是装甲电缆、刚性导管、电气金属管、金属沟，否则应加以保护。

12.2.4 Wires within an enclosure, compartment, raceway, or the like shall be so located or protected that damage to conductor insulation cannot result from contact with any rough, sharp, or moving part. 12.2.4 处于外壳内部、间隔间、沟内等的电线要注意保护，电线的绝缘物免受尖的、锐利的或活动的物体影响。

12.2.5 A hole by means of which insulated wires pass through a sheet-metal wall within the overall enclosure of an appliance shall be provided with a smooth, well-rounded bushing or shall have smooth, well-rounded surfaces upon which the wires may bear, to prevent abrasion of the insulation. A flexible cord used for external inter-connection as mentioned in 12.2.1 shall be provided with strain relief and bushings in accordance with 10.2.2.1 – 10.2.2.6 and 10.2.4.1 – 10.2.4.6 unless the construction is such that the cord will be protected from stress or motion. 12.2.5 电线穿过钣金件壁上的孔时，应在整个电器外壳的内用光滑的套管或在外壳上有光滑的面来阻止电线绝缘物的磨损，在12.2.1中提到的用来作内、外连接的软电线，应采用在12.2.2.1、12.2.2.6、12.2.4.1、12.2.4.6中提及套管或电线夹。除非在结构上保证电线不受压力或运动的影响。

12.2.6 Insulated wires may be bunched and passed through a single opening in a metal wall within the enclosure of an appliance. 12.2.6 绝缘导线可以被冲击并可以穿过电器外壳内的金属壁上的开口。

12.3 Splices 12.3 接头

12.3.1 All splices and connections shall be mechanically secure and shall provide acceptable electrical contact. A soldered connection shall be made mechanically secure before being soldered if breaking or loosening of the connection may result in risk of fire or electric shock. 12.3.1 所有的接头应机械加固并能导电，若焊接接头断开或松动可能引起电击，则在焊接前应机械加固。

12.3.2 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 of the appliance is not maintained. 12.3.2 若接头与其它金属部件之间的间隙不能长期保持，接头处应有一个类似绝缘物来包裹电线。

12.3.3 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 whether splice insulation consisting of coated fabric, thermoplastic, or other type of tubing is acceptable, consideration is to be given to such factors as its dielectric properties, heat-resistant and moisture-resistant characteristics. Thermoplastic tape wrapped over a sharp edge is not acceptable.

12.3.3 对于一个接头，由两层耐磨带、或两层热塑料带、或一层耐磨带一层橡胶带构成的绝缘物可以接受，若接头处的绝缘物是由织物、热塑性塑料或其它型式的管来包裹的，则这些绝缘物可接受的，并应考虑其介电特性、阻热性及抗湿性因子，热塑料带包裹尖锐的边是不能接受的。

12.3.4 Where stranded internal wiring is connected to a wire-binding screw, loose strands of wire shall be positively prevented from contacting any other uninsulated live part that is not always of the same polarity as the wire, and from contacting any dead metal part. This may be accomplished by the use of pressure terminal connectors, soldering lugs, crimped eyelets, soldering all strands of the wire together, or other equivalent means. 12.3.4 当内部的电线束成一股并将其连接到压线螺钉上，松散的线股绝对不要碰到任何与导线极性不同的活动导体，也不要碰到任何不动的金属体，可用压

线连接器、焊接接线片、卷曲孔眼、焊接线股及类似的方法来达到要求

12.4 Separation of circuits 12.4 分断电路

12.4.1 General 12.4.1 一般要求

12.4.1.1 Unless provided with insulation rated for the highest voltage involved, insulated conductors of circuits connected to separate sources of supply shall be separated by barriers or segregated. Except as described in 12.4.1.3, an insulated conductor of one circuit shall be separated or segregated from any uninsulated live part of a different circuit. 12.4.1.1除非提出了额定的最高绝缘电压，电路中绝缘导体同电源的分断用挡板断开或分离，除了12.4.1.3中所述的情况外，电路的绝缘导体应与不同电路的活动导体分离或断开。

12.4.1.2 Segregation of insulated conductors may be accomplished by clamping, routing, or an equivalent means which provides permanent separation from insulated or uninsulated live parts of a different circuit. 12.4.1.2绝缘导体的分离可用开关闭、行程开关或同活动的零件永久分离的类似的方法来完成。

12.4.1.3 Field-installed conductors of any circuit shall be segregated by barriers from: 12.4.1.3任何电路的FII (FIELD-INSTALLATION) 导体应用挡板来分断。

a) Field-installation and factory-installed conductors connected to any other circuit, unless the conductors of both circuits are or will be insulated for the maximum voltage of either circuit and, FII和FAI (FACTORY-INSTALLED) 导体连接到任一电路上，除非两电路的导体在自身的电路的最高电压下绝缘，并且，

b) Uninsulated live parts of any other circuit of the appliance, and from any uninsulated live parts whose short-circuiting would result in risk of fire or electric shock, except that: 电器任一电路上的活动导体，应防止因其短路而发生火灾或电击的危险，以下情况例外，

1) A construction in which field-installed conductors may make contact with wiring terminals is acceptable provided that Type T, TF, or equivalent conductors are or will be installed be, and FII导体在结构上是T, TF型或类似型号，它可同接线片连接。并且，

2) A construction in which field-installed conductors that do or may have insulation less than the types of wire mentioned in item 1 may make contact with low-voltage wiring terminals (see 12.4.1.6) is acceptable, provided that the short-circuiting of such terminals would not result in risk of fire or electric shock. FII导体在结构上的绝缘性小于1项提及的，可同低压连接片相连（参照12.4.1.6），并且短路不至于引发火灾或电击。

12.4.1.4 With respect to 12.4.1.3(a), if the intended uses of an appliance are such that in some applications a barrier is required, a removable barrier or one having openings for the passage of conductors may be employed, provided instructions for the use of the barrier are a permanent part of the appliance, and complete instructions in conjunction with a wiring diagram may be acceptable instead of a barrier if, upon investigation, the combination is found to provide the required separation. 12.4.1.4与12.4.1.3(a)相关的是，或某些电器在使用中用到挡板，为了通过导体，可用活动的挡板或有开口的挡板，挡板在结构上是电器上永久性的部件，在调查研究之下，联合结构完全可以分断电路，则与接线图相关的完整结构可用来代替挡板。

12.4.1.5 Segregation of field-installation conductors from other field-installation conductors and from uninsulated live parts of an appliance connected to different circuits may be accomplished by arranging the location of the openings in the enclosure for the various conductors (with respect to the terminals or other uninsulated live parts) so that there is no likelihood of the intermingling of the conductors or parts of different circuits. If the number of openings in the enclosure does not exceed the minimum required for the proper wiring of the appliance, and if each opening is located opposite a set of terminals, it is to be assumed (for the purpose of determining whether the appliance complies with the requirement in 12.4.1.3) that the conductors entering each opening will be connected to the terminals opposite the opening. If more than the minimum number of openings are provided, the possibility of conductors entering at points other than opposite the terminals to which they are intended to be connected and contacting insulated conductors or uninsulated current-carrying parts connected to a different circuit is to be investigated. To determine whether the appliance complies with the requirement in 12.4.1.3, it is to be wired as it would be in service, and in doing so, a reasonable amount of slack is to be left in each conductor, within the enclosure, and no more than average care is to be exercised in stowing this slack in the wiring compartment.

12.4.1.5 FII导体与FII导体的隔离或FII导体与连接到不同电路上的电器的活动导体的隔离，可以通过在外壳上开口来完成，这些开口用于不同的导体（同连接片及其它活动导体相关），因此不同电路的零件及导体就不可能混在一起，若开口的数目不超过电器须用电线的最少数目，并且每个开口对着一个连接片，可以断定（断定电器是否满足12.4.1.3的要求）导体可以穿过开口并同开口所对应连接片相连。若开口的数目超过电器须用电线的最少数目，应考虑到导体在某处穿过开口之与相对的连接片相连之外，还可能与绝缘导体或带电体相连，为断定电器是否采用了12.4.1.3的要求，在电器的使用过程中，用线加强，为此，在外壳中每个导体有合理的松动量，在间隔间中装松动量不要超过练习的平均量

12.4.1.6 LOW-VOLTAGE CIRCUIT – A low-voltage circuit is one involving a potential of not more the 30 V and supplied by a primary battery, by a standard Class 2 transformer, or by an impedance that, as a unit, complies with all of the performance requirements for Class 2 transformer.

12.4.1.6 低压电路 低压电路是所包括的电压不超过30V，并由主电池供电，或由2级变压器、或由一个阻抗，作为一个单元，其要求都符合2级变压器。

12.4.1.7 A circuit derived from a source of supply classified in 12.4.1.8 as a line-voltage circuit, by connecting resistance in

series with the supply circuits as a means of limiting the voltage and current, is not considered to be a low-voltage circuit as described in 12.4.1.6.

12.4.1.7来自于12.4.1.8中作为分类的电源电路，不认为是12.4.1.6中所提的低压电路。

12.4.1.8 LINE-VOLTAGE CIRCUIT – A line-voltage circuit is one involving a potential of not more than 250 V and having circuit characteristics in excess of those of a low-voltage circuit.

12.4.1.8线电压电路低压电路是所包括的电压不超过250V，并有超出了低压电路的电路特征的特征。

12.4.2 Barriers 12.4.2 挡板

12.4.2.1 If a barrier is used to provide separation between the wiring of different circuits, it shall: 12.4.2.1若不同的电路之间有挡板来分隔，挡板应是：

a) Be of metal or of insulating material, 金属或绝缘材料

b) Be reliably held in place and适当的、可靠的固定，并且，

c) Be of a mechanical strength to withstand any anticipated mechanical exposure. 有能抵挡预期的机械损害的机械强度。
Unclosed openings in a barrier for the passage of conductors shall not be larger in diameter than 1/4 inch (6.4 mm) and shall not exceed in number, on the basis of one opening per conductor, the number of wires which will need to pass through the barrier. The closure for any other opening shall present a smooth surface wherever an insulated wire may be in contact with it, and the area of any such opening, with the closure removed, shall not be larger than required for the passage of the necessary wires. 在挡板上导体通过的不封闭的开口，其直径不大于1/4英寸（6.4mm）并且开口的数量不超过一个导体对一个开口所要求的数量及穿过挡板的电线数量。绝缘电线连接的任何地方及开口所在区域，封闭开口的封闭盖时应形成一个光滑的面，封闭盖移动量不要超过电线通过开口的量。

12.4.2.2 A metal barrier shall have a thickness at least as great as the minimum acceptable thickness of the enclosure metal. A barrier of insulating material shall not be less than 0.028 inch (0.71 mm) thick, and shall be of greater thickness if its deformation may be readily accomplished so as to defeat its purpose. 12.4.2.2金属挡板的壁厚至少要与外壳的最小允许壁厚相同。绝缘挡板的壁厚不小于0.028英寸(0.71mm)，或绝缘挡板的变形易对其的作用不利，则挡板的壁厚应加厚。

13 Heating Elements 13. 发热组件

13.1 A heating element shall be adequately supported. It shall be protected against mechanical damage and contact with outside objects. 13.1发热组件应有充分的支持性能，应被保护以免机械破坏及同外部物体相连。

13.2 In determining that a heating element is adequately supported, consideration is to be given to sagging, loosening, and other adverse conditions of the element resulting from continuous heating. For an open-wire (uninsulated resistance wire) heating element consideration is also to be given to breakage at any point. When a fiberglass rope heating element is provided it shall be secured within the unit by a positive means such as screws, lock washers/nuts, rivets or the equivalent so that with minor loosening, disengagement of the heating element will not result in the risk of fire or shock as determined by the Abnormal Operation Test (Section 44). Revised 13.2 effective November 28, 2003

13.2为了决定一种发热组件有充分的支持性能，应考虑发热组件可能在连续加热过程中下垂、松动及在其它不利的条件下工作，对开式发热线（不绝缘电阻线），应考虑发热组件可能在某处断开。

13.3 Except for an automatic toaster, a heating element in an appliance that may be contacted by the user during intended use or cleaning shall not be of the open wire construction. An automatic toaster employing open wire heating elements and provided with a mode of operation that does not require the operation of both heating elements within a toaster slot meets the intent of the requirement provided at least one of the heating elements within the slot is in a mode of operation generating heat. 13.3 revised May 28, 2002

13.3除了自动多士炉之外，发热组件在用户使用或清洁过程中可被连接，发热组件在结构上应不是开放式的。

13.4 An open-wire element, that is, uninsulated resistance wire, may be used in an appliance provided it is enclosed or protected by barriers or covers that require tools for removal, and it complies with the accessibility of live parts requirements outlined in 6.9, 6.13 and 6.14 and the broken element test of Broken Element Test, Section 40.

13.4对开式发热线，也就是不绝缘电阻线，可封闭用在电器上，或用挡板、盖子保护好，且挡板、盖子须用工具才能打开，与活动件的可接近性要求在6.9,6.13,6.14中概述过，40节中有断裂组件测试要求。

13.5 A sheathed element, rope heater, or the like shall be judged under the applicable requirements of this standard.

13.5带外壳的组件、圆形加热器等，都应在本标准可用要求之下来判断。

13.6 An appliance in which the heating element is intended for operation only in an air blast shall be so wired or controlled that the element can be operated only while under the cooling effect of the blast. An appliance in which the cooling effect of the motion of a part is necessary for acceptable temperatures shall be so wired or controlled that the element cannot be operated without such motion.

13.7 The heating elements of an automatic toaster shall de-energize independent of the movement of a simulated toast load, as determined by 44.2.5.3.1 Added 13.7 effective November 30, 2001

13.6 仅在在有风情况使用的电器的发热组件应控制在仅有冷风条件下使用，有受冷冻影响的零件须有可接受的温度，并应控制好无该条件下就不能使用。

14 Electrical Insulation 14 绝缘介质

14.1 Insulating washers, bushings, and the like that are integral parts of an appliance, and bases or supports for the

mounting of current-carrying parts, shall be of a moisture-resistant material that will not be damaged by the temperatures to which they will be subjected under conditions of actual use. Molded parts shall be so constructed that they will have the mechanical strength and rigidity necessary to withstand the stresses of actual service.

14.1 绝缘执圈、套管等应是电器的一个完整零件，并能支持带电体或是带电零件的装配基体，还能抗潮湿并在实际使用过程中不会因温度的影响而被破坏，为了挡住使用过程中的压力，模压零件在结构上应保证有机械强度及刚度。

14.2 Insulating material employed in an appliance shall be judged with respect to its acceptability for the particular application. Materials such as mica, some molded compounds, and certain refractory materials are usually acceptable for use as the direct support of live parts. Other materials which are not acceptable for general use, such as magnesium oxide, may be acceptable if used in conjunction with other more appropriate insulating materials or if located and protected against mechanical damage and the absorption of moisture is minimized. When it is necessary to investigate a material to determine whether it is acceptable, consideration is to be given to its mechanical strength, dielectric properties, insulation resistance, heat-resistant qualities, the degree to which it is enclosed or protected, and any other features having a bearing on the risk of fire, electric shock, or injury to persons involved, in conjunction with conditions of actual service. All of these factors are considered with respect to thermal aging. The appropriate tests in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, see Electrical Insulation Section.

14.2 判断用在电器上的绝缘材料，应同特殊电器对该材料的可接受性相关。比如说云母，一些模压聚合物、或某种难熔材料都可直接用来支持活动零件，一般使用时，不能接受的材料，如镁氧化物，若同其它合适的绝缘物联合时可以使用，或其能防止机械破坏及吸湿最小，也可使用。当断定一种材料是否可用，对材料研究是必要的，研究时要考虑材料的机械强度、电介性能、绝缘电阻、隔热性能、防护或封闭等级，以及在实际使用的相关条件下，其它如引发火灾、电击或人身伤害的特征。所有的因子同其老化有关。本标准中**电气设备中的聚合物评估（UL746C）**有合适的测试方法，参看电气绝缘一章。

Exception: Thermoset materials need not be subject to the relative thermal capability requirements of UL 746C. For a thermoset material operating at a temperature above its temperature rating, the 1000 hour Aging Test as outlined in 43.1 shall be conducted. 例外：热固塑料不必符合UL746C中的相关热能力要求。对于工作在高于其温度范围内的热固塑料，按43.1中的要求作1000小时的老化测试。

14.3 In the mounting or supporting of small, fragile insulating parts, screws or other fastenings should not be tight enough to cause cracking or breaking of these parts with expansion and contraction. Generally, such parts should be slightly loose.

14.3 在装配或支撑小而易脆的绝缘件时，螺钉和其它紧固件不要装得太紧以致于这些绝缘件的收缩或扩展而破裂。一般这些绝缘件应有轻微的松动。

14.4 Sleeving or tubing used as an insulator for uninsulated live parts (such as glass fiber in rope heaters) shall be so disposed or protected that no damage to the sleeving or tubing can result from contact with any rough, sharp, or moving part. The sleeving or tubing shall not be installed under a compression that renders it incapable of complying with the dielectric voltage-withstand requirements in 38.1.

14.4 筒形及管形件用来做活动导体的绝缘物（如环形加热器上的玻纤）应处理好或应避免其碰撞尖锐件或活动件而被破坏。筒形及管形绝缘物不能用一种压力之下，这种压力是在38.1中所述的耐压电介质的耐压性。

15 Thermal Insulation 15. 绝热介质

15.1 Thermal insulation, if employed, shall be of such a nature and so located and mounted or supported that it will not be adversely affected by any intended operation of the appliance. See 35.1.27. 15.1 若用了绝热介质，应装配固定好不至于受任何电器正常使用操作的影响。参看35.1.27。

15.2 Combustible or electrically conductive thermal insulation shall not make contact with uninsulated live parts of an appliance. 15.2 易燃的、易导电的绝热物不能同电器上的活动导体相接触。

15.3 Some types of mineral-wool thermal insulation contain conductive impurities in the form of slag, which makes its use unacceptable if in contact with uninsulated live parts. See 37.1.

15.3 某种类型的矿物棉绝热材料包含有矿渣中的杂质，若其同活动导体相接触是不允许的。参看37.1

16 Motors 16. 马达

16.1 A motor shall be appropriate for the particular application, and shall be capable of handling its maximum intended load without risk of fire, electric shock, or personal injury. 16.1 马达用在某些特殊电器上，在最大的工作负荷的情况下，不会引发火灾、电击及人身伤害。

16.2 A motor winding shall resist the absorption of moisture and shall be formed and assembled in a workmanlike manner.

16.2 马达的绕组应能防潮，并且以精巧的方式装配形成。

16.3 With reference to the requirement in 16.2, 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 should be provided with impregnation or otherwise treated to resist moisture absorption. 16.3 参照16.2的要求，覆膜线不须防潮，但纤维槽衬垫、布缠带和类似的吸潮材料应嵌入，否则就防潮处理。

16.4 An automatic bread maker that performs both a heating and motor-operated food preparation function, shall have the motor-operated food preparing function evaluated in accordance with the requirements for a dough maker, in the following Sections in the Standard for Motor-Operated Household Food Preparing Machines, UL 982; Capacitors, Section 17; Starting Current Test, Section 25; Normal Temperature Test, Section 27; Abnormal Operation Test, Section 33; Enclosures of

17 Motor-Running Overcurrent (Overload) Protection 17. 马达超电流（超载）保护

17.1 The following appliances in which a 1 hp or smaller motor is used shall incorporate thermal or overload protection that prevents the motor from attaining excessive temperatures under any operating conditions: 17.1 电器中有1马力的马达或更小的应有过热、过载保护，以免马达在任何使用条件下集热，这些条件是：

- a) A remotely or automatically controlled appliance. 遥控或自动控制电器
 - b) A permanently connected, continuous-duty, manually started appliance. 不可拆卸连接，长期有灰尘，手工启动的电器。
- An impedance-protected motor is not required to have additional thermal or overload protection. 有阻抗保护的马达不须附加过热、过载保护。

17.2 An appliance intended to be automatically or remotely controlled and employing a motor rated at more than 1 hp shall incorporate thermal or overcurrent protection. 17.2 遥控或自动控制电器中的马达功率大于1马力的应有过热、过载保护。

17.3 Fuses shall not be used as motor-overload-protective devices unless the motor is protected by the largest size of fuse that can be inserted in the fuseholder. 17.3 不能用保险丝来做为马达的超载保护，除非马达的保护用能插入保险盒的最大的保险丝。

18 General (Short-Circuit and Ground-Fault) Overcurrent Protection 18. 一般（短路及接地失效）超载电流保护

18.1 Overcurrent protection at not more than 20 A shall be provided by means of a circuit breaker or fuse, as a part of a heating appliance, for each general-use receptacle circuit and each lampholder circuit independent of a heating element, included in the appliance, unless the appliance would be properly connected to a branch circuit rated at 20 A or less.

18.1 不超过20A的超载电流保护应采用保险丝断路器，在电器上的每一个正常使用的插座电路及指示灯固定器电路应独立于发热组件，除非电器有额定电流为20A或以下的分支电路。

18.2 The overcurrent protection mentioned in 18.1 shall be of a type indicated as being acceptable for branch-circuit protection. 18.2 在18.1中提及的超载电流保护可被分支电路所接受。

18.3 A fuseholder or circuit breaker provided as a part of an appliance shall be acceptable for the particular application and shall not be accessible from the outside of the appliance without opening a door or cover, except that the operating handle of a circuit breaker may project outside of the enclosure. A fuseholder shall be so installed that no uninsulated live parts other than the screw shell or clips of the fuseholder are exposed to contact by a person removing or replacing a fuse. If the fuseholder is intended to be accessible only to a serviceman, uninsulated live parts other than the screw shell or clips may be exposed if they are guarded, or the fuseholder is so located to prevent unintentional contact with these live parts.

18.3 保险盒或电路断路器作为电器的一个零件可被特殊电器所接受，并在电器上的门或盖未打开的情况下，除了电路断路器的操作手柄伸出了外壳，都不能接触到保险盒或电路断路器，保险盒装好，若更换或取走保险时，除了螺钉盖及保险夹可同人体接触之外，不能有其它的导电活动件裸露同人体接触。若保险盒只有维修人员可以打开时，若导电活动件防护好后，除了螺钉盖及保险夹之外的它们可以裸露，或者保险盒定位好不会无意触到导电活动件。

19 Overcurrent and/or Over-Temperature Protection 19. 超温及/或超载电流保护

19.1 If an appliance is provided with a replaceable overcurrent and/or over-temperature protective device, the device shall be secured in place and shall be so located that it will be accessible for replacement without damaging other connections or internal wiring. See 54.9. 19.1 若电器有可替换的超温及/或超载电流保护装置，该装置应固定好并能在不破坏内部接线的情况下易于更换。参看54.9

19.2 If an appliance is provided with a fusible device, the device shall be capable of opening the circuit in the intended manner without causing the short-circuiting of live parts and without causing live parts to become grounded to the enclosure when the appliance is connected to a circuit of voltage in accordance with 35.1.14, and operated in a normal position to cause abnormal heating.

19.2 若电器有保险装置，应能按希望的方式切断电路而不会引发活动件的短路及在电器连接到与35.1.14相关的电压电路中时，活动件不得对外壳短路，并且在一般的位置引起不正常的发热。

19.3 To determine whether a fusible device complies with the requirement in 19.2, the appliance is to be operated with separate devices five times as described in 19.2 while any other thermally operated control devices in the appliance are short-circuited. Each device is required to perform acceptably. During the test, the enclosure is to be connected through a 3-A fuse to a supply conductor not containing the device.

19.3 为了判定保险装置是否符合 19.2 的要求，当任一热控制装置操作装置短路时，电器的分断装置应像 19.2 所述的那样断开 5 次。每个装置都要求完成，在测试时，电器应有不属于装置的 3-A 的保险。

20 Lampholders 20. 指示灯固定器

20.1 If an appliance intended for permanent connection to the power supply or an appliance equipped with a polarized or grounding type attachment plug is intended to be connected to the grounded conductor of a power-supply circuit, a lampholder supplied as a part of the appliance shall be so wired that the screw shell is connected to the grounded conductor.

20.1 若电器与电源的连接是永久性的，或者电器配备了极化的或接地型的附加插头，且该插头同电源电路的接地导体相连，作为电器的一个零件的指示灯固定器应固定好，并且螺丝盖应接地。

20.2 Except as noted in 20.3, a lampholder shall be so constructed and installed that uninsulated live parts other than the screw shell will not be exposed to contact by persons removing or replacing lamps in user service.

20.2除了20.3中提及的，指示灯固定器应固定装配好，在更换、移走指示灯固定器时，不能触及活动导电体，除了螺丝盖之外的其它活动导电体不得裸露。

20.3 The requirement in 20.2 does not apply if, in order to remove or replace a lamp, it is necessary to dismantle the appliance by means of tools. 20.3在20.2中的要求不包括为了更换、移走指示灯固定器，需用工具来拆开电器的情况。

20.4 A medium-base lampholder or screw-shell receptacle shall not be used as a holder for a heating element rated at more than 6 A or 660W, except that a screw with a left-handed thread may be used with a heating element rated at not more than 10 A. 20.4一个中等大小的指示灯固定器或螺丝盖插座不可用来固定额定值超过6A、或660W的发热组件，除非螺丝螺纹为左旋螺纹可用在不超过10A的发热组件。

20.5 Except as noted in 20.6, a screw-shell lampholder for an infrared lamp shall be of the unswitched, medium-base type, and used with a 300-W or smaller lamp. 20.5除了20.6中提及的，红外线灯的螺钉壳固定器用不变的中等型号，并配有300-W或更小的灯。

20.6 A lamp-and-lampholder combination need not comply with the requirement in 20.5 if no unacceptable temperature is produced on any of the components in the normal-temperature test, and if the switching mechanism of a switched lampholder is capable of performing acceptably without undue burning, pitting, or the like. 20.6若在组件的一般温度测试时产生不可接受的温度，则灯和灯固定器组合型式不必依照20.5所述

20.7 A female screw shell used as a holder for a heating element shall be of copper or of a copper-base alloy and shall be plated with nickel or equivalent oxidation-resistant metal.

20.7用来固定发热组件的内螺纹壳应由铜或铜基合金构成，并且应电镀镍或类似的抗氧化金属。

21 Power-On Indicator – Toaster Ovens, Toaster Oven/Broilers 21. 通电指示灯 烤箱，烧烤器

21.1 A toaster-oven and toaster-oven/broiler shall be provided with power-on and power-off indicators. The power-on indicator shall be readily visible and distinguishable from any off position indicator. The power-on indicator shall clearly indicate that the appliance is on. 21.1 烤箱，烧烤器应有通电和断电指示灯，通电指示灯应易于观察并同其它指示灯区别开来，通电指示灯应清晰指示出电器正在工作。

21.2 The power-on indicator shall be an illuminated switch or pilot light. An ordinary on/off switch position marking alone is unacceptable. The power-on indicator shall remain on during any operating condition (including cycling of the thermostat) of the appliance. 21.2通电指示灯应是一个照明开关灯或一个指示光源灯，不能用普通的on/off开关标记，在电器的任一工作情况下（包括圆形自动控温装置），通电指示灯保持灯亮。

21.3 At least one means shall be provided, other than unplugging the cord, to turn the appliance off.

21.3除了用拔插头线来关闭电器之外，至少还有一种方法可关闭电器。

22 Switches 22. 开关

22.1 A switch or other control device provided as a part of an appliance shall be of a type intended for the particular application and shall have a current and voltage rating not less than that of the circuit (load) which it controls.

22.1开关或其它的控制装置作为电器的一个零件应考虑特殊运用场合。并且其额定电流、电压值不小于其控制的电路（负载）的电流电压值。

22.2 A switch employed on an appliance shall be so located or protected that will not be subjected to mechanical damage during use. 22.2电器的开关应固定好，并在使用过程中不会受机械破坏的影响。

22.3 It is recommended that all switches be of an indicating type. 22.3建议所有的开关都有指示。

22.4 A switch on a cord-connected toaster shall be of such a type and so connected that it will disconnect any open-wire element or elements that it controls from all conductors of the supply circuit. 22.4在线连接的多士炉上的开关，应正确连接好，不要连到任一个开放式发热组件上或者其控制的电路的所有导体。

22.5 The requirement in 22.4 applies to a switch in the "off" position or any other setting in which the element is not heated, and also to a through-cord switch or a plug in which a switch is incorporated. 22.5在22.4中的要求应用到开关的“OFF”档位或其它不加热的文件位，及通线开关或开关插头。

22.6 A manually operated, line-connected, single pole switch for appliance on-off operation shall not be connected to the conductor of the power supply cord intended to be grounded. Table 10.3 specifies the identification of the power supply cord conductor intended to be grounded. 22.6电器上手工操作、线连接的单极开关的“ON, OFF”档位不能连接到接地电源线的导体上。表10.3指明了电源线的接地标记。

22.7 A switch or other device controlling one or more elements of an appliance intended for permanent connection to the power supply shall be of such construction that opening the switch will disconnect all of the ungrounded conductors of the supply circuit, unless there will be no live parts exposed to unintentional contact when the switch is open or unless the fact that such parts are live parts is apparent. 22.7与电源永久性连接的电器的开关或控制一个或多个组件的控制装置应有这样的结构，打开开关则电路上的所有非接地导体被断开，除非开关打开后，不会无意碰到活动件，或事实上活动件是显然的。

22.8 A switch or other means of control intended to provide for the use of a limited number of elements at one time shall be so located or of such a type that the user cannot readily change the connections to energize more elements than intended.

22.8 开关或其它控制方式提供了一次使用的发热组件是有限个数的，它们应这样固定，为了加多发热组件，用户不能轻易改变接线方式来达到加多发热组件的目的。

22.9 A switch controlling a lampholder shall be acceptable for use with tungsten-filament lamps. 22.9控制指示灯固定器的开关应能控制钨丝灯。

22.10 A switch shall not be incorporated in a wooden handle or in other combustible material unless enclosed in metal or insulating material.

22.10开关不能同木柄或其它易燃材料合成一体，除非开关用金属或其它绝缘材料包围起来。

23 Dual Voltage Appliance 23. 双电压电器

23.1 The construction of the circuit voltage selector shall be such that the circuit voltage setting cannot be changed inadvertently. 23.1电路电压选择器的结构应是这样的，电路电压的改变不能在不注意的情况下被改变。

23.2 If the appliance is so constructed that the supply circuit voltage selector can be changed, the action of changing the voltage selector setting shall also change the supply circuit voltage indication. 23.2若电器的电压可以改变，则在改变电压选择器的同时也应改变电路电压的指示。

23.3 An appliance that can be set to different rated supply circuit voltages shall be provided with the statement required by 58.10. 23.3若电器的电压可以改变在不同的电压范围，则应满足58.10的要求。

24 Automatic Controls and Control Circuits 24. 自动控制及其控制电路

24.1 A control circuit shall comply with the requirements in 12.4.1.1 – 12.4.2.2. 24.1控制电路应符合12.4.1.1及12.4.2.2的要求。

24.2 The operation of an auxiliary control device in an appliance shall disconnect the element or elements that it controls from all ungrounded conductors of the supply circuit, unless there will be no live parts exposed to unintentional contact when the auxiliary control device is open or unless the fact that such parts are live parts is apparent.

24.2电器上的辅助控制装置应断开其所控制的所有非接地导体，除非辅助控制装置打开后，不会无意碰到活动件，或事实上活动件是明显的。

24.3 The operation of an auxiliary control device in an automatic toaster shall disconnect the element or elements that it controls from all conductors of the supply circuit in a cord-connected toaster and from all ungrounded conductors of the supply circuit for a permanently connected toaster if live parts are accessible to the extent that they are subject to unintentional contact when the appliance appears to be in a de-energized condition.

24.3当电器处于未曾加强的条件下，若活动件易于碰到无意识接触的区域，在自动多士炉中的辅助控制装置应断开其控制的发热组件，或线连接多士炉的所有电源导体，或永久性连接多士炉的所有非接地导体。

24.4 An auxiliary control is considered to be one that is intended primarily for time, temperature, or pressure regulation, and the like, under conditions of intended operation, and not for protection against overload or excessive temperature conditions resulting from abnormal operation.

24.4辅助控制装置是指在正常工作情况下，首先控制时间、温度、压力调节等，不是用在不正常工作条件下的超载及超温保护。

24.5 A temperature-limiting control intended to reduce the risk of fire or electric shock shall be operative whenever the appliance is connected to its power supply. Except for the inherent thermal protector of a motor, the control of a permanently connected appliance that has exposed live parts shall disconnect the element or elements it controls from all ungrounded conductors of the supply circuit. The operation of such a control shall comply with the requirements in 24.2. A controlled contactor shall comply with the endurance requirement for a limiting control if it is part of the limiting-control circuit.

24.5无论电器在何时接上电源，限温器都能减少火灾或电击的危险。除了马达的固定热保护器，有活动件外露的永久性连接电器的控制装置应断开其控制的发热组件或所有非接地导体。这种控制装置的工作应符合24.2中的要求。若电流控制器是控制电路的一个零件，则其应有耐久性要求。

24.6 A control device shall not deliberately overload the branch-circuit protective device as a means of disconnecting the appliance from the supply.

24.6控制装置不能故意使支路保护装置超载来作为切断电源的手段。

25 Overheating Protection 25过热保护

25.1 The requirements in 25.2 – 25.5 are applicable to an air-type corn popper, bacon-broiler, broiler, toaster-oven, toaster oven/broiler and table stove, or an appliance provided with an enclosure complying with 6.6. These requirements are in addition to or modify the applicable requirements in Overcurrent and/or Over-Temperature Protection, Section 19, Automatic Controls and Control Circuits, Section 24, and Component Switches and Control Devices, Section 48.

25.1在25.2及25.5中的要求是用在空气型爆玉米花机、烤肉器、烧烤器、烤箱，面包烤箱/烤器以及台式炉具，或者是6.6中所述外壳的电器，这些要求超是19节中“超电流和/或超温保护”、24节中“自动控制及其控制电路”、48节“零件开关及控制装置”的附加要求或修订要求。

25.2 An appliance shall be provided with a separate and distinct temperature-limiting device to limit temperatures within the appliance. A single combination regulating-limiting control is unacceptable for this purpose. 25.2电器应一个单独的明显的温度限制装置来限制电器内的温度，不能用单独的混合式的规则限制器来控制电路。

Exception: A temperature-limiting device is not required if, with all thermally responsive devices short-circuited, the results of

all appropriate abnormal tests in Abnormal Operation Test, Section 44, are acceptable. 例外：发热装置短路，则温度控制不作要求，在44节中“非正常工作测试”的所有的适当的非正常测试结果是可接受的。

25.3 A limiting device shall be any one-time device or manual-reset thermostat, inaccessible to the user, (see 6.13 – 6.16) that performs its intended function when tested according to these requirements.

25.3限定装置是一次性装置或手工复位温度控制器，当按6.13及6.16中的要求来执行其功能时，用户不易做到。

25.4 A single-operation thermostat or a manual-reset thermostat that is provided as the temperature-limiting device shall comply with the applicable requirements for Single-Operation Devices in the Standard for Temperature-Indicating and -Regulating Equipment, UL 873. 25.4单工作温度控制器手工复位温度控制器有温度限制装置的应符合标准中的相关要求，这个要求是UL873中“有温度指示及规则装备的单工作装置”。

Exception: See 25.6例外：参看25.6

25.5 A thermal cutoff that is provided as a temperature-limiting device shall comply with the applicable requirements in the Standard for Thermal Cutoffs for Use in Electrical Appliances and Components, UL 1020. 25.5热断路器作为一个温度限制装置应符合标准中的相关要求，这个要求是UL1020，“电器及其零件的热断路器”。

Exception: See 25.6例外：参看25.6

25.6 A thermostat or thermal cutoff need not comply with a specific requirement in the standard indicated in 25.4 and 25.5, respectfully, if the requirement: 25.6若有下列情况，温度控制器及热断路器不必按照25.4及25.5中的要求

a) Involves a feature or characteristic not needed in the application of the component in the product, or包括了电器中的不必要的特征及面貌。或者，

b) Is superseded by a requirement in this standard.

被标准取代的要求。

26 Spacings 26. 电气间隙

26.1 Line-voltage circuits 26.1线电压电路

26.1.1 General 26.1.1一般要求

26.1.1.1 Except as noted in 26.1.1.2 and 26.1.1.3, the spacings in an appliance shall be in accordance with Tables 26.1 and 26.2. 26.1.1.1除了26.1.1.2及26.1.1.3中的情况，电气间隙应与表26.1及26.2中要求相一致。

26.1.1.2 The spacings specified in Tables 26.1 and 26.2, do not apply to the inherent spacings of a component part of an appliance, such spacings are judged under the requirements for the component in question.

26.1.1.2表26.1及26.2中要求的电气间隙不是电器零件的固有间隙，当零件有问题时，作为判断的要求。

Table 26.1
Minimum acceptable spacings at field-wiring terminals^{a,b}

Parts involved	Through air		Over the surface	
	inch	mm	inch	mm
Between live parts of opposite polarity; and between a live part and a dead metal part, other than the enclosure, which may be grounded	1/4	6.4	3/8	9.5
Between a live part and the enclosure	1/2	12.7	1/2	12.7

^a These spacings do not apply to connecting straps or busses extending away from wiring terminals. Such spacings are to be judged under Table 26.2.

^b Applies to the sum of the spacings involved where an isolated dead part is interposed.

表 26.1 **a, b**
区域布线连接片间最小可接受间隙

包括的零件	在空气中		在平面上	
	Inch	mm	Inch	mm
相对极性的活动件之间；活动件与固定件之间，但除了接地的外壳。	1/4	6.4	3/8	9.5
活动件同外壳之间	1/2	12.7	1/2	12.7

a. 间隙不包括连接带及伸出连接片的连接条，这种间隙用表 26.2 中来判断。

b. 单个固定件的插入的地方包括间隙的总数。

Table 26.2

Minimum acceptable spacings through air or over the surface at points other than field-wiring terminals or inside motors^{a,b}

Parts involved	Inches	mm
Between uninsulated live parts of opposite polarity, and between a rigidly mounted uninsulated live part and a dead metal part that either is exposed for persons to contact or may be grounded	1/16	1.6
<p>^a If an uninsulated live part is not rigidly supported, or if a movable dead metal part is in proximity to an uninsulated live part, the construction shall be such that at least the minimum acceptable spacing of 1/16 inch (1.6 mm) is maintained under all operating conditions and under all conditions of handling.</p> <p>^b If exact centering of the cold pin of a sheathed-type heating element is required to maintain the 1/16-inch (1.6-mm) spacing, a spacing of 3/64 inch (1.2mm) in one location is acceptable.</p>		

表 26.2

除了区域布线连接片及马达内部之间，并在空气中及平面上的最小可接受间隙

包括的零件	Inches	mm
相对极性的活动导电零件之间；严格装配的活动导电零件与外露的，人能触及或接地的固定件之间。	1/16	1.6
<p>a.若带电活动体未固定牢，或者可动的固定金属件与带电活动体很接近，在结构上应保证：在正常的所有使用条件及操作条件下应保持有最小的可接受间隙为 1/16 英寸（1.6mm）</p> <p>b.若壳类发热组件的冷态针的实际中心要求有 1/16 英寸（1.6mm）的间隙，单面间隙为 3/64 英寸（1.2mm）可以接受。</p>		

26.1.1.3 The spacings within a motor shall comply with the requirements in the Standard for Electric Motors, UL 1004.

26.1.1.3 马达内的间隙按UL1004中“马达电气标准”中的要求。

26.1.1.4 At closed-in points only, such as the screw-and-washer construction of an insulated terminal mounted in metal, a spacing of 3/64 inch (1.2 mm) is acceptable in an appliance. Within a thermostat, except at contacts, the spacings between uninsulated live parts on opposite sides of the contacts are to be not less than 1/32 inch (0.8 mm) through air and 3/64 inch (1.2 mm) over the surface of insulating material, and the construction is to be such that the spacings will be maintained permanently.

26.1.1.4在封闭点上，比如装在金属上的绝缘连接片的螺钉-垫圈结构件，有3/64英寸（1.2mm）的间隙的电器可以接受，在温度控制器内，除了在接线处，在接线处对边的导电活动件之间的空气间隙不少于1/32英寸（0.8mm）和绝缘材料面的上部的间隙不少于3/64英寸（1.2mm），并在结构上应保证间隙是永久性的。

26.1.2 Barriers 26.1.2 挡板

26.1.2.1 Except as noted in 26.1.2.2, an insulating liner or barrier of fiber or similar material employed where spacings would otherwise be unacceptable shall not be less than 0.032 inch (0.8 mm) thick and shall be so located or of such material that it cannot be adversely affected by arcing, except that the fiber not less than 0.016 inch (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. 26.1.2.1除了26.1.2.2中所提及的，用在间隙处的绝缘衬垫或纤维挡板或类似材料的厚度不小于0.032英寸（0.8mm），否则不能接受。并且定位好或由不会因自身变形而受影响的材料构成，除了纤维材料不小于0.016英寸（0.4mm）的厚度，其它的材料可同空气间隙相连接来组成间隙，此空气间隙应不小于单独空气间隙的50%。

26.1.2.2 Insulating material having a thickness less than specified in 26.1.2.1 may be used if it is equivalent in appropriate properties. 26.1.2.2若绝缘材料在合适的特性方面是等价的，绝缘材料的厚度可小于26.1.2.1中所提及的厚度。

26.1.2.3 Unless protected from mechanical abuse during assembly and functioning of an appliance, a barrier of mica shall be 0.010 inch (0.25 mm) or thicker.

26.1.2.3除了在装配和操作电器中保护电器免受机械破坏，挡板云母的厚度可以是0.010英寸（0.25mm）或者更薄一些。

27 Grounding 27. 接地

27.1 In an appliance intended for permanent connection to the power supply by a metal-enclosed wiring system (such as rigid metal conduit or armored cable), all exposed dead metal parts and all dead metal parts inside the enclosure that are exposed to contact during any servicing operation (including maintenance and repair) and that are likely to become energized shall be conductively connected to the point at which the cable armor, conduit, and the like, is attached to the appliance. 27.1电器通过金属密封系统（如硬金属管或带壳电缆）同电源永久性连接，所有的外露金属固定件及电器工作时（包括维护和修理），在外壳内裸露连接的金属固定件及那些可能带电的物体，都应在导电连接处加上作为电器附属物的保护壳、导管及类似的东西。

27.2 In an appliance intended for permanent connection to the power supply by means other than a metal-enclosed wiring

system (such as non-metallic-sheathed cable): 27.2 电器除了通过金属密封系统（如其它非金属带壳电缆）同电源永久性连接，还应有以下措施：

- a) An equipment-grounding terminal or lead shall be provided (see 10.1.2.13 and 10.1.2.14), and 提供接地连接片或连接头（参看 10.1.2.13及10.1.2.14），并且，
- b) All exposed dead metal parts and all dead metal parts inside the enclosure that are exposed to contact during any servicing operation (including maintenance and repair) that are likely to become energized shall be conductively connected to such terminal or lead. 所有的外露金属固定件及电器工作时（包括维护和修理），在外壳内裸露连接的金属固定件及那些可能带电的物体，都应引导连接在接地连接片或连接头上。

27.3 On a cord-connected appliance where grounding is required or provided, the flexible cord shall include a grounding conductor that shall be: 27.3 一个有接地要求的线连接电器，软电源线应包括接地导体应是这样的：

- a) Green with or without one or more yellow stripes, 带有一条或多条黄色带并是绿色的，也可不带黄色带。
- b) Connected to the grounding blade of an attachment plug of a grounding type, and 连接到接地型的插头的接地插片上，并且
- c) Connected to the enclosure of the appliance by means of a screw not likely to be removed during ordinary servicing, or by other equivalent means. Solder alone is not acceptable for making this connection.

用螺钉连接到外壳上并在一般的使用过程中不会松动，或用其它的类似方法。用焊接方法来连接是不允许的。

27.4 All exposed dead metal parts of a cord-connected appliance that is equipped with a grounding conductor, and all dead metal parts within the enclosure that are exposed to contact during any user servicing and are likely to become energized, shall be conductively connected to the grounding conductor of the power-supply cord.

27.4 一个有接地导体的线连接电器的所有的外露金属件及在外壳内外露且用户在使用过程中可能触及的带电固定金属件，都应同电源线的接地导体相连。

27.5 A separable connecting device provided with a grounding connection shall be such that the appliance grounding connection is made before connection to, and broken after disconnection from the supply circuit. 27.5 接地连接的可分离式连接装置应是这样的，在连接电路之前连接好并从电路上拆下时应破坏。

Exception: An interlocked plug, receptacle, and connector that is not energized when the appliance grounding connection is made. 例外：当有接地连接器用在电器上时，互锁插头、插座及连接器不带电。

27.6 A cord-connected appliance that is intended for more than occasional outdoor use and can be so used, and a motor-driven spit, outdoor electric grill, food smoker, or similar device intended for outdoor use: 27.6 经常户外使用和可以户外使用的线连接电器，如电动SPIT，室外用电烤架，烟熏机，及类似户外用电器。

- a) Shall be double insulated, or 应有双层绝缘，或者，
- b) Shall have provision for grounding dead metal parts in the form of a grounding conductor in the cord and a grounding type of attachment plug, in accordance with 27.3 (see also 54.14). Grounding shall not be used if the product is marked as being provided with double insulation. 应在电源线上和接地型的插头上，以接地导体的形式来预备接地固定金属件，与27.3（参看54.14）相关。若产品标明了双层绝缘，不用接地。

27.7 A cord-connected two-wire appliance intended to operate at a nominal potential of 240 V (and similarly any other potential within the 220 – 250-V range) shall have provision for grounding in accordance with 27.3 unless the marked rating on the appliance is 120/240 V or unless the appliance is otherwise marked to indicate that it is to be connected only to a 120/240-V circuit with a grounded neutral.

27.7 两线连接电器的名义工作电压为240V（和在220—250V之间的电压）应按照27.3的要求有接地的要求。除非标明的电压为120/240V或者电器标明了其可连接在120/240V的带接地中性线的电路中。

28 Pressure Vessels and Parts Subject to Pressure 28. 压力容器及有关压力的部件

28.1 Except as noted in 28.2, a pressure vessel having an inside diameter of more than 6 inches (152 mm) and subject to a gauge pressure of more than 15 lbf/in² (103 kN/cm²) shall be certified by the National Board of Boiler and Pressure-Vessel Inspectors and marked in accordance with the appropriate boiler and pressure vessel code symbol of the American Society of Mechanical Engineers (ASME) ("H", "M", "S", or "U") for a working pressure not less than the pressure determined by applying 28.3.

28.1除了28.2中提及的，内径超过6英寸（152mm），并且相关的测量压力为15lbf/in（103kN/cm²）的压力容器，应取得国家锅炉部（NBB）及压力容器检测员的认证，并且标记ASME（American Society of Mechanical Engineers）相关的锅炉及压力容器代码（“H”、“M”、“S”、或“U”），其工作压力不小于28.3中提及的压力。

28.2 If a pressure vessel, because of its application, is not covered under the inspection procedures of the ASME code, it shall be so designed and constructed that it will comply with the requirements in 28.3.

28.2若压力容器，因为它的电器部分未被ASME代码的检测程序所覆盖，就应按28.3的要求来设计组成。

28.3 Except as noted in 28.4 and 28.5, a part that is subject to air or vapor pressure (including the vapor pressure in a vessel containing only a superheated fluid) during normal or abnormal operation shall withstand without bursting or leaking a pressure equal to the highest of the following that is applicable:

28.3除了28.4及28.5中提及的，无论是否正常工作，涉及到空气或蒸汽（包括在容器中聚集的超高温液体）压力的零件，应能挡住压力而不会爆炸及御漏，压力等于下列所述的最高压力值。

a) Five times the pressure corresponding to the maximum setting of a pressure-reducing valve provided as part of the assembly, but no more than five times the marked maximum supply pressure from an external source and no more than five times the pressure setting of a pressure-relief device provided as part of the assembly.

作为装配件的减压阀的最高压力的5倍，不超过外部供应源最高压力的5倍，并且也不超过作为装配件的御压阀的压力的5倍。

b) Five times the marked maximum supply pressure from an external source, except as provided in (a).

除了a)项之外，外部供应源最高压力的5倍。

c) Five times the pressure setting of a pressure-relief device provided as part of the assembly.

作为装配件的御压装置压力的5倍。

d) Five times the maximum pressure that can be developed by an air compressor that is part of the assembly, unless the pressure is limited by a pressure-relief device in accordance with (a).

作为装配件的空压机所能提供压力的5倍，除非压力像a)项的御压装置对压力有限制。

e) Five times the working pressure marked on the part.

标记在零件上的工作压力的5倍。

28.4 A test need not be performed to determine whether a part complies with the requirement in 28.3 if study and analysis indicate that the strength of the part is adequate for the purpose as a result of its material and dimensions – for example, copper or steel pipe of standard size and provided with standard fittings might be considered to have adequate strength.

28.4若研究和分析表明零件的强度在其材料和尺寸方面可以达到强度的要求，则不必按28.3的要求来进行测试。例如，标准大小的铜管和钢管且带标准的装置可以认为其有适合的强度。

28.5 A pressure vessel bearing the ASME code inspection symbol ("H", "M", "S", or "U") is considered to comply with the requirement in 28.3 if the vessel is marked with a value of working pressure not less than that to which it is subject during normal or abnormal operation.

28.5若压力容器标定的工作压力不低于其在正常或非正常工作时的压力，则撕去ASME代码检测标记（“H”、“M”、“S”、或“U”）的压力容器被认为其执行了28.3的要求。

28.6 If a test is necessary to determine whether a part complies with the requirement in 28.3, two samples of the part are to be subjected to a hydrostatic-pressure test. Each sample is to be so filled with water as to exclude air and is to be connected to a hydraulic pump. The pressure is to be raised gradually to the specified test value and is to be held at that value for 1 minute. The results are not acceptable if either sample bursts or leaks, except as indicated in 28.7.

28.6若必须作测试来决定零件是否执行了28.3的要求，则零件的两个样板作静水压测试，每个样板注入水以便排空空气，并与水压力泵相连接，逐渐加压到指定的测试压力值，保压1分钟。除了28.7所述之外，若样板漏水或破裂，则样板不合格。

28.7 Leakage at a gasket during the hydrostatic-pressure test is not unacceptable unless it occurs at a pressure 40 percent or less of the required test value. 28.7在静水压测试时垫圈处漏水是不允许的，除非垫圈处漏水发生在要求测试压力的40%或更低的情况下。

28.8 A means for relieving pressure shall be provided for all parts in which pressure might be generated in the event of fire.

28.8零件上御压的方式不能发生火灾的危险。

28.9 Pressure-relief devices (see 28.15), fusible plugs, soldered joints, nonmetallic tubing, or other pressure-relief means or the equivalent may be employed to comply with the requirements in 28.8.

28.9御压装置（参看28.15），可熔性的塞子，焊接接头，非金属管，及其它御压装置及类似的方式都可用来达到28.8的要求。

28.10 There shall be no shut-off valve between the pressure-relief means and the parts that it is intended to protect.

28.10御压装置同其保护的零件之间不得有截止阀。

28.11 A vessel having an inside diameter of more than 3.0 inches (76.2 mm) and subject to air or steam pressure generated or stored within the appliance shall be protected by a pressure-relief device.

28.11内径大于3.0英寸(76.2mm)的压力容器且产生或储存在电器中是水压或气压，则须有御压保护装置。

28.12 The start-to-discharge pressure setting of the pressure-relief device shall not be higher than the working pressure marked on the vessel. The discharge rate of the device shall acceptably relieve the pressure.

28.12御压装置的初始御压压力不能高于容器上的工作压力。在御压装置的御压范围应能御压。

28.13 A pressure-relief device shall comply with all four of the following: 28.13御压装置应有下列四条要求：

a) Shall be connected as close as possible to the pressure vessel or parts of the system that it is intended to protect. 御压装置同压力容器或其保护的零件应尽可能的封闭；

b) Shall be so installed that it is readily accessible for inspection and repair and cannot be readily rendered inoperative. 御压装置安装的位置应方便检测同维修并不易失效；

c) Shall have its discharge opening so located and directed that the risk of scalding is reduced to a minimum. 御压装置的御压口的位置处发生烫伤的危险应减到最小；

d) Shall have its discharge opening so located and directed that operation of the device will not deposit moisture on bare live parts or on insulation or components affected detrimentally by moisture. 在御压装置的御压口的位置处，操作装置的外露

活动件或绝缘件或零件上不得积累有害于它们的湿气。

28.14 A pressure-relief device having an adjustable setting is judged on the basis of its maximum setting unless the adjusting means is sealed at a lower setting. 28.14 预压装置有一个基于最大压力设置的调节装置，除非调节装置被封闭在一个最小压力位置。

28.15 A pressure-relief device is considered to be a pressure-actuated valve or rupture member intended to relieve excessive pressures automatically. 28.15 预压装置被认为是一个在超压时自动御压的压力活动阀或分裂件。

28.16 Where a pressure relief device is required, the control responsible for limiting the pressure in the vessel shall be capable of performing under rated load for 100,000 cycles of operation and shall prevent the pressure from exceeding 90 percent of the relief device setting under any condition of normal operation.

28.16 在有御压装置的地方，在容器中的限压控制应在额定负载下有100,000次的工循环，并在正常工作的任何条件下，容器内的压力不会超过御压装置工作压力的90%。

29 Protection Against Personal Injury 29. 人身安全保护

29.1 Materials employed in the construction of an appliance to protect against personal injury shall be acceptable for the particular use. See 6.1 and 6.5. 29.1 电器结构上的为了保护人身安全的应用材料可为特殊使用所接受。参看6.1及6.5。

29.2 An enclosure, a frame, a guard, a handle, or the like shall not be sufficiently sharp to constitute a risk of injury to persons during normal maintenance and use. 29.2 在正常使用维护的情况下，外壳、支架、防护装置、手柄及类似物不得太尖锐而伤人。

Exception No. 1: A part or portion of a part needed to perform a working function need not comply with this requirement. 例外1: 零件上的尖锐部分是为执行其功能的不在此要求之内。

Exception No. 2: A part or portion of a part inaccessible to the probe illustrated in Figure 6.2 need not comply with this requirement. 例外2: 零件上的尖锐部分不易接触到如图6.2所示的探测器的也不在此要求之内。

29.3 Compliance with the requirement of 29.2 is determined by applying the test procedures, equipment, and acceptance criteria described in the requirements for test for sharpness of edges on equipment – UL 1439. 29.3 按29.2的要求来进行检测步骤，装置及可接受的标准在UL1493“装置的锐边检测”要求中有描述。

29.4 The release mechanism for detachable handles shall be: 29.4 可分离手柄的释放机械装置应为:

a) So located and/or so guarded that inadvertent detachment of the handle does not occur during normal use of the appliance, and 在电器的正常使用过程中，释放机械装置应能防止无意的手柄分离，并且，

b) So constructed that complete and proper engagement of the handle is made evident to the user during the operation of attaching the handle. 在操作手柄的过程中，结构上保证能明显的完成完整的、适当的手柄接合。

PERFORMANCE 功能

30 General 30. 一般要求

30.1 The performance of an appliance shall be investigated by subjecting the requisite number of samples to all the applicable tests as described in Sections 31 – 48, inclusive. Insofar as practicable, the tests shall be conducted in the order in which they are presented here. Samples employed for leakage-current tests shall be first tested for leakage prior to employing the samples for other tests.

30.1 按31节及48节中所述的所有测试需要的样板数量要求来调查电器的功能，在可行的范围内，各种测试按其出现的次序引入。漏电测试是第一个泄漏测试并先于其它测试。

31 Power Input Test 31. 输入电源测试

31.1 The power input to an appliance shall not be more than 105 percent of its marked rating. 31.1 电器的输入电源不要超过其标定功率的105%。

31.2 To determine whether an appliance complies with the requirement in 31.1, the power input is to be measured with the appliance at normal operating temperature under full-load conditions (if required for normal operation), and while connected to a supply circuit adjusted to be the highest of the following: 31.2 为了决定电器是否采用了31.1的要求，以电器在满负载(若要求正常操作)情况下的正常工作温度来量度，并同调到下列最高值时的电源电路相连接:

a) The marked voltage rating, or 标记的额定电压，或者，

b) The highest voltage of the applicable range of voltages specified in 53.1 if the marked voltage is within one of the voltage ranges indicated in 53.1. 若标记的额定电压在53.1所示电压范围内，53.1中的可用电压的最高值。

If an appliance employs a nonmetallic element (such as carbon), the power input is to be determined for an unused element. 若电器用了非金属组件(如碳)，由不可用组件来决定电源的输入。

32 Leakage Current Tests 32. 漏电流测试

32.1 The leakage current of a cord-connected appliance rated for a nominal 120-V or 240-V supply when tested in accordance with 32.3 – 32.8 shall not be more than: 32.1 一个名义电压为120-V或240-V的线连接电器当按32.3和32.8的要求来测试时，其漏电流不大于:

a) 0.5 mA for an ungrounded (2-wire) appliance, 非接地(2线)电器0.5mA.

b) 0.5 mA for a grounded (3-wire) appliance that is easily carried or conveyed by hand, and 易于用手搬运的接地(3线)电

器0.5mA.并且,

c) 0.75 mA for a grounded (3-wire) permanently connected appliance, or a cord connected appliance that is intended to be fastened in place or located in a dedicated space and employing a standard attachment plug rated 20 A or less. 永久性连接电器0.75mA, 或线连接电器固定在某处或专用场合, 并且标准插头的额定值为20A或更少。

Exception: The leakage current of an appliance incorporating a sheath type heating element, when measured in accordance with 32.3 – 32.8, shall not exceed 2.5 mA during the first 5 minutes after reaching the leakage current limit of 0.5 mA or 0.75 mA, as applicable, and at the end of this time, the leakage current shall be not more than the 0.5 mA or 0.75 mA limit as applicable – the leakage current is to be monitored during heat-up and cool-down. 例外: 当按32.3和32.8的要求来测试时, 带壳型发热组件的电器的漏电电流在达到漏电电流极限0.5mA或0.75mA后的第一个5分钟内不得超过2.5 mA, 在这个5分钟结束时, 漏电电流不得超过0.5mA或0.75mA的极限, 在发热组件冷却或发热时, 漏电电流应被监控。

32.2 Leakage current refers to all currents, including capacity coupled currents, which may be conveyed between exposed conductive surfaces of an appliance and ground or other exposed conductive surfaces of an appliance. 32.2漏电电流指的是所有电流, 包括连接电流的能力, 可以在电器的裸露导电面和大地之间或电器的其它裸露导电面之间导通。

32.3 All exposed conductive surfaces are to be tested for leakage currents. The leakage currents from these surfaces are to be measured to the grounded supply conductor individually as well as collectively where simultaneously accessible and from one surface to another where simultaneously accessible. Parts are considered to be exposed surfaces unless guarded by an enclosure considered acceptable for protection against electric shock as defined in 6.1 – 6.16. Surfaces are considered to be simultaneously accessible when they can be readily contacted by one or both hands of a person at the same time. These measurements do not apply to terminals operating at voltages which do not present a risk of electric shock.

32.3 所有裸露导电面须进行漏电流测试, 漏电流的测量是用同时受影响的、单独的又是全体的接地电源导体来测量, 该导体从一个导电面到另一处同时受影响的导电面。零件考虑成露出表面, 除非按 6.1 及 6.16 的要求用外壳保护以防电击。被认为是同时受影响的表面是人在同一时刻易于一只手或双手接触的面。在不会发生电击的地方在测量时不用连接片。

32.4 If a conductive surface other than metal is used for the enclosure or part of the enclosure, the leakage current is to be measured using a metal foil with an area of 10 by 20 cm in contact with the surface. Where the surface is less than 10 by 20 cm, the metal foil is to be the same size as the surface. The metal foil is not to remain in place long enough to affect the temperature of the appliance. 32.4若除了金属的导电面用来作为外壳或外壳的一部分, 则漏电流的测量须用一张面积为 10X20cm的金属箔来连接表面。若表面的面积小于10X20cm, 金属箔的大小同表面的面积相等。金属箔不能长期放在某处, 以免影响电器的温度。

32.5 A heated surface of insulating material is to be investigated concerning the leakage current available from the use of metal utensils. 32.5从使用金属器具的方面来研究绝缘材料的受热表面相关漏电流。

32.6 The measurement circuit for leakage current is to be shown in Figure 32.1. The ideal measurement instrument is defined in items (a) – (d). The meter which is actually used for a measurement need only indicate the same numerical value for a particular measurement as would the ideal instrument. The meter used need not have all the attributes of the ideal instrument. 32.6漏电流的测量电路如图32.1所示。(a) (d)项是理想的测量手段。实际测量的仪器只需显示同理想值相同的部分测量数值。所用的仪器不必有理想值的所有属性。

a) The meter is to have an input impedance of 1500 ohms resistive shunted by a capacitance of 0.15 μ F. 仪器有1500 Ω 的输入阻抗并联上一个0.15F的电容。

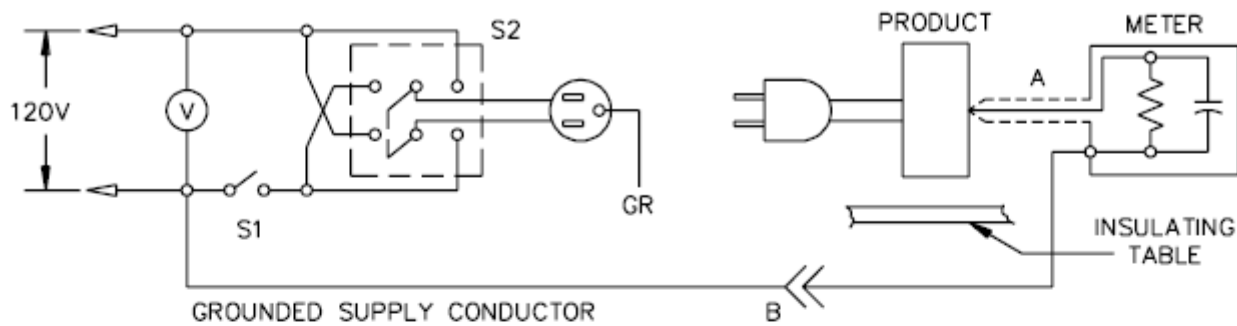
b) The meter is to indicate 1.11 times the average of the full-wave rectified composite wave-form of voltage across the resistor or current through the resistor. 仪器标明的电压或电流是通过电阻的全波整流的复合波形电压或电流的平均值的1.11倍。

c) Over a frequency range of 0 – 100 kHz, the measurement circuitry is to have a frequency response (ratio of indicated to actual value of current) that is equal to the ratio of the impedance of 1500 ohm resistor shunted by a 0.15 μ F capacitor to 1500 ohms. At an indication of 0.5 or 0.75 mA, the measurement is to have an error of not more than 5 percent at 60 Hz. 频率高于0-100KHz, 测量电路有一个频率响应(标记电流和实际电流的比值), 并且等于1500 Ω 的输入阻抗并联上一个0.15F的电容与1500 Ω 的比值。在标明0.5mA及0.75mA处, 60Hz处的测量误差不超过5%。

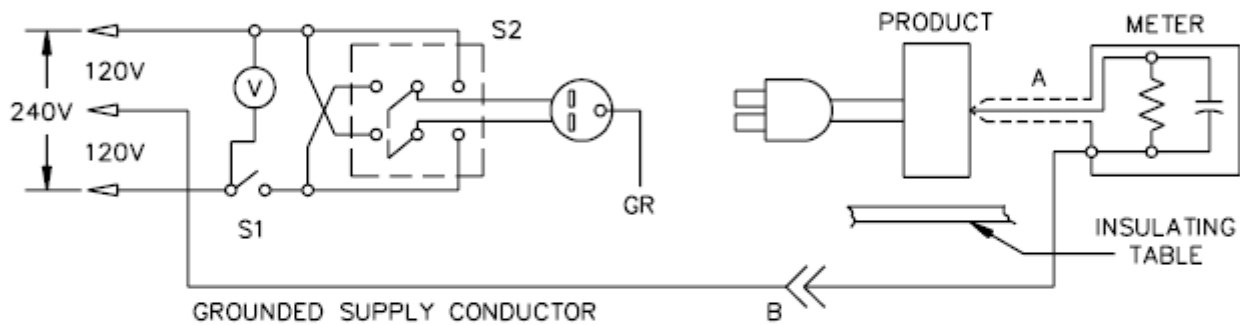
d) Unless the meter is being used to measure leakage from one part of an appliance to another, the meter is to be connected between the accessible parts and the grounded supply conductor.

除非从电器的一个零件到另一个零件之间测量漏电流, 仪器应连接在易于接近的零件和接地导体之间。

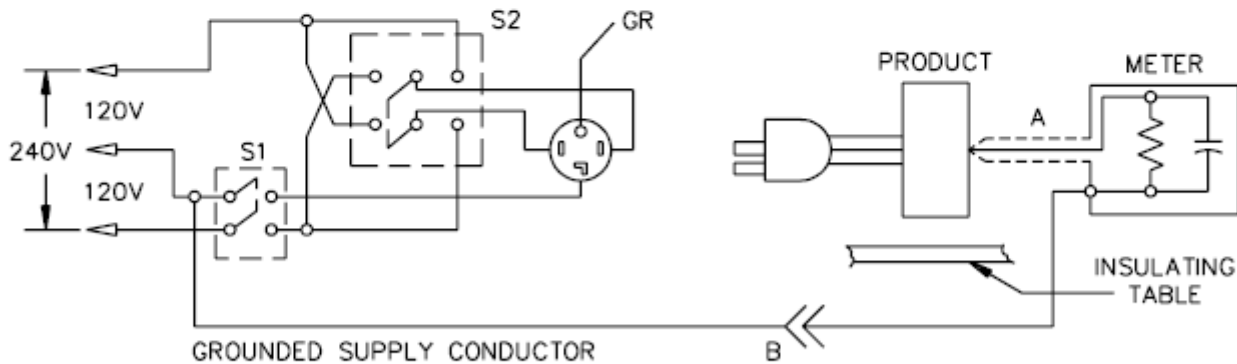
Figure 32.1
Leakage-current measurement circuit



Appliance intended for connection to a 120-V power supply, as illustrated above.



2-wire appliance intended for connection to a 3-wire, grounded neutral power supply, as illustrated above.



3-wire appliance intended for connection to a 3-wire, grounded neutral power supply, as illustrated above.

NOTES -

A - Probe with shielded lead.

B - Separated and used as clip when measuring currents from one part of appliance to another.

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32.7 A sample of the appliance is to be tested for leakage current starting with the "as received" condition with all its switches and thermostats closed, but its grounding conductor, if any, open at the attachment plug. The "as received" condition being without prior energization, except as may occur as part of the production line testing. The supply voltages is to be 120- to 240V. The test sequence, with reference to the measuring circuit (Figure 32.1), is to be as follows: 32.7用来测试漏电流的电器样板，在其上有“作为标准”的字样并且电器上的开关及温度控制器处于关闭。但对接地导体，如果有的话，应对插头开路。除了生产线上检测之外，“作为标准”的样板不会预先加电压。电源电压是120V—240V，测度的次序，参照测试电路（图32.1），并作如下说明：

a) With switch S1 open, the appliance is to be connected to the measuring circuit. Leakage current is to be measured using both positions of switch S2. 开关S1打开，电器接上测试电路，开关S2的两个位置便可测出漏电流。

- b) Switch S1 is then to be closed, energizing the appliance, and within a period of 5 seconds, the leakage current is to be measured using both positions of switch S2, and with the appliance operated at the maximum heat setting of controls. 开关S1接通, 给电器加电压, 在5S之内, 用开关S2的两个位置测出漏电电流。并且电器工作在最大的加热设置之下。
- c) Leakage current is to be monitored until thermal stabilization under the maximum heat condition. Both positions of switch S2 are to be used. The equivalent of thermal stabilization is considered to be obtained as in the normal temperature test. If any thermostat does not cycle at the maximum heat setting, it is to be adjusted until it does cycle before the final measurements at thermal stabilization are taken. Measurements are to be made with the thermostat, if any, open and closed. Upon evidence of stabilizing readings, monitoring periods may be increased. 监控漏电流直到最大的加热状况下热稳定。开关S2的两个位置将被用到, 在正常温度测试时, 将得到等价热稳定状态。若任一温度控制器在最大的加热状态时不循环, 在出现热稳定的最后一次测试之前, 须调节温度控制器直到它工作循环。测量时有温度控制器, 若有的话, 须开和关。在有明显的稳定的读数情况下, 可以增加监控期。
- d) If the appliance employs a single pole switch, monitoring of leakage current is to continue until the leakage current stabilizes or decreases after the appliance is turned off. 若电器有单极开关, 电流的监控应持续到漏电流稳定或电器关闭后减弱。

32.8 Normally a sample will be carried through the complete leakage current test program as covered by 32.7, without interruption for other tests. With the concurrence of those concerned, the leakage current tests may be interrupted for the purpose of conducting other nondestructive tests.

32.8 一般的, 按照 32.7 的测试过程来做一般样板的完全漏电流测试。不为其它测试所打断。对同时进行的相关测试, 漏电流测试可被其它非破坏性测试打断。

33 Operational Tests 33 操作性能测试

33.1 Operation of an appliance while simulating anticipated conditions of use shall not increase the risk of fire, electric shock, or injury to persons. 33.1 当模仿预期的使用条件时, 操作时不能增加火灾、电击及人身伤害的危险。

33.2 In conducting the test, the conditions mentioned in the manufacturer's instructions, including cleaning, maintenance, and the use of accessories may be included or omitted so as to simulate reasonably foreseeable actions of the user.

33.2 在引入测试的过程中, 生产者的使用说明中提及的条件包括了清洁、维护及为了模仿用户显然的可预期的行为, 而包括的或省略的附件的使用。

34 Calibration of Probe-Type Temperature Controls Tests 34 针式温度控制器刻度测试

34.1 Ovens 34.1 烤箱

34.1.1 The maximum temperature in the center of an oven shall not be higher than 300°C (572°F) either before or after a probe-type control is dropped five times from a height of 3 ft (0.91 m) onto a hardwood surface.

34.1.1 烤箱中心的最高温度不得超过300EC (572EF), 或者在指针式温度控制器从3英尺(0.91m)的高度跌落在硬木板表面上5次之前或之后, 烤箱中心的最高温度也不得超过300EC (572EF)。

34.2 Other appliances 34.2 其它电器

34.2.1 The maximum temperature at the center of the underside of the appliance cooking surface shall not be higher than 300°C (572°F) either before or after a probe-type control is dropped in accordance with

34.2.2. The average of the maximum and minimum temperatures shall not be higher than 260°C (500°F) either before or after the dropping. 34.2.1 在电器蒸煮面的下边缘的中心的最高温度不得超过300EC (572EF), 或者在指针式温度控制器按34.2.2的要求。最高和最低温度的平均值在跌落之前或之后不得超过260EC (500EF)。

34.2.2 Six samples of each control are to be calibrated, and the maximum or minimum temperature in any case is to be the average of at least five temperature readings taken during the cycling of the control after a stabilized cycling pattern has been established. After the initial calibration, each control, while still heated, is to be dropped five times from a height of 3 ft (0.91 m) onto a hardwood surface, following which the control is to be recalibrated.

34.2.2 每一种控制器的6个样板要被校准, 温度控制器稳定的循环图被建立之后, 在温度控制器循环期间, 在任一容器上的最高或最低温度是至少5个温度刻度的平均值。在初始校准后, 每一个温度控制器, 当还是热的时候, 在重新校准后, 应从3英尺(0.91m)的高度跌落在硬木板表面上5次。

34.3 All appliances 34.3 全体电器

34.3.1 The normal temperature test is to be conducted: 34.3.1 正常温度测试将进行:

a) Employing the sample probe-type control that results in the highest center temperature before the drop test, and also, employing the sample probe-type control that results in the highest center temperature after the drop test, if that temperature is higher than the highest temperature obtained before the drop test, or
若指示温度高于跌落测试之前的最高温度, 则样板指针式温度控制器导致了跌落测试之前的最高中心温度, 也导致了跌落测试之后的最高中心温度。

b) Employing the sample probe-type control that results in the highest center temperature after the drop test, if that temperature is higher than the highest temperature obtained before the drop test. However, if the highest center temperature is obtained before the drop test, a sample probe-type control that is calibrated to provide the highest center temperature is to be employed.

若指示温度高于跌落测试之前的最高温度，则样板指针式温度控制器导致了跌落测试之后的最高中心温度，但是，若在跌落测试之前得到最高中心温度，应用校准了的指针式温度控制器来获得最高中心温度

35 Normal Temperature Test 35正常温度测试

35.1 General 35.1一般要求

35.1.1 An appliance, when tested under the conditions described in 35.1.3 – 35.2.7, shall comply with all three of the following conditions: 35.1.1 当按照35.1.3及35.2.7所述的条件来测试电器时，应用下列三个条件：

a) The appliance shall not attain at any point a temperature that would constitute a risk of fire or damage any materials employed in the appliance.

电器在任一点的温度不会引起火灾或对电器上其它任何材料有破坏作用。

b) At any time during the test – other than as indicated in 35.1.2 and 35.1.3 – temperature rises at specific points shall not be greater than indicated in Table 35.1.

除了35.1.3及35.1.2之外，在测试过程中的任一时刻，在特殊点的温升不得高于表35.1所定的值。

c) The appliance shall comply with the requirement in 6.1 电器应符合 6.1 的要求。

表 35.1 可接受的最高温升

	材料同组元件	C	F
1	永久性连接电器有区域安装导体在接线盒或布线间内，接线盒或布线间之内的任何点的温度，除非电器按 54.12 作了标记。	35	63
2	接近于永久性连接电器或壁挂电器或橱柜下线连接电器表面的任一点，包括电器的安装平面和测试平面的指定点，和以指定间隔离开电器的外壳上。	65	117
3	除了在电器的正常工作过程中有意接触的表面之外，外露且可能无意碰到的壁挂电器或橱柜下的线连接电器表面的任一点。	f	
4	保险丝	65	117
5	作为绝缘套或电气绝缘物的纤维	65	117
6	用木材或其它复合材料作为发热电器的一个零件。	65	117
7	棉或人造丝的软电线	65 a	117 a
8	在继电器或螺线管的绕组上的 105 级绝缘系统和类似绝缘：		
	1) 热电偶方式：	65	117
	2) 电阻方式	85	153
9	A 级绝缘的 d-c 及通用电机的绕组： b		
	A) 开放式电机内：		
	1) 热电偶方式：	65	117
	2) 电阻方式	75	135
	B) 全封闭式电机：		
1) 热电偶方式：	70	126	
2) 电阻方式	80	144	
10	A 级绝缘的 a-c 电机（不含通用电机）的绕组及热电偶方式或电阻方式的振荡器绕组： b		
	a) 开放式电机内及振荡线圈上	75	135
	b) 全封闭式电机内	80	144
11	在继电器或螺线管的绕组上的 130 级绝缘系统和类似绝缘：		
	1) 热电偶方式：	85	153
	2) 电阻方式：	105	189
12	d-c 及通用电机的 B 级绝缘系统： b		
	A) 开放式电机内：		
	1) 热电偶方式：	85	153
	2) 电阻方式	95	171
	B) 全封闭式电机：		
1) 热电偶方式：	90	162	
2) 电阻方式	100	180	
13	B 级绝缘 a-c 电机（不含通用电机）的绕组的 B 级绝缘系统及热电偶方式或电阻方式的振荡器绕组： b		

	a) 开放式电机内及振荡线圈上	95	171
	b) 全封闭式电机内	100	180
14	用作电器绝缘的复合材料或材料退化后可能引发火灾、电击或人身伤害的地方: c	125	225
15	除了壁挂电器及厨柜下电器, 线连接电器支撑平面上的点	100	180
16	台式电器的检测角的接近平面上的点	100	180
17	熨斗或电器插头面	175	315
18	绝缘电线或导线	25C(77F)不小于其的温度范围: d	
19	密封化合物	e	
20	镀锡铜或裸露线束		
	直径小于 0.015 英寸(0.38mm)	125	225
	直径大于等于 0.015 英寸(0.38mm)	175	315
	在铜导体上镀镍、金或银或混合金属	225	405
21	未镀镍的铜导体或压力连接器的末端	125	225
	a. 在电器内, 电源线上编织物可能受用某种方式注入电器内的石棉的影响面温升较高		
	b. 参照 35.1.12 和 35.1.13		
	c. 研究过并发现其有特殊阻热性能的化合物, 酚类合成物限制使用		
	d. 电器内部, 电线或导线的温升可能高于指定的最大温升, 单独导体上的绝缘物上应有附加绝缘物来保护(如编织带、缠带、带子或封闭管), 这些绝缘物应适合温度及绝缘型号。		
	e. 室温为 25EC (77FC), 除了热硬化的材料, 密封化合物的最高温度是 15EC (27EF), 小于化合物的软化点温度, 这类化合物在 ASTM E28-92 “环球形器械的软化点温度测试方法” 中说明。		
	f. 最高温升不要超过表 36.1 中的要求,除非电器在温升超过 100EC (180FC) 的位置处标明了“注意 热表面”的字样, 并且字体的高度不得小于 3/32 英寸 (2.4mm), 参看 54.22.		

Table 35.1
Maximum acceptable temperature rises

	Materials and component parts	Degrees	
		C	F
1.	Any point within a terminal box or wiring compartment of a permanently connected appliance in which field-installed conductors are to be connected (including such conductors themselves) unless the appliance is marked in accordance with 54.12	35	63
2.	Any point on a surface adjacent to a permanently connected appliance or wall-mounted or under-cabinet mounted cord-connected appliance, including the surface on which the appliance is mounted, and specified points on test surfaces and enclosures at designated clearances from the appliance	65	117
3.	Any point on a surface of a wall-mounted or under-cabinet cord connected appliance exposed to casual contact except for surfaces that are intended for contact during normal operation of the appliance		f
4.	Fuses	65	117
5.	Fiber used as electrical insulation or as cord bushing	65	117
6.	Wood or other combustible material which is part of a heating appliance	65	117
7.	Cotton or rayon braiding of flexible cord	65 ^a	117 ^a
8.	Class 105 insulation systems on winding of relays or solenoids and the like:		
	Thermocouple method	65	117
	Resistance method	85	153
9.	Class A insulation systems on coil windings of d-c and universal motors ^b :		
	a) In open motors:		
	Thermocouple method	65	117
	Resistance method	75	135
	b) In totally enclosed motors:		
	Thermocouple method	70	126
	Resistance method	80	144

Table 35.1 Continued

	Materials and component parts	Degrees	
		C	F
10.	Class A insulation systems on coil windings of a-c motors (not including universal motors) and on vibrator coils – thermocouple or resistance method ^b		
	a) In open motors and on vibrator coils	75	135
	b) In totally enclosed motors	80	144
11.	Class 130 insulation systems on windings of relays, solenoids, or the like:		
	Thermocouple method ^b	85	153
	Resistance method	105	189
12.	Class B insulation systems on coil windings of d-c and universal motors ^b		
	a) In open motors:		
	Thermocouple method	85	153
	Resistance method	95	171
	b) In totally enclosed motors:		
	Thermocouple method	90	162
	Resistance method	100	180
13.	Class B insulation systems on coil winding of a-c motors (not including universal motors) and on vibrator coils – thermocouple or resistance method ^b		
	a) In open motors and on vibrator coils	95	171
	b) In totally enclosed motors	100	180
14.	Phenolic composition used as electrical insulation or where deterioration would result in a risk of fire, electric shock, or injury to persons ^c	125	225
15.	Points on surface supporting a cord-connected appliance other than wall-mounted or under-cabinet	100	180

Table 35.1 Continued

	Materials and component parts	Degrees	
		C	F
16.	Points on adjacent surfaces of test corner for counter-top appliances	100	180
17.	Flatiron or appliance plug face	175	315
18.	Insulated wire or cord	25°C (77°F) less than its temperature rating ^d	
19.	Sealing compound	e	
20.	a) Copper tinned or bare strands:		
	1. Less than 0.015 inch (0.38 mm) in diameter	125	225
	2. 0.015 inch diameter and larger	175	315
	b) Nickel, gold or silver platings, or combinations of those platings over copper conductors	225	405
21.	Termination of copper conductor and pressure terminal connector without being nickel-coated or otherwise acceptably protected	125	225

^a Inside an appliance, the braid of a heater cord may be subjected to a greater rise if the impregnated asbestos insulation is held in place by other appropriate means.

^b See 35.1.12 and 35.1.13

^c The limitation on phenolic composition does not apply to a compound which has been investigated and found to have special heat-resistant properties.

^d Inside an appliance, the temperature rise on a wire or cord may be greater than the specified maximum rise, provided that the insulation on each individual conductor is protected by supplementary insulation (such as braid, wrap, tape, or close-fitting tubing) which is appropriate for the temperature and the type of insulation involved.

^e Unless a thermosetting material, the maximum sealing compound temperature, when corrected to a 25°C (77°F) ambient temperature, is 15°C (27°F) less than the softening point of the compound as determined by the Test Method for Softening Point by Ring-and-Ball Apparatus, ASTM E28-92.

^f Maximum temperature shall not exceed the temperature specified in Table 36.1, unless appliance is marked "CAUTION – Hot Surface" and temperature rise does not exceed 100°C (180°F). Such marking shall be in letters not less than 3/32 inch (2.4mm) high, see 54.22.

35.1.2 Initial temperature transients may be in excess of the temperature limits specified in Table 35.1 and 35.1.3 if the duration and extent of the excursion do not result in risk of fire or electric shock. 35.1.2若超温持续时间及涉及的范围不至引发火灾及电击,则短暂的初始温度可以超过表35.1的限制。

35.1.3 Temperatures are to be measured during preheat modes. Temperature rises not exceeding those specified in Table 35.1 by more than 20 percent are acceptable. 35.1.3在预加热期间将测量温度,温升不超过表35.1的温升限制的20%是可接受的。

35.1.4 All values in Table 35.1 are based on an assumed ambient (room) temperature of 25°C (77°F), but a test may be conducted at any ambient temperature within the range of 10 – 40°C (50 – 104°F). However, if the operation of an automatic thermal control during the test limits the temperatures under observation, no temperature higher than 25°C (77°F) plus the specified maximum rise is acceptable. 35.1.4表35.1的所有温升值都是假定室温为25EC (77FC), 但测试时可在室温为10EC-40EC (50-104FC) 的情况下进行, 但是, 若自动热控制器在测试期间的工作限制在易于观察的温度之下, 不超过25EC (77 FC) 的温度加上最大温升是可接受的。

35.1.5 During intended operation, the temperature of the fat, oil, or grease in the drip pan or equivalent part of a grill-type broiler shall be less than the flash point of the fat.

35.1.5在正常的使用期间, 承液盘内的油、脂肪、或脂类物的温度或烤架式烧烤器的类似地方的温度不得超过油的闪点。

35.1.6 A gasket that is depended upon to prevent the entrance of water into an appliance during cleaning shall not become hard or brittle, shall not crack, and shall show no other signs of deterioration as a result of an accelerated-aging test in which the gasket is subjected to elevated temperatures. 35.1.6在清洗电器时, 用来阻止水进入电器的密封圈不能变硬、变脆, 并且在密封圈在老化测试时的温度影响下不得有变坏的现象。

35.1.7 The temperature to which the gasket is subjected during the test, as well as the duration of the test, is to be determined in accordance with the material of the gasket, the temperature to which it is subjected during operation, and other conditions of the particular application. Usually the appliance is to be operated dry and for a period of 240 hours.

35.1.7 密封圈测试温度及持续时间由密封圈的相关材料、电器工作温度及特殊电器的其它条件来决定。一般的电器在空载的情况下持续工作 240 小时。

35.1.8 Following the accelerated aging, the sample is to be immersed, tested, and examined for the entrance of water.

35.1.8老化测试之后, 样板被浸水、测试检验水的进口。

35.1.9 Temperatures are to be measured by thermocouples consisting of wires no larger than No. 24 AWG (0.21 mm²) and

no smaller than No. 30 AWG (0.05 mm²), except that a coil temperature may be determined by the change-of-resistance method if the coil is inaccessible for mounting thermocouples. When thermocouples are used in determining temperatures in electrical equipment, it is standard practice to employ thermocouples consisting of No. 30 AWG iron and constant wire and a potentiometer-type instrument, and such equipment is to be used whenever referee temperature measurements by thermocouples are necessary. The thermocouple wire is to conform with the requirements specified in the Initial Calibration Tolerances for Thermocouples table in Temperature-Measurement Thermocouples, ANSI/ISA MC96.1-1982. The thermocouples and related instruments are to be accurate and calibrated in accordance with good laboratory practice.

35.1.9 revised January 22, 2001

35.1.9用热电偶来测温度，热电偶由不大于24AWG (0.21mm²) 且不小于30AWG (0.05mm²) 的线构成，除了在线圈不易用来装配热电偶，线圈温度可以由电阻改变的方法来决定。当电气设备中用热电偶来决定温度时，标准的惯例是采用由30#AWG铁、连续线及电位计式的器械构成热电偶，无论何时用热电偶来决定温度，用该装置都是必要的。热电偶的线应同特别热电偶的要求一致，特别热电偶的要求在ANSI MC96.1 982中“热电偶温度测量”中的热电偶的误差范围表中列出。热电偶及相关器械将是正确的及被校准的，这同一个好的实验室的习惯是相关的。

35.1.10 For tests that are to be continued until constant temperatures are attained, thermal equilibrium is to be considered to exist only if three successive readings indicate no change when taken at the conclusion of each of three consecutive equal intervals of time, the duration of each interval being whichever of the following is longer: 35.1.10测试将进行直到获得恒定的温度，仅在三个连续相等时间间隔中的每一个间隔结束末，三个连续刻度表明了温度没改变，可以认为热平衡已存在。以下列时间作为每一个间隔的持续时间比较长的：

a) 5 minutes, or 5分钟，或者，

b) 10 percent of the total test time elapsed previous to the start of the first interval. 前次耗用的总的测试时间的10%到第一次间隔的开始。

35.1.11 A thermocouple junction and adjacent thermocouple lead wire are to be securely held in good thermal contact with the surface of the material whose temperature is being measured. In most cases, good thermal contact will result from securely taping or cementing the thermocouple in place but, if a metal surface is involved, brazing or soldering the thermocouple to the metal may be necessary.

35.1.11热电偶的交叉处及接近热电偶的导线应被牢固的固定在被测试材料表面上并保持良好的热接触，在多数情况下，良好的热接触由在热电偶上攻丝或粘接热电偶的方法获得，若金属表面是不易测量的，在金属表面上焊接或进行铜焊是必要的。

35.1.12 Usually, the temperature of a coil or winding is to be measured by means of thermocouples mounted on the outside of the coil wrap. If the coil is inaccessible for mounting thermocouples (for example, a coil immersed in sealing compound) or if the coil wrap includes thermal insulation, or more than 1/32 inch (0.8 mm) of cotton, paper, rayon, or similar insulation, the change-of-resistance method is to be used. For the thermocouple-measured temperature of a coil of an alternating-current motor (other than a universal motor) the thermocouple is to be mounted on the integrally applied insulation of the conductor.

35.1.12一般的，绕组的温度测量可以用装在绕组外面的热电偶来完成，若绕组上不易装热电偶（例如，绕组浸入封闭的化合物中），或者有超过1/32英寸（0.8mm）的棉、纸、人造丝或类似绝缘物，就可用调电阻的方法来测试。对于交流电机（通用电机除外）的绕组的热电偶测量温度，热电偶需装在完全绝缘的导体上。

35.1.13 At a point on the surface of a coil where the temperature is affected by an external source of heat, the temperature rise measured by means of a thermocouple may be higher by the following amount than the maximum indicated in Table 35.1 provided that the temperature rise measured by the change-of-resistance method does not exceed the values indicated in Table 35.1.

35.1.13在绕组面的一个点上，其温度受外部热源影响，用热电偶的方法测得的温升因下列值的影响可能会高于表35.1中用改变电阻的方法测得的温升最大值，改变电阻的方法测得的温升不会超过表35.1的值。

Item in Table 35.1	Additional thermocouple rise	
Item 8	15°C	27°F
Part A of Item 10	5	9
Part A of Item 12	20	36
Part A of Item 13	10	18

表 35.1 中项目	附加热电偶温升	
项目 8	15EC	27EF
项目 10 的 A 部分	5	9
项目 12 的 A 部分	20	36
项目 13 的 A 部分	10	18

If the coil wrap is not caused to exceed its temperature limitation by radiation from an external source, the temperature of the coil may be measured by means of a thermocouple on the integral insulation of the coil conductors.若绕组不会由外部热源的辐射而引起超温，绕组的温度可由热电偶测量，热电偶装在有完整绝缘物的导体上的。

35.1.14 To determine whether an appliance complies with the requirements in 35.1.1, the appliance is to be operated continuously until constant temperatures have been reached. The test voltage is to be the highest of the following: 为了确定一个电器是否符合35.1.1节中所提到的要求,该电器需要不间断的通电使用直到达到一个稳定的温度。测试电压须是下面所提到的最高电压:

a) The marked voltage rating, or 电器上所标识的电压额度, 或者是

b) The highest voltage of the applicable range of voltages specified in 53.1 if the marked voltage is within one of the voltage ranges indicated in 53.1. 如果所标识的电压额度在53.1节中所提出的某一电压域值之内, 就取这一域值的最高电压值。

35.1.15 Unless a particular voltage or other test condition is specified in 35.2.1.1 – 35.2.7.1, the test voltage specified in 35.1.14 is to be increased, if necessary, to cause the wattage input to the appliance to be equal to the wattage rating marked on the appliance. 除非35.2.1.1和35.7.1节有指出一个特定的电压或其它测试条件, 否则35.1.14节中所提及的测试电压须得增加。如果有必要, 要使得输入电压的瓦特数和电器上所标识的瓦特数额度相等。

35.1.16 If an appliance employs a motor in addition to a heating element, the voltage applied to an integrally connected motor is to be the test voltage as specified in 35.1.14. A motor supplied from a separate circuit is to be connected to a test voltage derived from its marked rated voltage in accordance with 35.1.14. 如果该电器在加热元件之外还使用了一个电动机, 则按照35.1.14中的要求以完全连接的发动机所适用的电压为测试电压。通过单独电路供电的电动机的测试电压则应根据35.1.14节的要求从它的标识电压值中得出。

35.1.17 In conducting a test to determine whether an appliance complies with the temperature requirements, it is to be mounted or supported as in service and tested under conditions approximating those of intended operation, except as otherwise noted. Temperatures are to be observed on nearby surfaces, on the supporting surface, at points of support, on attachment plugs, and at other points as may be necessary, including building wiring which may be located adjacent to or behind a permanently installed appliance. 在进行测试以确定该电器是否符合温度要求时, 需要使它保持使用状态并在和预期使用条件相似的条件进行测试,除非还要求有别的条件。所观测的温度包括电器表面、支柱表面、支柱尖端、附件插头以及其它需要观测的端点, 包括可能会被装在长期使用的电器的附近或后面的电器配线。

35.1.18 A counter-type appliance is to be tested in a test corner with the appliance located 4 inches (100 mm) away from the side and rear walls of the test corner. The 4 inch (100 mm) spacing is to be measured from the outer-most extremity of the appliance. The test corner is to consist of dull black-painted fir plywood not less than 3/8 inch (9.5 mm) thick, having such width and height that the walls extend no less than 2 ft (0.61 m) beyond the physical limits of the appliance. The vertical walls are to meet at a right angle.

将要测试的相应型号的电器放在试验角里, 并使电器离试验角的侧面和背面都为4英寸(100mm)。4英寸(100mm)的距离以该电器最突出的外端为基准。试验角由被漆成纯黑色的杉木夹板所制, 其厚度不少于3/8英寸(9.5mm), 测试角的边壁的宽度和高度至少要超过电器物理边界的2英尺(0.61m)。垂直的边壁要以直角相交。

Exception No. 1: Front- or side-loaded appliances (such as a toaster-oven, broiler and convection oven) and other appliances (such as a table stove, food warmer and food tray), which by virtue of their size, usual loading and unloading procedures, or intended usage are not likely to be moved from a counter resting location prior or during use, are to be located with the back of the appliance placed directly against one wall of the corner, and with 4 inches (100 mm) maintained from the side of the appliance to the other corner wall. 例外 No.1: 从正面安装或从侧面安装的电器(如面包烤箱、烤(肉)机和对流烤箱)以及其它电器 (如桌式烤炉、食物加热器及食物托盘), 安装方式由它们的大小决定并且这些电器, 通常是装载了或未装载程序的或者是预期的用途使得它们不大可能在使用前或使用时被搬离固定安置处的。这些电器在测试时必须背面正对着测试角的一个边壁并且使其侧面保持离测试角的另一边壁4英寸(4mm)远放置。

Exception No. 2: An appliance intended for outdoor use only need not be tested in a test corner.

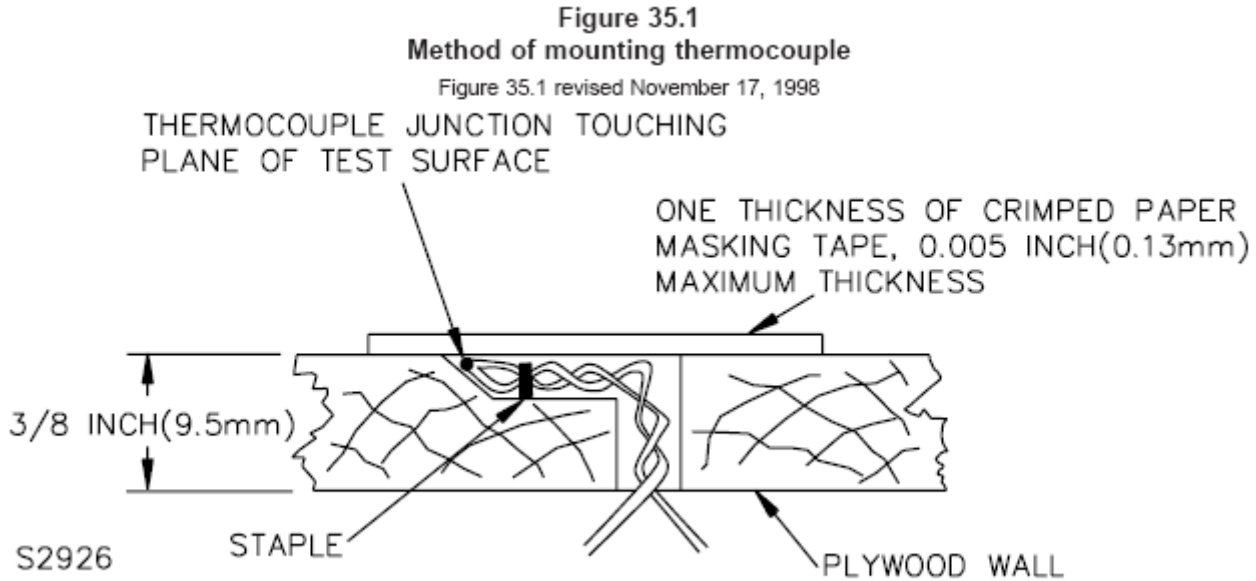
例外No.2: 预期户外用的电器不必在测试角内测试。

35.1.19 A cord-connected wall or under-cabinet mounted appliance is to be mounted on one wall or cabinet bottom of a test corner consisting of dull black-painted fir plywood not less than 3/8 inch (9.5 mm) thick, having such a width and height that the walls extend not less than 2 ft (0.61 m) beyond the physical limits of the appliance. The vertical walls are to meet at a right angle. Unless marked as described in 54.13, the appliance is to be placed as close to the corner wall as the construction will permit, and an under-cabinet appliance is to be in contact with the rear wall while a wall-mounted appliance is to be in contact with either the cabinet bottom or the counter, whichever results in the highest temperature. The cabinet bottom is to be 12 inches (300 mm) deep, located 16 inches (400 mm) above the counter top. The surface beneath the unit is to be softwood covered with a double layer of white tissue paper.

用绳挂在墙上的电器应被安置在测试角的墙上进行测试; 放在橱柜里的电器, 应被放在橱柜底部进行测试。测试角应包括漆成全黑的, 不低于3/8英寸(9.5毫米)厚的杉木夹板, 测试墙的宽度和高度应延伸至超出电器物理界限至少2英尺(0.61米)的地方。垂直墙应以直角相交。除非标注有如54.13所述之内容, 否则应把电器放在结构允许的, 离墙角最近的地方。放在橱柜里的电器应与后墙接触, 而安装在墙上的电器则要么与橱柜底部接触, 要么与桌面接触, 怎样使之达到最高温度就怎样做。橱柜底部应有12英寸(300毫米)厚, 位于桌面上方16英寸(400毫米)处。器具下方应是垫有两层白色薄纸的软木表面。

35.1.20 Thermocouples are to be mounted on wood surfaces using the method illustrated in Figure 35.1 or the equivalent. Starting in the corner, thermocouples are to be placed every 3 inches (76 mm) on each surface (Figure 35.2) so that a minimum area of 18 inches by 18 inches (460 mm by 460 mm) is covered by the thermocouples on each surface.

热电偶须得用图35.1所示或相当的方法安置在木质表面上。从边角开始将热电偶每隔3英寸放在每个表面上(如图35.2),因此每个表面上被热电偶所覆盖的最小表面积为长18英寸、宽18英寸(460mm×460mm)。



35.1.21 An appliance intended to be permanently connected to the power supply is to be supported in the intended manner on black-painted wood not less than 3/8 inch (9.5 mm) thick and is to be located in a corner (vertical walls meeting at a right angle) formed by two black-painted, vertical sheets of 3/8 inch (9.5 mm) plywood having such width and height that they extend not less than 2 ft (0.61 m) beyond the physical limits of the appliance. The appliance is to be located as close to both walls of the corner as its construction will permit, and it is to be so placed relative to the walls that maximum heating of the walls will occur, except that it may be spaced away from the walls to preclude the wall temperatures from rising more than 65°C (117°F) if the appliance is marked as described in 54.13. For wall-mounted or under-cabinet mounted appliances intended to be permanently connected to the power supply, mounting is to be as outlined in 35.1.19 above.

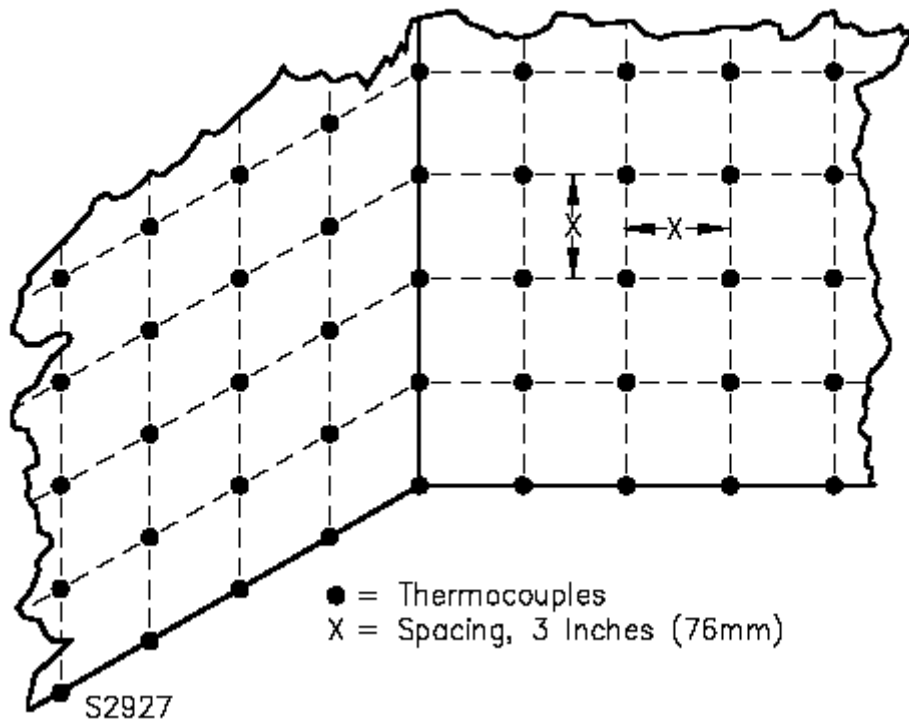
一种将来使用时会长时间的处于通电状态的电器需要按将来使用的方式安置在厚度不小于3/8英寸(9.5mm)的漆成纯黑的木板上,并且须得放在一个试验角(垂直边壁以直角相交)里,试验角由两片笔直的被漆成黑色的杉木夹板所制,其厚度不少于3/8英寸(9.5mm),测试角的边壁的宽度和高度至少要超过电器物理边界的2英尺(0.61m)。电器需在其结构允许的条件下尽可能地放得离试验角近些,正因为如此试验角的边壁会被最大限度的加热,除非它可能会因为要避免边壁过热以致温度会升至65CE(117EF)以上而被挪开。对于要安在墙上的和安在壁橱里的电器来说,它们会被长期通电使用,其安装需按照前面35.1.19节所述的去。

35.1.22 Unless otherwise indicated in the description of the test for a specific appliance, a cord-connected appliance is to be supported on two layers of white tissue paper on a softwood surface. 35.1.22除非是带有关于测试的其它描述的特定电器,否则一个有线连接的电器须得安置在铺有两张白色薄纸的软木质表面上。

35.1.23 An automatic temperature-regulating or -limiting control or other protective device is to be shunted out of the circuit, unless the control has been shown, in accordance with Table 48.1 to be rugged, reliable, and unlikely to be defeated by the user. The control is considered to be unlikely to be defeated if tools are required to gain access to the control, or a positive stop is incorporated in the control. 35.1.23电器上的自动调节温度装置或温限控制装置及其它保护装置需要避开电路,除非控制装置看得见,并且根据表48.1要求其表面粗糙、安全可靠并不可能被使用者损坏。控制装置的不可损坏性需将必要时可能会需要用工具来修理控制装置的情况考虑在内以及要保证关闭钮与控制装置一体情况下的不可损坏性。

35.1.24 During the normal temperature test, a temperature-limiting device provided for overheating protection shall not operate. 35.1.24在一般的温度测试中,为防止电器过热而设的温限控制保护装置不应该被运用。

Figure 35.2
Thermocouple spacings



35.1.25 If the construction of an appliance is such that cooking or heating of a liquid is a determining factor in the temperature attained (such as in a slow cooker or food warmer), the intended duty of an appliance is to be taken into consideration. Normal operating conditions cannot be obtained however, if certain types of appliances are operated continuously and in a dry condition. Accordingly, in determining whether or not an appliance complies with the requirements in 35.1.1, actual service conditions or an approximation thereof are to be employed. Unless otherwise specifically indicated below: 35. 1. 25如果电器的构造设计使得煮东西或加热液体是所要达到的温度的决定因素(如慢饭煲或食物加热器), 那么这个电器的预期用途就需要被考虑到。然而如果特定类型的电器被持续的在干燥的条件下使用, 标准的操作条件就不可能达到。相应地, 在确定电器是否符合35. 1. 1节中的要求时, 须得将运用于实际的使用条件或它的近似条件。除非有如下的特别指示:

- If the appliance is controlled by an adjustable thermostat, the thermostat is to be set to give maximum temperatures, and if the circuit is controlled by an adjustable temperature control device, the device is to be set to give maximum temperatures, and
- If the appliance is controlled by a nonadjustable thermostat, it is to be allowed to operate at whatever temperature the thermostat permits. In each case, operation is to be continued until temperatures stabilized.

如果该电路有不可调的温度控制装置控制, 该装置可以在温控器允许的任何温度条件下起作用。 在以上任一情况下, 温控装置都会一直起作用直到温度稳定下来。

35.1.26 An appliance that may be either open or closed in actual service is to be tested both open and closed in actual service to determine which condition produces the higher operating temperature. In the case of an open-front tabletop broiler or the like where some cooking operation may be performed without a tray in the broiler compartment, temperatures are to be measured on the horizontal supporting surface in front of the open face of the appliance.

35. 1. 26在实际使用中可能是开启状态也可能是关闭状态的电器测试时就需要测其在开和关的条件下的使用情况以确定哪种情况能产生更高的温度。对于前开门式放在桌面上的烤箱或类似的电器来说在烹饪食物的烘烤分隔间里没有托盘, 那么就测量在该电器开口处前面的水平支撑平面的温度。

35.1.27 External thermal insulation, such as woven glass fiber or mineral wool, is to be removed before a heating appliance is installed in the test enclosure unless the material is bonded or permanently attached to the appliance. Rubber or other material similarly subjected to deterioration is to be removed from feet or other supports if the removal of the material is likely to result in higher temperatures being attained on the appliance.

35. 1. 27外部的隔热物, 如烤炉的玻璃光纤或矿物毛织物需得放在要进行加热操作的电器前面, 该电器要装在试验角里, 除非那些隔热物与之相连或者是长期附贴于其上。橡胶或其它相似的物质易于受腐蚀, 如果它们的移动会导致电器的温度更高则需要被移离电器的支脚或其它支柱。

35.1.28 Wherever cheesecloth is mentioned in connection with either a temperature test or an abnormal test, the cloth is to be bleached cheese-cloth, running 14 – 15 yd²/lb (approximately 28 – 30 m²/kg), and having what is known to the trade as a "count of 32 × 28" – that is, for any inch square, 32 threads in one direction and 28 threads in the other direction (for any centimeter square 13 threads in one direction and 11 threads in the other direction). 35. 1. 28只要在温度测试和反常测试时

提到粗棉布,这种布都是漂白的粗棉布,约14—15yd²/1b(28—30平方米/千克),布的经纬密度为“32×28”,也即是对每一英寸的布来说一个方向有32根线另一方向28根线(对每一平方厘米上则是一个方向13根线另一方向11根)。

35.1.29 An appliance that is required to be preheated as part of the temperature or abnormal tests is to be preheated as follows: 35.1.29在有些温度和反常测试中需要预热的电器应按以下方法来预热:

a) In accordance with the manufacturer's instructions marked in a readily visible location on the appliance, or

a) 根据在电器上易被看到的地方上标识的产品说明,或者

b) If not marked, the appliance is to be operated for 15 minutes at the temperature setting specified for the cooking portion of the test. b) 如果没有标识的话,就在电器的烹煮部分所设的温度下使电器运转15分钟。

Exception: An appliance is not to be preheated if the manufacturer's instructions specifically state that preheating of the appliance is not necessary. See 56.8. 例外: 如果产品说明指出电器无须预热则不必将之预热。见56.8节。

35.1.30 Whenever hamburger is mentioned in connection with either a temperature or an abnormal test, each hamburger is to consist of a mixture of 75 percent lean beef and 25 percent suet by weight ground together twice in succession. A hamburger is to be 3/4 inch (19 mm) thick and have a 4 inch (102 mm) diameter before cooking. The initial hamburger temperature is to be 4.4°C (40°F). A hamburger is considered well done when a central internal temperature of 74°C (165°F) is attained on a centrally located hamburger.

35.1.30只要在温度测试和反常测试时提到汉堡包,它都是由重量比重为75%的瘦牛肉和25%的板油混合而成。每个汉堡包在烹制之前厚3/4英寸(19mm)直径4英寸(102mm)。最初汉堡包的温度是4.4EC(40EF)。当放在电器中央的汉堡包内部中心温度达到74EC(165EF)时可认为它已经做好了。

35.2 Specific test condition 特殊测试条件

35.2.1 General 总则

35.2.1.1 For most of the common types of appliances, standardized conditions for the temperature tests are given in

35.2.2.1 – 35.2.8.1. 35.2.1.1 revised November 17, 1998

35.2.1.1对大多数的普通型电器来说,35.2.2.1节—35.2.8.1节给出了标准的温度测试条件。

35.2.1.2 In the case of a multi-functional appliance, such as a toaster oven/broiler, the appropriate tests for each function are to be conducted as outlined in 35.2.2.1 – 35.2.7.1.

35.2.1.2对多功能电器来说,如面包烤炉/箱,对于它的每项功能的相应测试条件都可参照35.2.2.1节—35.2.7.1节。

35.2.2 Electrically-equipped barbecue units and grill-type broilers

野餐用的烧烤电器和烤架式烤箱

35.2.2.1 In the case of grill-type broiler, barbecue unit, or the like that is intended to burn solid fuel, (see 44.2.4.2 and 54.8), the heat source is to be a fire of charcoal briquettes as follows:

35.2.2.1对于野餐用的烧烤电器和烤架式烤箱以及类似的电器将会用固体燃料,(见44.2.4.2节和54.8节),测试时热源须是按以下方法用木炭煤球烧的火:

a) In a circular fire box, a conical pile of fuel having a diameter 3/4 of that of the box, and a height 3/4 of that of the sides of the box, but not less than three briquettes high, or

在圆的火盆中,圆锥形的燃料堆的直径要占盆的直径的3/4,高也要达到盆的侧边高的3/4,且其高不可以小于三个煤球的高度,或者

b) In a rectangular fire box, a pyramidal pile of fuel having respective width and length 3/4 of those of the box, and a height 3/4 that of the sides of the box, but not less than three briquettes high.

在矩形火盆中,锥形的燃料堆长宽都要分别是盆的长宽的3/4,高也要达到盆的侧边高的3/4,且其高不可以小于三个煤球的高度。

35.2.3 Broilers/ovens/grills 烤箱/烤炉/烤架

35.2.3.1 A convection oven, broiler, grill or a broiler/oven is to be preheated in accordance with 35.1.29. The cooking tray or rack is to be loaded to 75 – 80 percent of its capacity with hamburgers. A total of 3 loads of hamburgers are to be cooked until well done. A 10-second interval per hamburger is to be allowed for changing loads. On an appliance that broils only on one side, a 5-second interval per hamburger is to be allowed for turning the hamburgers at the middle of each cycle. If the appliance is marked with a temperature setting for hamburgers, the specified temperature is to be used for the test.

Otherwise, the maximum temperature setting is to be used. Temperatures are to be measured continuously during each cooking cycle. A maximum of 30 seconds is to be allowed between hamburger loads for emptying a grease tray.

35.2.3.1对流烤炉、烤箱、烤架或烤箱/炉要根据35.1.29节所述来预热。放在烹煮托盘及架子上的汉堡包占其容量的75%—80%。要烹制的是有三种装料的汉堡包。每个汉堡包可以间隔10秒钟换一次装料。对于只可以单面烤制的电器,每个汉堡包可以在烤制时每隔5秒钟翻个面。如果电器上标有汉堡包的温度设置,则在测试中用指定温度。否则,用温度设置的最大值。在每次烘烤时间里都要不断的测温。在每两次装料之间最多只能让涂了油脂的托盘腾空30秒。

35.2.3.2 An oven, convection oven or a broiler/oven is to be preheated in accordance with 35.1.29 and then operated while baking potatoes. The potatoes are to occupy 75 – 80 percent of the bake tray. The temperature control setting is to be adjusted to maintain an oven chamber temperature of 204°C (400°F) or the temperature setting marked in a readily visible location on the appliance, but not less than 177°C (350°F) in any case. The potatoes are to be standard baking potatoes each weighing between 3/8 – 5/8 lb (0.85 – 1.38 kg). Temperatures are to be measured continuously during the test. The test is to be terminated when the internal center temperature of a centrally located potato is 99°C (210°F).

35.2.3.2 对流烤炉、烤箱、烤架或烤箱/炉要根据35.1.29节所述来预热然后烘焙土豆。放在烘焙托盘上的土豆占其容量的75%—80%。要将温度控制装置调到使烤炉内腔的温度保持在204EC (400EF) 或是在电器上易被看到的地方上标识的温度，但任何情况下都不可低于177EC (350EF)。土豆须为标准烘焙土豆，每个重3/8—5/8 lb (0.85—1.38kg)。试验过程中要不断的测温。当放在电器中央的土豆内部中心温度达到99EC (210EF) 时可结束测试

35.2.4 Table stoves 餐桌上的烤炉

35.2.4.1 The appliance is to be operated continuously with each heating unit covered with a shallow pan of water. The diameter of the bottom plane surface of a pan is to be equal to the outside diameter of the active part of the heating element with a plus tolerance on 1 inch (25 mm). 35.2.4.1 将每个加热单位用一浅平底锅的水盖住并使电器持续工作。平底锅的平底面直径要等于加热元件的活动部分的外层直径。该加热元件公差为1英寸 (25mm)。

35.2.5 Toaster 烤箱

35.2.5.1 A toaster, toaster oven, or toaster oven/broiler is to be operated first toasting a total of six slices of bread with one slice of bread per cycle and then toasting a total of 24 slices of bread while loaded to its maximum capacity. Between the two sets, a sufficient cool-down period is to be allowed for the appliance to return to its ambient temperature. For each of the two tests, the bread is to be toasted to a good brown color as rapidly as the toaster will operate. The bread is to be commercially available white bread weighing approximately 25 grams. A good brown color is to be determined by use of the toast color chart in Appendix B.

35.2.5.1 首先要用面包机、面包烤炉、或面包烤炉/箱每次烤一片面包，共烘制6片，然后再使每次烘的片数为电器的最大容量共烘24片。在这两套烘制程序之间，要有足够的时间使电器冷却到环境温度。在这两个测试中面包都要在面包机允许的情况下尽快烘成漂亮的咖啡色。测试用的面包是从外面买来的重约25克的白面包。面包是否显出漂亮的咖啡色可用附录B中的面包比色卡来确定。

35.2.6 Warming trays and food warmers 保温托盘和食物保温机

35.2.6.1 Warming trays (receive only vessels on the heated surface) and food warmers (receive food directly on the heated surface) are to be operated continuously with the thermostat set at the maximum-heat position and with the surface empty. If the thermostat cycles, the test is to be repeated with a vessel containing water (minimum depth: 1 inch or 25 mm) placed on the heating surface over the thermostat. The vessel will normally consist of a 6-inch-diameter (152-mm) shallow pan.

35.2.6.1 保温托盘(加热表面上只能放装食物的器皿)和食物保温机(加热表面上可直接放食物)在测试中都要腾空加热表面,并在温控调到最高时持续工作。如果温控是循环工作的,就要在温控之上的加热表面上放一个装有水(最小深度:1英寸或25mm)的容器,并重复测试。一般来说,容器都是6英寸(152mm)直径的浅平底锅。

35.2.7 Rotisseries 电热轮转自动烤肉机

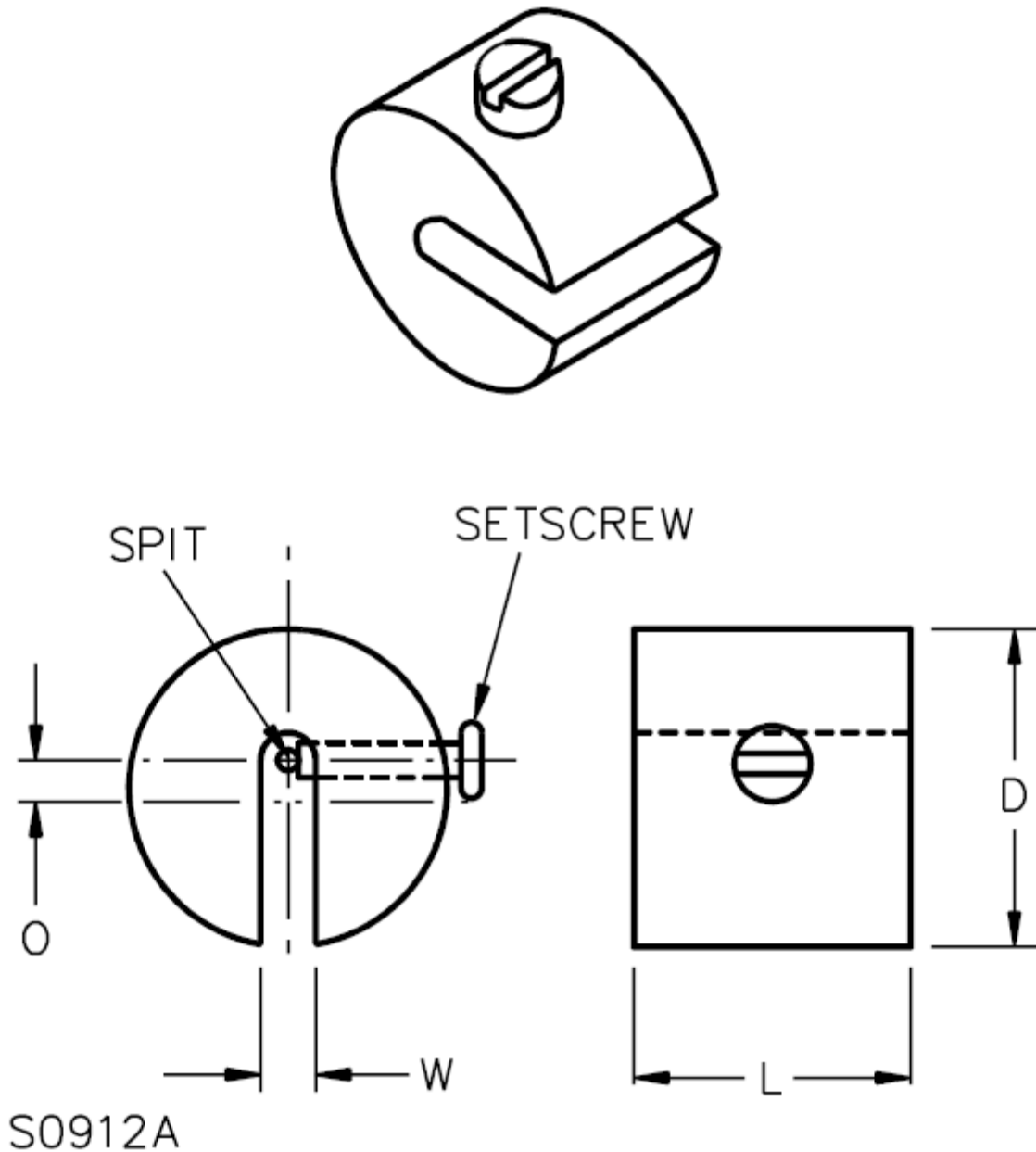
35.2.7.1 A rotisserie is to be operated continuously until thermal equilibrium is obtained. During the test, the manufacturer's maximum recommended load, or if not specified, a 10 lb (4.5 kg) steel weight as shown in Figure 35.3 is to be employed. In the case of multiple spits, each spit is to be loaded with the manufacturer's maximum recommended load or a total of 10 lb (4.5 kg) distributed equally among the spits. 35.2.7.1 电热轮转自动烤肉机要持续使用直至达到热平衡。在测试中,要使其负上产品所推荐的最大负荷值的重物,如果没有推荐值的就如图 35.3 所示使其负上一块重 10lb (4.5kg)的钢。对于有多种烤肉叉的情况,每个烤肉叉上都要负上产品所推荐的最大负荷值的重物或者是将总重 10 lb(4.5kg)的重物平均分配在所有烤肉叉上。

35.2.8 Automatic bread makers 面包机

35.2.8.1 An automatic bread maker is to be operated for two complete cycles making the maximum size loaf of white bread in accordance with the manufacturers instructions. The second cycle is to begin immediately after completion of the first cycle. 35.2.8.1 added November 17, 1998

Figure 35.3
Load for rotisseries

Figure 35.3 revised November 17, 1998



Dimension	Inches	mm
O	7/32	5.6
W	3/4	19.0
L	3-3/8 ^a	85.7 ^a
D	4	102.0

^a Length approximate, length varied to obtain weight specified.

36 Top-Front Edge Temperatures – Convection Ovens Tests 36 前盖边缘的温度 对流烤炉测试

36.1 When tested under the conditions described in 36.5 – 36.10, the temperatures of an external top-front edge of a convection oven with a top-mounted manual control panel shall not exceed the maximum acceptable temperatures specified in Table 36.1 在如36.5节—36.10节中所述的条件下测试时, 盖子上安有手动控制面板的对流烤炉的前盖边缘的温度不可以超过表36.1所允许的最高值。

Exception: An oven that is marked in accordance with 54.21 need not comply with this requirement.

例外：烤炉的标识和54.21节所述一致时可以不此要求。

36.2 With reference to 36.1, a top-front edge is considered to be a locus of points on the top-front horizontal plane, located 7/64-inch (2.8 mm) to the rear of and parallel to the front vertical enclosure panel. A top-mounted manual control panel is considered to be one that is mounted 6-inches (152 mm) or more horizontally behind the top-front edge of the appliance. 关于36.1节, 前盖边缘被认为是前盖水平表面上所有连接点的集中所在, 它平行于内隅的前垂直面板且离之7/64英寸。盖上的手动控制面板需安在电器的前盖边缘后离之水平距不小于6英寸(152 mm)处。

36.3 All values for temperatures specified in Table 36.1 are based on a 25°C (77°F) ambient (air) temperature within the range of 20 – 30°C (68 – 86°F).

表36.1的所有温度值都是以25EC(77EF)的环境(空气)温度为条件的, 其中25EC(77EF)是在20—30EC(68—86EF)范围内的。

Table 36.1
Maximum temperature limits

	°C	°F
(1) Bare or painted metal	67	152
(2) Porcelain enamel	71	160
(3) Glass	78	172
(4) Plastic ^a	83	182

^a Includes plastic with a metal plating not more than 0.005 inch (0.127 mm) thick; and metal with a plastic or vinyl covering not less than 0.005 inch (0.127 mm) thick.

表 36.1 最高温限

	EC	EF
(1) 裸露或上过漆的金属	67	152
(2) 搪瓷	71	160
(3) 玻璃	78	172
(4) 塑胶 ^a	83	182

^a 塑胶和金属电镀厚度不超过 0.005 英寸(0.127mm); 并且有塑料或乙烯基物质覆盖的金属的厚度不小于 0.005 英寸(0.127mm)。

36.4 For the test described in 36.5 – 36.10, if the ambient temperature is other than 25°C (77°F), the temperatures measured are to be corrected to this ambient – that is, the temperatures are to be decreased or increased, as appropriate, 1 degree for each degree the ambient is greater than or less than 25°C (77°F).

对于36.5—36.10节所讲到的测试, 如果环境温度不是25EC(77EF), 需将所测温度值调整为在这个温度下的数值, 即是在环境温度高于(或低于)25EC(77EF)1度时将所测温度适当的降低(或升高)1度。

36.5 A convection oven is to be completely assembled for the test – all handles, knobs, guards, and the like are to be mounted in place. A shelf, a rack, or the like may be removed if it interferes with the placement of the thermocouple used to measure oven temperature.

对流烤炉在测试时需完全地安装好: 所有的手柄、旋钮、防护装置以及类似的配件都要装到位。搁板、架子等类似的东西如果会妨碍测温用的电偶的放置则可移走。

36.6 With reference to the requirement in 36.1, corrugated, dimpled, and similarly finished edges are to be tested. Edges are to be clean when temperatures are measured.

根据36.1节的要求, 波纹形的、有凹纹的以及类似的边缘需要被测。测量温度时需将边缘弄干净。

36.7 Temperatures are to be measured immediately prior to or following oven thermostat cycling – opening of thermostat – after convection oven has been operating for 1 hour with the temperature control maintaining an average oven temperature of 204 ±3°C (400 ±5°F) and constant surface temperatures have been attained.

测量温度需在烤炉自动控温装置就要开始工作之前和刚刚结束工作之时测。在对流烤炉工作一小时后开启自动控温装置并使之保持烤炉内的均温为204EC(400EF)以及使表面温度达到恒温。

36.8 Convection-oven temperatures are to be measured with a single unshielded thermocouple located in the geometric center of the oven cavity.

对流烤炉的温度要用放在烤炉腔内几何中心的单独的一个电偶来测。

36.9 Top-front temperatures are to be measured using the probe illustrated in Figure 36.1. For each measurement, the probe is to be at the ambient temperature, and then is to be preheated for 15 seconds to approximately the temperature of the edge under consideration. Preheating consists of applying the probe with a 5 lbf (22 N) force for 15 seconds to a similarly heated edge located approximately 1 inch (25 mm) from the edge to be tested. The probe is then to be vertically applied to the edge under consideration with a 5 lbf for 10 seconds. The probe is to be moved from the preheat position to the edge as quickly as possible, and is to be applied so that the probe disc is tangent to the front edge with the axis of the probe perpendicular to the horizontal enclosure panel of the convection oven.

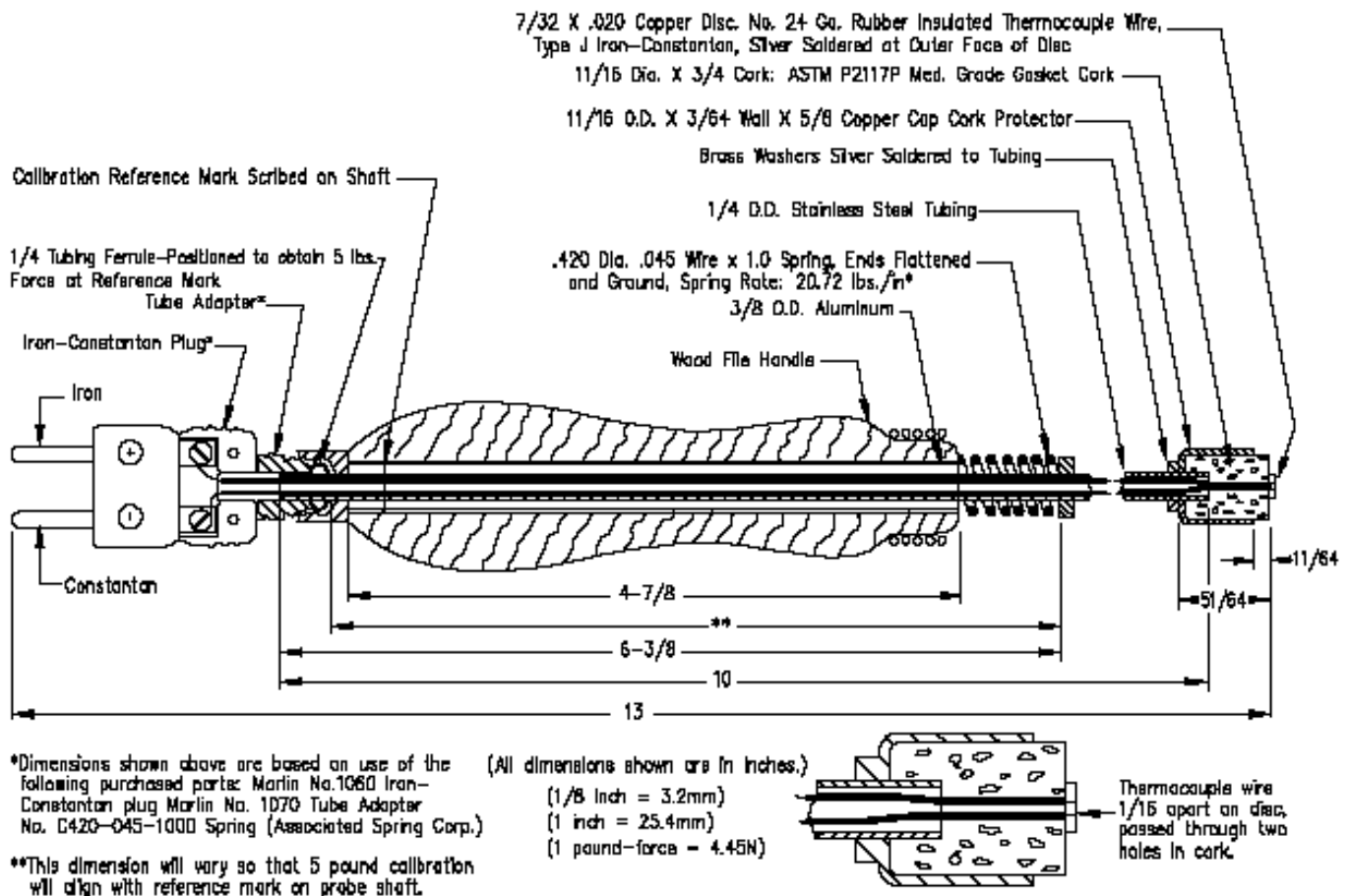
前盖温度的测量要用图36.1所示的探测针来测。每次测温时探测针的温度都是环境温度，然后预热15秒到其温度接近要测的前盖边缘的温度。预热时要用5 lbf (22N)的力将探测针压在离测试边缘约1英寸(25mm)处，因为其加热程度与测试边缘差不多。然后将探测针用5 lbf的力垂直的压在需测边缘上10秒钟。探测针从预热处移往边缘时要尽可能的快，并使探测针圆盘与前边缘相接触，同时使探针的中心轴垂直于对流烤炉内腔的水平表面。

36.10 A top-front edge temperature is considered to be constant when three successful readings taken at not less than 5-minute intervals indicate no change.

如果方法正确且每隔5分钟以上测一次温度，测三次读数都一样的话，就可以认为前盖边缘的温度是恒定的。

Figure 36.1
Temperature measuring and accessibility probe

Figure 36.1 revised August 8, 1996



37 Tests for Insulation Resistance and Leakage Current as a Result of Moisture

测试绝缘电阻及由潮湿导致的漏电情况

37.1 An appliance employing insulation material likely to be affected adversely by moisture under condition of intended use shall be conditioned for 48 hours in moist air having a relative humidity of 88 ± 2 percent at a temperature of $32.0 \pm 0.2^\circ\text{C}$ ($89.6 \pm 3.6^\circ\text{F}$). After the conditioning: 电器所用的绝缘材料在使用时可能遇到的潮湿情况下可能会有反作用。因此要将电器放在创造的潮湿环境里48个小时。这种环境内的潮湿空气相对湿度为88%温度为32.0EC (89.6EF)。在创造这种环境之后:

a) A cord-connected appliance rated for a nominal 120- or 240-V supply shall comply with the requirement in 32.1 in a repeat leakage current test, except that the test shall be discontinued when leakage current stabilizes.

名义上的120或240伏的电力供应对于有线连接的电器来说就能符合32.1节中的要求从而进行重复的漏电测试,重复的测试在泄漏电流已稳定时就不必继续了。

b) An appliance other than mentioned in (a) shall have an insulation resistance of not less than 50,000 ohms between live parts and interconnected dead metal parts.

除开(a)中所提及的有线连接的电器以外,别的电器在活动部分和内部连接的固定金属部分之间的绝缘电阻都应不小于50,000欧姆。

37.2 The insulation resistance is to be measured: 绝缘电阻应这样被测量:

- By a magneto megohmmeter that has an open circuit output of 500 V, 通过开放电流输出为500伏的磁发电机兆欧计,
- By a voltmeter having an internal resistance of at least 30,000 ohms and using a 250-V d-c circuit, or通过内部电阻至少

30, 000欧及使用250伏的直流电的伏特计或

c) By equivalent equipment. 通过有相同作用的设备。

37.3 If glass-fiber sleeving is used as electrical insulation in a rope heater assembly, a previously untested appliance shall be operated for 96 continuous hours under the condition resulting in the maximum temperature on the sleeving, as determined from the normal temperature test, following that it shall be conditioned for 48 hours in moist air having a relative humidity of 88 ± 2 percent at a temperature of $32 \pm 2.0^\circ\text{C}$ ($89.6 \pm 3.6^\circ\text{F}$). After the conditioning, the appliance shall comply with the requirement in 32.1 in a repeat leakage test, except that the test shall be discontinued when the leakage current stabilizes. Following the leakage current test, the appliance shall also comply with the dielectric voltage-withstand test requirement in 38.1.

如果用玻璃纤维套作为绳状加热器的绝缘材料,那么这些未测试过的电器就因此要将电器放在创造的潮湿环境里持续96个小时以使绝缘套达到最高温。这种环境内的潮湿空气相对湿度为88%温度为32.0EC(89.6EF)。在创造这种环境之后,电器应符合32.1节中重复漏电测试的要求,而当漏电电流稳定时漏电测试可停止。漏电测试之后,电器还应符合38.1节中绝缘体承受能力测试的要求。

37.4 An appliance that by construction and intended use can be expected to be used outdoors (for example, an outdoor electric grill, motor-operated spit, and the like) when tested after being conditioned as indicated in 37.5.

依照说明书或设计用途得知电器将用于户外(如户外电烤架、电动烤肉叉及类似的电器),则应在以下条件下进行户外操作测试:

a) If a cord connected appliance rated for a nominal 120- or 240-V supply, shall comply with the requirement in 32.1 in a repeat leakage current test, except that the test shall be discontinued when leakage current stabilizes.

电源供应在名义上是120V或240V的有线连接电器在重复的漏电测试中就应符合32.1节的要求,且测试在漏电电流稳定后停止。

b) If an appliance other than those mentioned in (a), shall have an insulation resistance of not less than 50,000 ohms.

中未提到的电器应有不少于50,000欧的绝缘电阻。

c) Shall also be capable of withstanding without breakdown for a period of 1 minute the application of a 60 Hz essentially sinusoidal potential between live parts and interconnected dead metal parts. The dielectric test potential shall be 1000 V. 还应能承受频率为60赫兹的、本质是窦状隙的电压1分钟且不破裂,此电压存在于活动部分和内部连接的固定金属部分之间。绝缘体测试的电压应为1000伏。

37.5 One sample of an appliance that can be expected to be used outdoors is to be mounted as in actual service (the appliance is to be mounted in any shield or other shelter that the manufacturer provides for use with the appliance). While so mounted and without being energized, the appliance is to be subjected for 4 hours to a water spray applied at an angle 45 degrees from the vertical and adjusted to be equivalent to a beating rain. After this conditioning and while still mounted, the appliance is to be tested first for leakage current or for insulation resistance and then dielectric withstand as indicated in 37.4. 户外用的电器试验样本在测试中要和实际使用时一样被安装好(如电器要安在为产品提供的保护物或遮盖物之内)。如是安装好电器后,不接电源对其喷水4小时,喷水角度约为与垂直方向成45度且适当调整使之与敲打的两点效果相当。创造好这样的条件后,首先对产品进行漏电测试或绝缘电阻测试以及按37.4节进行绝缘体承受力测试。

37.6 In the case of a warming tray, a solution of 1/2 g of calcium sulphate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) per liter of distilled water, in sufficient quantity to cover the appliance surface to a depth of 5 mm, is to be sponged over the serving surface. The sponging operation consists of using the volume of water described above in a simulated cleaning operation with the water being allowed to drain from the edges. At the conclusion of this test, the leakage current or insulation-resistance and the dielectric-withstand tests described in 37.4 are to be conducted. The leakage current is not to exceed 0.5 mA. 对保温托盘,要将密度为每升蒸馏水1/2克硫酸钙($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$)的溶液用海绵吸取后拭擦其表面,该溶液的量至少要足够覆盖电器表面5mm深。用以上描述的溶液擦拭的过程中要使水能从边缘流走。这项测试结束后,要对产品进行漏电测试或绝缘电阻测试以及按37.4节进行绝缘体承受力测试。泄漏电流不可超过0.5毫安。

37.7 In the case of food warmers, the volume of hard water solution described in 37.6 is to be poured on the surface of the appliance and allowed to remain for a period of 1 hour. Without removing the solution, the tests described in 37.4 are to be conducted. 对食物保温器,将大量37.6节中所描述的溶液倾泄在电器表面上并使之保留1小时。不擦除溶液,进行37.4节的测试。

37.8 Except as noted in 37.9, an appliance (such as a food warmer) that is likely to be immersed in water for cleaning shall show a leakage current of not more than 0.5 mA and shall be capable of withstanding a potential of 1000 V when tested in accordance with 37.9 – 37.12. The test shall not result in the entrance of water into the interior of the appliance such that the water might come into contact with uninsulated live parts. 除了37.9节指出的电器外,可能浸入水中清洗的电器的泄漏电流均不可超过0.5毫安且在依据37.9—37.12节测试时须能够经受1000伏的电压。

37.9 An appliance marked to indicate that it is not intended for immersion need not comply with the requirements in 37.8. See 54.18. 当电器标识指出其不会被浸泡,则它不必符合37.8节的要求。见54.18节。

37.10 Three samples of the appliance are to be heated as described in 37.12 and after disconnection from the supply circuit, are then to be immersed immediately in water at a temperature of $10 - 25^\circ\text{C}$ ($50 - 77^\circ\text{F}$). The immersion is to be complete unless the appliance is marked to indicate that it is intended for partial immersion only (see 54.18), in which case each appliance is to be immersed only to the extent indicated. After 1 hour of immersion, the samples are to be removed from the

water, dried with a soft cloth to remove all surface moisture, including surface moisture from terminal pins, and the samples are to be tested for leakage current as indicated in 37.4. 三个试验样本要在切断电流之后如37.12节所述的方式被加热，然后立刻将之浸入温度为 10—25EC (50—77EF) 的水中。除非电器标识指出其只能部分浸泡否则应将其全部浸泡。部分浸泡时，电器只能浸泡到标识指出的界限处。浸泡1小时之后，从水中取出样本后用软布擦去表面上包括末端钉子上的水并且要按37.4节所述进行测试。

37.11 The entire procedure of immersion and leakage current measurement is to be repeated four times, immediately following which each sample is to be subjected to a 1000-V dielectric voltage-withstand test as described in 38.1. The three samples are to be used for aging tests, and are required to comply with the requirements in 35.1.7 – 35.1.9. If there is an air cavity having electrical components, the three samples are to be disassembled and the internal parts visually examined for the presence of water (37.8). See Table 37.1.

浸泡和漏电测试的整个程序要重复4遍，且要紧跟着每个电器样本做完38.1节所述的1000伏绝缘体电压承受力测试之后。这三个试验样本要进行老化测试，它们要符合35.1.7—35.1.9节的要求。如果电器内有装有电子部件的空气腔，则三个样本都需被拆卸以观察内部零件的进水情况 (37.8节)。见表37.1。

Table 37.1
Immersion tests^a

All appliances likely to be immersed			
	Sample No. 1	Sample No. 2	Sample No. 3
First 5 cycles	Conditioning for Tests Dry initially and throughout conditioning Immerse 1 hour Dry with cloth Leakage-current test		
After 5th cycle	High-potential test Operate 240 hours Cool to room temperature Reheat as for normal-temperature test Immerse for 1 hour Leakage-current test High-potential test		

^a If there is an air cavity housing electrical components in the appliance, disassemble and examine for water.

表 37.1 浸泡测试^a

所有可能浸泡的电器			
	样本 No. 1	样本 No. 2	样本 No. 3
前 5 个周期	测试条件的创造 使最初电器为干燥的 浸泡一小时 用布拭干 漏电测试		
5 个周期后	高电压测试 运转 240 小时 冷却至室温 再加热进行一般温度测试 浸泡 1 小时 漏电测试 高电压测试		

^a如果电器内有装有电子部件的空气腔，拆卸之以检察进水情况。

37.12 The appliance is to be heated for the immersion test by operating it dry, with the thermostat at the highest setting, until the thermostat automatically switches to the low or off position. 37.12 要进行浸泡测试的电器加热时是使之在干燥时运转，并将温控设到最大值，直到温控自动降低或回到关闭档。

37.13 A food-warming tray or food warmer provided with a seal is to be energized and maintained at its maximum temperature for 2-1/2 hours, after that it is to be cooled to ambient temperature and re-energized. Operation in this manner is to continue until 1000 hours of on time has accrued. The test described in 37.6 or 37.7 is then to be repeated.

37.13 有密封装置的食物保温托盘或食物保温器须通电并保持其最高温2个半小时，然后冷却之至室温后再通电。重复这样的操作直到总时间为1000小时。然后才重复做37.6节或37.7的测试。

38 Dielectric Voltage-Withstand Test 绝缘体电压承受力测试

38.1 An appliance shall be capable of withstanding for 1 minute without an indication of unacceptable performance, the application of a potential applied between live parts and accessible metal parts. The appliance is to be at its maximum normal operating temperature. The test potential (rms) shall be 1000 V.

电器在合理操作中应能承受测试中加在电器的活动部分和易接触的金属部分间的电压1分钟。电器应保持在一般操作温度的最大值。测试电压(rms)应为1000伏。

38.2 With respect to 38.1, an appliance having an enclosure constructed partly or totally of insulating material is to have accessible surfaces of the material closely wrapped in metal foil. The test potential is to be applied between live parts and the foil.

关于38.1节,对于内腔部分地或全部地由绝缘材料构成的电器,这些绝缘材料的易接触表面是由金属箔紧密包裹的。这时测试电压就加在活动部分和金属箔之间。

38.3 With respect to 38.1 and 38.2, a part is considered to be accessible if it can be contacted by the probe illustrated in Figure 6.2 when applied in all possible articulated positions, with and without the parts referenced in 6.16 in place.

关于38.1和38.2节,如果绝缘材料的某部分能被表6.2所示的探测针所触到就可认为其为易接触的,而不论6.16节所提到的部分是否在合适的位置。

38.4 To determine whether an appliance complies with the requirements in 38.1, the test potential is to be applied as described in 38.6, by means of test equipment having the characteristics outlined in 38.5.

为确定电器是否符合38.1节的要求,施加测试电压时要如38.6节所述的方式,并通过有着38.5节所描述的特征的测设备来进行测试。

38.5 The test equipment for conducting the dielectric voltage-withstand test is to have the following features and characteristics:

用来进行绝缘体电压承受力测试的测试设备要有以下特征:

a) A means for indicating the test voltage that is being applied to the appliance under test. This may be accomplished by sensing the voltage at the test leads or by an equivalent means.

一种能指示测试中加在电器上的测试电压的方法。这可以通过测试导线或其它能达到相同作用的方法去感应电压值来做到。

b) An output voltage that: 输出电压:

1) Has a sinusoidal waveform, 其波形为正弦曲线,

2) Has a frequency that is within the range of 40 – 70 Hz, and 其频率在40—70赫兹之间, 并且

3) Has a peak value of the waveform that is not less than 1.3 and not more than 1.5 times the root-mean-square value. 该波形的波峰值介于root-mean-square值的1.3至1.5倍之间。

c) A sensitivity of the test requirement that is such that when a resistor of 120,000 ohms is connected across the output, the test equipment does not indicate unacceptable performance for any output voltage less than the specified test voltage, and the test equipment does indicate unacceptable performance for any output voltage equal to or greater than the specified test value. The resistance of the calibrating resistor is to be adjusted as close to 120,000 ohms as instrument accuracy can provide, but never more than 120,000 ohms.

测试要求的灵敏度体现在当120,000的电阻器接在输出电流的对面时,测试设备在小于指定测试电压值的任何输出电压下都指示为可接受程序,而如果输出电压等于或大于指定测试电压值,测试设备会指示其为不可接受程序。

Exception No. 1: The sensitivity of the test equipment may be reduced, a lower value of calibrating resistance may be used, when testing an appliance intended to be permanently wired.

例外No. 1:如果测试的电器是长期接线的,测试设备的灵敏度可以降低,可接一个数值低些的校准电阻。

Exception No. 2: The sensitivity of the test equipment may be increased, a higher value of calibrating resistance may be used, if agreeable to those concerned.

例外No. 2:如果符合所考虑的条件的话,测试设备的灵敏度可以提高,可接一个数值高些的校准电阻。

38.6 The method of applying the test voltage to the appliance is to be such that there are not any transient voltages that result in the instantaneous voltage applied to the appliance exceeding 105 percent of the peak value of the specified test voltage. The applied potential is to be increased from zero at a substantially uniform rate so as to arrive at the specified test potential in approximately 5 seconds, and then is to be maintained at the test potential for one minute. Manual control of the rate of rise may be used.

在电器上施加测试电压的方法必须不会产生过高的瞬时电压从而导致加在电器上的瞬间电压超过指定测试电压最高限的105%。施加的电压要从零开始以固定速率在约5秒的时间里逐渐增加直至达到指定测试电压值,然后保持这个值1分钟。可以用手动控制增加速率的方法。

38.7 In the case of an appliance in which the electric wiring passes through a hinged member or spring, the cover is to be raised and lowered three or more times while the test potential is being applied in order to determine whether an indication of unacceptable performance may result from damaged insulation on the conductors while the cover is in other than the closed position. 对于其电子配线穿过有绞链部分或弹簧的电器,当施加测试电压以确定导线上损坏的绝缘体是否导致不可接受

程序且其保护外层不在封闭处时,其保护层要增加和减少3倍或更多。

39 Mechanical Endurance Test 机械耐力测试

39.1 If the intended operation of an appliance causes movement of the internal wiring, the appliance shall be capable of operating for 6000 cycles in the intended manner while connected to a supply circuit of the voltage indicated in 39.2. If the cleaning of an appliance, such as a range element on a table stove, causes movement of the internal wiring, the movable part shall be capable of operating successfully for 1000 cycles unenergized in the intended manner indicated in 39.2. There shall be no electrical or mechanical malfunction and, after the test, the appliance shall comply with the requirements for dielectric voltage-withstand in 38.1 – 38.7.

如果电器的操作会导致内部配线的移动,该电器就该按将来实际中的使用方法重复操作6000次,而且与电器相连的电源电压符合39.2节所述。如果清洁电器时,比如清洁桌式烤炉上的并列元件时,会导致内部配线的移动,则应按39.2节所述按将来实际使用的方法将之在不通电情况下反复操作1000次。测试中不应出现电子或机械故障,通过测试的电器应符合38.1节—38.7节中的绝缘体电压承受力的要求。

39.2 In a test to determine whether an appliance complies with the requirements in 39.1, any mechanical arrangement may be employed to operate the movable member at a rate of approximately 12 cycles per minute, but, in any case, the cover or movable member is to be so operated that it will reach the actual limits of travel in both directions, each cycle.

在确定电器是否符合39.1节的要求时,任何机械的排列都可用来操作可移动的部分,操作的速率是每分钟约12次。但是,任何情况下,对保护外层和可移动部分的操作每次都要能够使被操作对象的移动范围最大直至达到相反两个方向的极限位置。

40 Broken Element Test 破损元件测试

40.1 An open-wire heating element in an appliance shall be so constructed and supported so that if the wiring is cut at any point there shall be no reduction of electrical spacings below the limits specified in this standard. Except for an automatic toaster, after being cut, no portion of the heating element wire shall be accessible to contact by the articulate probe through any opening in the enclosure.

电器中的一些外线加热元件的构造和支撑方式需使得当配线在任一点被切断时不会使电的间距不会减至标准的指定极限以下。但自动面包机除外,在配线切断后,其加热元件上的配线不能被通过内腔任一通路连接的探测针触到。

40.2 To determine compliance with 40.1: 为确定是否符合40.1节:

- a) The appliance is first to have been operated until fully heated as in the Power Input or Temperature Tests, and 在进行输入电流测试或温度测试时,首先要使电器持续运作直到被完全加热,并且
- b) After cutting the heating element, the appliance is to be rotated 360 degrees in the direction most likely to cause contact between the heating element and accessible parts. 在切断加热元件后,电器要被旋转360度从而尽可能地使加热元件和易接近的部分接触。

40A Push-Back Relief Test

40A added November 17, 1998

40A.1 To determine compliance with 10.2.2.3, a product shall be tested in accordance with 40A.2 without occurrence of any of the following conditions:

- a) Subjecting the supply cord or lead to mechanical damage;
- b) Exposing the supply cord or lead to a temperature higher than that for which it is rated;
- c) Reducing spacings (such as to a metal strain-relief clamp) below the minimum required values; or
- d) Damaging internal connections or components.

40A.2 The supply cord or lead is to be held 1 inch (25.4 mm) from the point where the cord or lead emerges from the product and is then to be pushed back into the product. The cord or lead is to be pushed back into the product in 1 inch (25.4 mm) increments until the cord buckles or the force to push the cord into the product exceeds 6 pounds-force (26.7 N). The supply cord or lead within the product is to be manipulated to determine compliance with 10.2.2.3.

41 Overflow Test 溢出测试

41.1 General 总则

41.1.1 If an appliance incorporates a reservoir or liquid-storage chamber that is likely to be over-filled in intended service, liquid overflowing from the reservoir or chamber shall not wet uninsulated live parts or film-coated wires, and shall not wet electrical insulation that is likely to be adversely affected by the liquid used in the reservoir or chamber.

41.1.1 如果电器与蓄水池或液体储蓄室连为一体,则蓄水池或液体储蓄室有可能会在使用时装水过多,而从中溢出的液体必须不能弄湿未绝缘的活动部分或薄膜包裹的电线,也不能弄湿在溢出的液体作用下可能产生反作用的电绝缘体

41.1.2 To determine whether an appliance complies with the requirement in 41.1.1, it is to be tested as follows: water is to be used for the test, and is to be poured into the reservoir through an orifice 3/8 inch (9.5 mm) in diameter. The reservoir is to be filled to the level recommended by the manufacturer if such level is plainly marked; otherwise, the reservoir is to be filled to maximum capacity. Additional water, equal to 50 percent of the volume just mentioned (but not more than 1 pint), is then to be poured into the reservoir. The appliance is considered to involve a risk of electric shock if the current measured through a 500 ohm resistor between an accessible part and ground is more than 5 mA. Revised 41.1.2 effective November 28, 2003

41.1.2 为确定电器是否符合41.1.1节的要求,必须按如下方式进行测试:测试中的液体用的是水,并且水是通过直径为3/8英寸(9.5mm)的孔向水池注入的。如果水池上明确标有产品的推荐水位线就将水注到此线处为止;否则按水池的最大容量注水。然后再往水池中注入额外的水,水量等于刚才所提到的注水量的50%(但是不超过1品脱)。通常判断从水池中溢出

的液体有未弄湿未绝缘的活动部分是通过肉眼观察的，但必须以绝缘电阻测试、绝缘体电压承受力测试或这两个测试一起作补充来确认判断是正确的。

41.1.3 A cup or carafe warmer that incorporates ventilation or other openings through which liquid may enter, liquid entering the openings shall not wet uninsulated live parts or film-coated wires, and shall not wet electrical insulation that is likely to be adversely affected by the liquid entering the openings. Added 41.1.3 effective November 28, 2003

41.1.4 To determine whether a cup or carafe warmer complies with the requirement in 41.1.3, standard hard water solution consisting of 0.07oz/gal (0.5g/L) of calcium sulfate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) in distilled water, is to be poured uniformly through an orifice 3/8 inch (9.5 mm) in diameter directly onto the center of the warming plate. For a warmer intended for vessels that hold up to 17.5 oz (0.51 L), then 8 oz (0.24 L) of standard hard water solution is to be used for this test. For a warmer intended for vessels that hold more than 17.5 oz (0.51 L), then 16 oz (0.47 L) of standard hard water solution is to be used for this test. The appliance is considered to involve a risk of electric shock if the current measured through a 500 ohm resistor between an accessible part and ground is more than 5 mA. Added 41.1.4 effective November 28, 2003

41.2 Fill 补充

41.2.1 After testing as described in 41.2.2, an appliance that incorporates a removable container shall not permit uninsulated live parts, film-coated wire, or electrical insulation that may be adversely affected by liquid to become wet when used with the container removed. 41. 2. 1 在进行了如41. 1. 2节所述的测试之后, 与可移动的容器连为一体的电器应禁用未绝缘的活动部分、薄膜包裹的电线或者在使用可移动的容器时溢出的液体作用下可能产生反作用的电绝缘体

Exception: An appliance that is marked in accordance with 54.26 need not be tested.

例外： 电器上的标识与54. 26节一致时就不必进行该测试。

41.2.2 With the cooking container removed, 1 pint (0.47 l) of standard hard water solution (see 37.6) is to be poured into the appliance through a 3/8-inch (9.5-mm) diameter orifice in the locations likely to cause wetting of live parts and wiring. Determination of whether uninsulated live parts have become wet as a result of the test is to be made by means of a leakage current test or dielectric voltage-withstand test, or both, with the appliance de-energized. The appliance is then to be disassembled and examined for the presence of water on metal parts in the electrical component spaces that directly support electrical parts, the failure of which could result in a risk of fire or electric shock.

41. 2. 2在容器移动时, 通过直径为3/8英寸 (9. 5mm) 的孔 (此孔位于易弄湿活动部分和导线的地方) 向容器内注入1品脱 (0. 47升) 标准溶液 (见37. 6节)。在未通电时用绝缘电阻测试、绝缘体电压承受力测试或这两个测试一起来确定溶液有未弄湿未绝缘的活动部分。然后将电器拆卸开以检查直接放置电子部件的空间内的金属零件上是否有水, 应注意的是如果这一步操作不当的话, 会导致起火或电击的危险。

42 Metal Enclosure Impact Tests 金属内腔冲击测试

42.1 A metal enclosure part shall comply with the tests outlined in 42.2 – 42.5. For polymeric enclosure parts, see the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C.

金属内腔部分须符合42. 2—42. 5节所述的测试。对于聚合体的内腔来说, 参照UL标准746C《在电子设备中使用聚合体材料的评定标准》。

42.2 A metal enclosure part shall withstand the ball impact, with the appliance restrained, as described in 42.3 without occurrence of any one of the following conditions:

对于有限的电器来说, 按照42. 3节所述如果不出现下列情况之一的話, 金属内腔部分应该能承受球的冲击:

- Making live parts accessible to contact with the articulate probe, see 6.13 and 6.14. 使活动部分易于与有关节的探测针接触, 见6. 13和6. 14。
- Producing any other condition that results in damage of the enclosure so as to adversely affect the function of any safety or constructional feature, such as thermostats, overload protective devices or strain relief. 存在别的情况使得内腔受损以致影响了安全防护功能及其结构特征从而导致反作用, 比如对温度控制装置来说, 负荷了过多的保护装置或是压力突然减轻时。
- Producing other conditions so that the appliance does not comply with the dielectric voltage-withstand requirements in Dielectric Voltage-Withstand Test, Section 38 after being subjected to the impact. 存在别的情况使得电器不符合绝缘体电压承受力测试中的绝缘体电压承受力要求, Section 38 在遭受冲击之后。

42.3 Each of three samples of the appliance is to be subjected to one impact. This impact is to be imparted by dropping or swinging a 2-inch (50.8-mm) diameter steel sphere, weighing 1.18 lb (0.535 kg) from a height that will produce an impact of 1.5 ft-lbf (203 N·m). The sample is to be rigidly supported and the impact is to be made perpendicular to the most vulnerable spots on the appliance enclosure that are exposed to a blow during intended use. A different spot on the enclosure is to be selected for each impact. Refer to Figure 42.2 with respect to the ball drop impact test and to Figure 42.3 for the ball pendulum impact test. 三个电器样品都得分别受一次冲击。通过从能够制造1.5 ft-lbf (203 N?) 的冲击力的高度扔下或摆动钢球来制造冲击, 其中此球直径为2英寸 (50. 8mm), 重1. 18 lb (0. 535 千克)。样品应被牢牢地固定住且制造冲击时要垂直向电器内腔最脆弱的点用力, 因为电器内腔在预期使用中往往易于遭受冲击。每次冲击都要选择内腔上的不同的点。参照图42. 2中的抛球冲击试验和图42. 3中的摆球冲击试验。例外: 如果生产商挑选的话, 可用少于3个的样品来进行图42. 1所示的试验 (要求每一系列都进行一次冲击)。完成了图42. 1的任一程序后则全部的工作都可接受。

Exception: If the manufacturer elects, fewer than three samples may be used for the test in accordance with Figure 42.1 wherein each series consists of one impact. The overall performance is acceptable upon completion of any one of the procedures represented in Figure 42.1.

42.4 With reference to Figures 42.2 and 42.3, the "H" designation represents the vertical distance the sphere must travel to produce the desired impact. For the pendulum impact, the sphere is to contact the test sample when the string is in the vertical position. The supporting surface is to be as described in 42.5. The backing surface for the pendulum impact is to consist of 3/4-inch (18-mm) plywood over a rigid surface of concrete or an equivalent nonresilient backing surface may be used. 关于图42.2和42.3，符号“H”代表为了使球产生想要的而必须要通过的垂直高度。对于摆动产生的冲击，当绳子处于垂直位置时球要接触样品。支撑表面须得如42.5节所要求的那样。摆动冲击试验中的支撑表面要包括3/4英寸（18毫米）在刚性水泥表面（或效力相当的无弹性的支撑表面）及其上的夹木板。

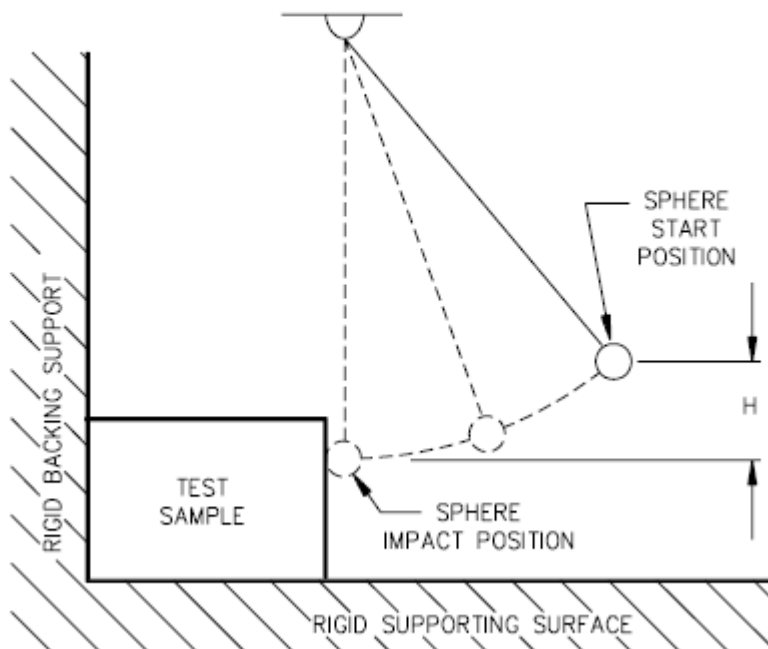
Figure 42.1
Procedure for impact test

Figure 42.1 revised November 17, 1998

Series Number	Sample Number																	
	1	2	3	1	2	3	1	2	3	1	2	3						
1	↓	A	N	N	↓	A	N	N	↓	A	N	N	↓	A	N	N		
2	↓	A	N	N	↓	A	N	N	↓	U	↘	↙	↓	A	N	N		
3	↓	A	N	N	↓	U	↘	↙	↓	A	N	↓	U	↘	↙	↓	A	N

Arrows indicate sequence of test procedure
 A – Acceptable results from drop
 U – Unacceptable results from drop
 N – No test necessary

Figure 42.3
Ball pendulum impact test



42.5 The supporting surface mentioned in 42.4 is to consist of a layer of tongue-and-groove oak flooring mounted on two
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layers of 3/4-inch (18-mm) thick plywood. The oak flooring is to be nominally 3/4 inch by 2-1/4 inch (actual size 3/4 by 2-1/4 inch – 18 by 57 mm). The assembly is to rest on a concrete floor or an equivalent nonresilient surface.

在42.4节中所提到的支撑表面由两层夹木板及安装在其上的一层tongue-and-groove 橡木地板组成，其中夹木板厚3/4英寸(18毫米)。而橡木地板则为3/4英寸×2-1/4英寸 (18×57mm)。测试装备要放在水泥地上或相同效果的无弹性表面上。

42A Non-Metallic Enclosure-Fasteners Test 42A effective March 26, 1997 **42A 外壳非金属紧固件测试**

42A.1 An enclosure or enclosure part secured by non-metallic fasteners shall not become detached and shall remain in the secured position when tested in accordance with 42A.2 – 42A.7. An enclosure or part that requires removal to perform manufacturer's recommended user servicing, maintenance, operating adjustments, attachment of accessories, and the like, is to be disassembled and assembled 10 times before the test is conducted. The tests are to be performed on a total of six samples; three samples as-received, and three samples that have been conditioned by operating until constant temperatures are obtained in accordance with Normal Temperature Test, Section 35. The test is to be commenced within one minute after completion of the conditioning of the three samples.

由非金属紧固件固定的外壳或部分外壳，在进行42A.2–42A.7的测试后，应不会掉出来而应保持锁定位置。为了完成制造商所推荐的用户维护、操作调整、装配件等而要求取下的外壳或部分外壳，装拆10次后再做测试。用六个样品做测试，其中三个样品未做过任何测试，另三个样品工作至达到恒温，工作条件与35章之正常温度测试相同。在工作完成后1分钟内，开始测试。Exception: For polymeric enclosure not fabricated with thermoplastic materials, only the as-received samples are to be tested. 42A.1 effective March 26, 1997 例外：对由非热塑性材料制成的非金属外壳，只需用未做过任何测试的样品做测试。

42A.2 Each sample is to be subjected to push and pull forces as specified below. The forces are to be applied in any direction likely to result in non-compliance:

每个样品按如下做推力及拉力测试。力的施加方向为可能产生不符合标准要求的所有方向：

a) A push force of 11.2 lbf (50 N); and 推力为11.2 lbf (50N) ；

b) A pull force: 拉力为：

1) Of 11.2 lbf (50 N), if the shape of the part is such that the fingertips cannot easily slip off, or

如果外壳的形状使得指甲尖不易于滑脱，为11.2 lbf (50N) ；

2) 6.7 lbf (30 N), if the projection of the part which is gripped is less than 0.4 inch (10 mm) in the direction of removal.

The force is to be applied gradually at a uniform rate until the specified value is obtained. The force is then to be maintained for 10 seconds. For each of the samples tested, the point of application and direction of the force is to be different.

42A.2 effective March 26, 1997

如果外壳抓握部分在取出方向的凸出高度小于0.4" (10mm) ，为6.7 lbf (30N)

匀速地逐渐增大力的作用点及力的作用方向均不同。

42A.3 The push force is to be applied by means of a rigid probe of the dimensions shown in Figure 42A.1.

The pull force is to be applied by an acceptable means such as a wire through an opening in the enclosure that does not affect the securement means of the enclosure or enclosure part being evaluated, so that the test results are not affected.

42A.3 effective March 26, 1997 用图42A.1所示的测试指施加推力。用合适方法（如用穿过开孔处的线）施加拉力，使得不会影响被测试外壳或部分外壳的紧固装置，从而不影响测试结果。

42A.4 While the pull force specified in 42A.2(b) is being applied, the test fingernail shown in Figure 42A.2 is to be inserted in any aperture or joint with a force of 2.24 lbf (10 N). The fingernail is then to be slid sideways with a force of 2.24 lbf. The fingernail is not to be twisted or used as a lever. 42A.4 effective March 26, 1997

当施加拉力时，将图42A.2所示的测试指甲用2.24 lbf (10N) 的力插入任何孔位或接头处，然后用2.24 lbf (10N) 的力使其做侧向滑动。不要扭转测试指甲，不要将测试指甲作为杠杆使用。

42A.5 If the shape of the part is such that an axial pull is unlikely, no pull force is to be applied but the test fingernail shown in Figure 42A.2 is to be inserted in any aperture or joint with a force of 2.24 lbf (10 N) and then is to be pulled for 10 seconds by means of the loop with a force of 6.7 lbf (30 N) in the direction of removal. 42A.5 effective March 26, 1997

如果外壳的形状使得不可能受到轴向拉力，则不施加拉力，而只是将图42A.2所示的测试指甲用2.24 lbf (10N) 的力插入任何孔位或接头处，然后用一个拉环在取出方向用6.7 lbf (30N) 的力拉10秒钟。

42A.6 If the enclosure or enclosure part is likely to be subjected to a twisting force, a torque as specified below is to be applied at the same time as the pull or push force:

如果外壳或部分外壳可能受到扭力，则在施加推力或拉力的同时施加如下所述的力矩：

a) For major dimensions up to and including 2 inches (50.8 mm) – 17.7 in.-lbf (2 N•m).

对于长边尺寸小于或等于2" (50.8mm) ，为17.7 in.-lbf (2 N•m)

b) For major dimensions over 2 inches – 35.4 in.-lbf (4•m). 对长边尺寸大于2"的，为35.4 in.-lbf (4 N•m)

The torque is also to be applied when the test fingernail is pulled by means of the loop. 42A.6 effective March 26, 1997

在用拉环拉测试指甲的同时，也施加力矩。

42A.7 If the projection of the enclosure or enclosure part that is gripped is less than 0.4 inch (10 mm), the torque as specified in 42A.6 is to be reduced to 50 percent of the value. 42A.7 effective March 26, 1997 如果外壳抓握部分在取出方向的凸出高度小于0.4" (10mm) ，则施加力矩为42A.6规定值的一半。

Figure 42A.1
IEC accessibility probe with stop plate

Figure 42A.1 effective March 26, 1997

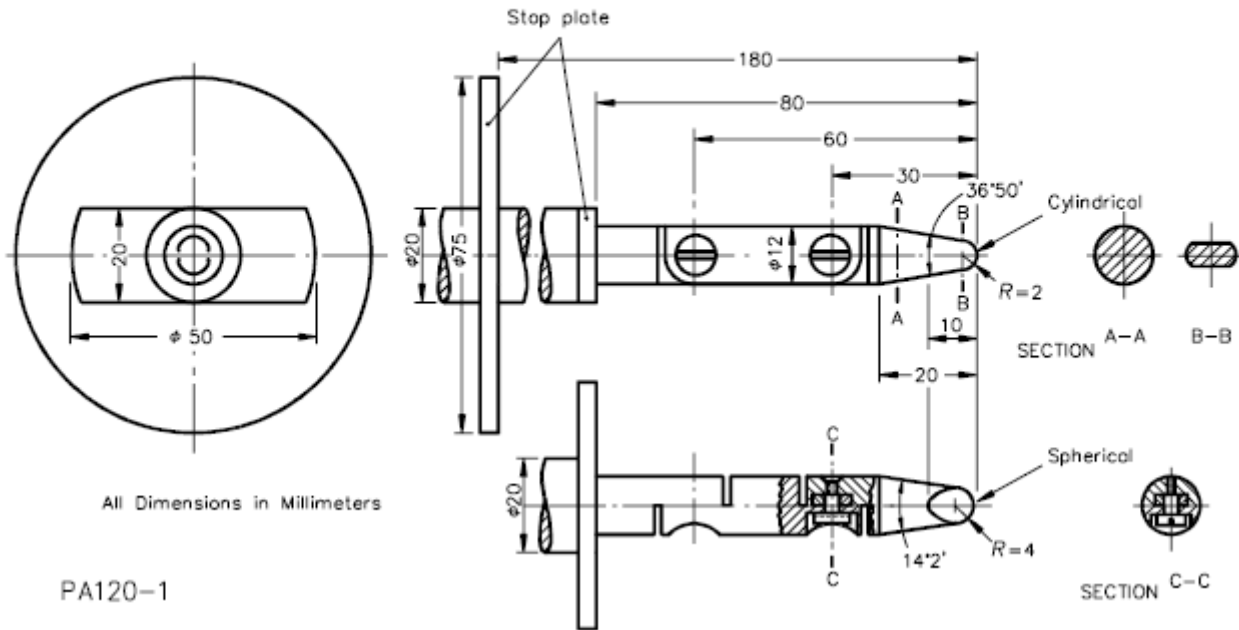
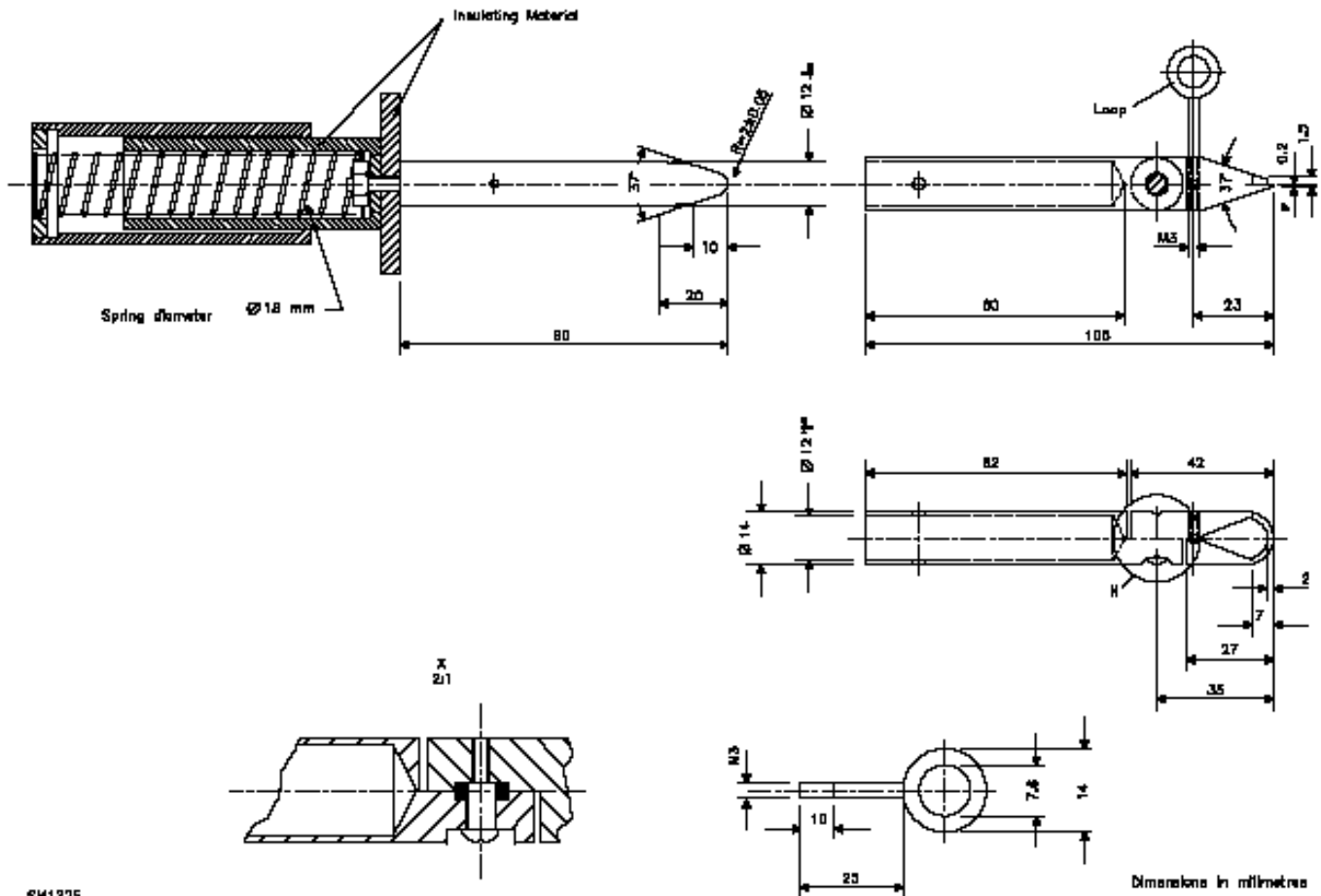


Figure 42A.2
Test fingernail

Figure 42A.2 effective March 26, 1997



SM1225

43 Thermal Degradation Test 43 熱降解測試

43.1 A thermoset material used for a part of an appliance where risk of fire, electric shock or injury to persons is involved shall be resistant to thermal degradation at the maximum temperature to which it is exposed during normal use of the

appliance. The thermal-aging characteristics of the material may be investigated by any one of the following procedures: 有可能引起火灾、电击或伤害人体的零件, 当采用热固性材料时, 热固性材料应具备正常使用情况下的最高温度的耐热降解能力。可用下述流程之一检查其老化特性:

- a) The material shall have a temperature index, based on historical data or a long-term thermal aging program, described in the Standard for Polymeric Materials – Long Term Property Evaluations, UL 746B, which indicates acceptability for use at the temperature involved or 根据历史数据, 或根据UL 746B的温度指数表明, 该材料可用于其相关工作温度, 或
- b) The product shall be operated with the input voltage adjusted so that the part in question operates at the maximum temperature obtained during the normal temperature test. The test is to be conducted with all temperature controls by-passed for a period of 1000 hours. There shall be no visible degradation of parts at the conclusion of the 1000 hours. 器具在下述条件下工作: 调节输入电压, 使正在测试的零部件产生正常温度测试过程中得到的最高温度。测试时间为1000小时。测试时, 将温度控制装置短路掉。测试完成后, 该零部件应无可见降解。

44 Abnormal Operation Test 非正常工作测试

44.1 General

44.1 總體要求

44.1.1 If the conditions of normal operation are not representative also of abnormal conditions likely to be obtained in actual service, an appliance shall not involve a risk of fire or electric shock when operated continuously under such abnormal conditions. 如果正常工作测试不能代表实际使用可能发生的非正常状况, 则当在这些非正常状况下连续工作时, 器具应不会引发火灾、电击等危险。

44.1.2 The appliance shall have its voltage selector switch set in any supply circuit voltage position being connected to any one of the rated supply circuits. The combination of selector settings and supply circuit to which the equipment is connected is to be that which develops the most severe operating conditions. 在接通任一种额定电源后, 将其电压选择开关置于任一位置。输入电源及电压选择开关的组合使其产生最不利的工作状况。

44.1.3 If provided, an externally operable input voltage selector is to be operated for 25 cycles with the appliance operating at the minimum rated voltage and for 25 cycles with the appliance at the maximum rated voltage. Each cycle consisting of moving the voltage selector to its alternate position and back at the rate of six cycles per minute with the voltage selector in each position for 5 seconds. The operating and temperature controls are to be set as to result in the most adverse operating conditions. 如果提供从外部可操作的电压选择开关, 让其在最低额定电压及最高额定电压下各工作25次。将电压选择开关从其工作位置切换到另一位置, 再切换回来, 这样为一次。开关切换速度为6次/分钟, 在每一位置上的停留时间为5s。将工作控制装置及温度控制装置设置在产生最不利工作状况的位置。

Exception: If an externally operable voltage selector switch interlocks with the power switch and cannot be operated with the power switch in the on position, the test procedure will be as described in 44.1.4. 例外: 如果从外部可操作的电压选择开关与电源开关互锁, 而且当电源开关处于接通位置时, 不能操作电压选择开关, 则采用44.1.4节的测试流程。

44.1.4 For an externally operable voltage selector switch that interlocks with the power switch and cannot be operated with the power switch in the on position, the voltage selector is to be operated for 25 cycles each at the maximum and minimum voltages. Each cycle is to consist of the following steps: 对与电源开关互锁的电压选择开关, 使得当电源开关处于接通位置时, 电压选择开关不能操作, 则电压选择开关在最高电压及最低电压下各工作25次。一次包括以下各个步骤:

- a) With the power switch in the off position, move the voltage selector to the alternate position; 在电源开关处于断开位置时, 将电压选择开关切换到另一位置
- b) Turn the power switch on and operate the appliance for 5 seconds; 打开电源开关, 让器具工作5s;
- c) Turn the power switch off; 断开电源开关;
- d) Move the voltage selector to the original position; and 切换电压选择开关至初始位置;
- e) Turn the power switch on and operate the appliance for 5 seconds. 打开电源开关, 让器具工作5s。

44.1.5 To determine whether a risk of fire or electric shock actually exists, a separate burnout or abnormal test is to be conducted with the appliance operating continuously until the ultimate result has been observed. Unless otherwise indicated below, the test is to be conducted with the applied voltage, method of mounting, and thermostat connection in accordance with 35.1.14 – 35.1.23. Accessible metal parts, those that can be contacted by the probe in Figure 6.2, and metal parts accessible during user-servicing are to be connected to ground through a 3-A fuse. In most cases, continuous operation for 7 to 8 hours will be necessary to determine the ultimate result.

为确定是否真的存在火灾或电击危险, 对器具做单独的燃烧测试: 让器具连续工作, 直至得到最终结果。除非下面另有规定, 否则测试时, 样品的输入电压、固定方法及温控器连接按35.1.14–35.1.23所述。可被图6.2测试指碰到的金属零件, 以及在用户维护过程可被碰到的金属零件, 要通过一根3A保险丝接地。大多情况下, 要连续工作7-8小时才可得到最终结果。

44.1.6 A counter-top appliance, including a table stove and a front- or side-loaded appliance, is to be located as close to the walls of the test corner as the construction will permit. The test corner is also to be provided with a 12-inch (300-mm) deep, simulated cabinet bottom, located 16 inches (400 mm) above the counter top. The cabinet bottom is to consist of dull black-painted fir plywood 3/8 inch (9.5 mm) thick. 台式器具 (包括TABLE STOVE) 以及從前面或側面裝食物的器具, 放置器具时, 按其结构允许尽可能靠近测试角的板壁。测试角同時帶有一塊深度為12"(300mm)的頂板, 頂板與底板相距16"(400mm)。頂板材料为喷无光黑漆杉木胶合板, 厚度為3/8" (9.5mm)。

Exception No. 1: An appliance such as a yogurt maker, slow cooker, and the like with relatively low surface temperatures are typical appliances that need not be tested in an alcove corner. 例外1: 表面温度很低的典型器具 (如YOGURT MAKER,

SLOW COOKER等），不必在测试角里测试。

Exception No. 2: An appliance intended for outdoor use only need not be tested in a test corner. 例外2：僅在室外使用的器具，不必在测试角里测试。

Exception No. 3: When an appliance is more than 16 inches (406 mm) high and not more than 22 inches (559 mm) high, the cabinet bottom is to be just over the appliance. When the appliance is more than 22 inches high, the cabinet bottom is to be omitted. 例外3：高度介于16"（400mm）–22"（559mm）的器具，頂板剛好位于器具上面。高度大于22"（559mm）的器具，测试角不加頂板。

Exception No. 4: When the test specifies the use of an indicator test panel over the appliance, the cabinet bottom is to be omitted. 例外4：如果测试要求使用测试指示面板，则测试角不加頂板。

44.1.7 When operated under such abnormal conditions, an appliance is considered to involve a risk of fire if there is any emission of flame or molten metal (other than drops of melted solder), or if the operation of the appliance results in the glowing or flaming of combustible material upon which the appliance may be placed or, in the case of a permanently installed appliance, that may be in proximity to the appliance as installed. 当器具在这些非正常状况下工作时，如果产生火花或熔融金属（焊锡熔滴除外），或引燃垫于器具下面或位于器具附近的易燃材料，则认为存在火灾危险。

44.1.8 An appliance is considered to involve a risk of electric shock if the 3-A fuse connected from accessible metal parts of the appliance to ground opens during the test. 测试过程中，如果连接于器具可触及零件与地线之间的3A保险丝熔断，则认为存在电击危险。

44.1.9 After having been subjected to an abnormal test, a cord-connected appliance is considered to involve a risk of electric shock if the current measured through a 500 ohm resistor between an accessible part and ground is more than 5 mA. The current need not be measured at terminals operating at voltage levels less than 42.4 V peak. In the case of an appliance utilizing a liquid in its normal operation, the liquid container is to be filled with the hard water solution described in 37.6 in the intended manner, prior to the current measurement. Liquid need not be added if it is obviously apparent that the appliance will not hold liquid. Otherwise, water in an amount equal to the capacity of the container is to be poured into the container and the current is to be measured as quickly as possible thereafter. 用电源线进行连接的器具，在完成一个非正常工作测试后，如果在位于可触及金属零件与地线之间的一个500Ω电阻两端测得的电流大于5mA，则认为存在电击危险。当工作电压峰值小于42.4V时，不必测量电流。对于正常工作时使用液体的器具，在液体容器里加入37.6节所述的硬水，加入量等于容器的容量，然后尽可能快地测量电流。但是，如果很明显器具不能装液体，则不必注入硬水。

44.1.10 After having been subjected to an abnormal test, a permanently-connected appliance shall be subjected to a repeated Dielectric Voltage-Withstand Test as described in Section 38. 永久联机器具，在经过一个非正常测试后，应能再次通过38章的高压测试。

44.1.11 If a motor is connected across a portion of a resistance element, the appliance shall not present risk of fire or electric shock as the result of an open circuit in the portion of the element that is in parallel with the motor.

如果马达并联于一部分电阻丝的两端，则当断开与马达并联的那部分电阻丝后，应无火灾及电击危险。

44.2 Specific test conditions 具体测试条件

44.2.1 General 通用条件

44.2.1.1 For most of the common types of appliances, standardized abnormal test conditions are given in 44.2.2.1 – 44.2.8.1. 对大多数普通器具，标准非正常测试条件如44.2.2.1–44.2.8.1所述。

44.2.2 Appliances with breakable exterior surfaces 外表面易于碎裂的器具

44.2.2.1 If an appliance (such as a warming tray or food warmer) has an exterior surface of glass, ceramic, or comparably brittle material in or on which the heating element is mounted or which is an essential part of the enclosure of live parts, the material shall be capable of withstanding the stresses likely to be encountered in actual service. 如果器具（如WARMING TRAY或FOOD WARMER）的外表面由玻璃、陶瓷或相当脆的材料制成，并且发热丝装于里面或上面，或者是罩住带电体的关键部分，则这些材料应能承受实际使用中可能遇到的压力。

44.2.2.2 Certain specific tests are described in 44.2.3.1 – 44.2.3.6, but other tests may be necessitated by the design or intended operation of the appliance. 某些具体测试在44.2.3.1–44.2.3.6叙述，但由于器具的设计或工作原因，可能需要其它测试。

44.2.3 Appliances with breakable surfaces 表面易于碎裂的器具

44.2.3.1 The glass or ceramic surface shall withstand without cracking or breaking the application of a cloth fully saturated with water (the hard water solution described in 37.6) at room temperature, with the appliance in the fully heated condition. The quantity of water involved shall wet the surface completely. 当器具处于充分加热状态下，用蘸满冷水（37.6节所述的硬水）的布盖在玻璃或陶瓷表面上后，这些表面应不碎裂。水量应能完全弄湿这些被测表面。

a) A cord-connected appliance rated for a nominal 120-V or 240-V supply shall comply with the requirement in 32.1 in a repeat leakage current test, except that the test shall be discontinued when leakage current stabilizes. 额定电压为120V或240V的用电源线进行连接的器具，重做漏电流测试时，应能符合32.1的要求。但当漏电流稳定下来时，结束测试。

b) An appliance other than those specified in (a) shall have an insulation resistance of not less than 50,000 ohms. 所述器具以外的器具，绝缘电阻应不小于50,000Ω。

44.2.3.2 The horizontal glass or ceramic food warming surface of an appliance shall withstand without cracking or breaking the impact of a steel sphere, 2 inches (50.88 mm) in diameter and weighing 1.18 pounds (535 g), dropped from a height of

20.25 inches (514 mm). Four drops shall be made at different places on separate samples. 带玻璃或陶瓷水平保温面的器具，用直径为2" (50.88mm)，重量为1.18磅 (535g) 的钢球从40.5" (857mm) 高度落下，冲击到这些表面上后，应不碎裂。用四个样品做测试，每个样品各冲击一次，但冲击位置不同。

Exception: Breakage or cracking of the surfaces as a result of the test is acceptable if the leakage current, when measured as described in 44.2.3.3 and 44.2.3.4, does not exceed the limits described in 44.1.9 and acceptable results are obtained following a repeated Dielectric Voltage-Withstand Test as described in Section 38. Revised 44.2.3.2 effective November 17, 1999

例外：测试后这些表面发生碎裂的器具，如果满足以下三个要求，则可以接受：经过44.2.3.3及44.2.3.4的测试后，其漏电流不超过44.1.9的限值；通过38章的高压测试；面板经过44.2.3.5的冲击后不加重碎裂程度。

44.2.3.3 With reference to the Exception to 44.2.3.2, to determine whether a broken or cracked surface is acceptable, a solution of 500 cubic centimeters of water containing 1/4 gram of ordinary table salt is to be spilled over the broken or cracked area of the surface. A layer of metallic foil is then to be placed over the surface. The foil is to be covered with a 1-inch (25-mm) thick layer of 1 lb/ft³ (16 kg/m³) glass fiber insulation. A 10-inch (254-mm) diameter pan filled with enough water to make it weigh 10 lb (4.54 kg) is then to be placed on the insulation directly over the broken or cracked area. The leakage current is then to be measured in accordance with 44.1.9.

关于44.2.3.2的例外情况，为了确定碎裂表面是否可以接受，进行如下测试：将含1/4克精盐的盐水500cm³，泼在这些表面的碎裂区域，然后在上面盖上一层金属箔，再在金属箔上盖上一层厚度为1" (25mm)，比重为1 lb/ft³ (16 kg/m³) 的玻璃纤维绝缘材料，接着将直径为10" (254mm)，装水使其重量达到10 lb (4.54kg) 的锅直接放在碎裂区域。然后按44.1.9测量漏电流。

44.2.3.4 The leakage current between the metallic foil and live parts of the appliance is to be measured as soon after the water-salt solution has been poured on the surface as is possible. For the test, the appliance frame is to be connected to the metallic foil. The Dielectric Voltage-Withstand Test shall be conducted immediately after the leakage current measurement. 泼完盐水后，尽快测量金属箔与器具带电体之间的漏电流（测量时，将器具外壳与金属箔连接起来）。漏电流测量完成后，立即进行高压测试。

44.2.3.5 Deleted effective November 17, 1999

44.2.3.6 In the case of an appliance other than a warming tray, the glass or ceramic surface shall withstand without cracking or breaking the impact of a utensil loaded with shot to a mass of 4 lbf (1.81 kgf) and dropped from a height of 6 inches (152 mm). The size and shape of the utensil shall be as appropriate as possible for the particular appliance, and ten drops of the utensil shall be made. WARMING TRAY 以外的器具，其玻璃或陶瓷表面进行如下测试后应不碎裂：将一个装有铅丸，总重量为 4lbf (1.81kgf) 的容器从 6" (152mm) 高度落下，冲击到这些表面上，一共冲击 10 次。容器的大小及形状尽可能适合于被测器具。

44.2.4 Barbecue units and grill-type broilers 44.2.4 BARBECUE UNITS AND GRILL-TYPE BROILERS

44.2.4.1 An electrically heated grill-type broiler, barbecue unit, or the like shall comply with the flare-up-test requirements in 44.2.4.3 – 44.2.4.7 if: 电热式 GRILL-TYPE BROILER, BARBECUE UNIT等，如果同时满足以下三个要求，应能通过 44.2.4.3–44.2.4.7 的测试：

- The heat source is below the cooking surface, and 热源位于烹调表面下面，
- The temperature of the heat source has an average value higher than 260°C (500°F) or a maximum value higher than 300°C (572°F), and 热源平均温度高于260°C (500°F)，或者最高温度高于300°C，
- The use of the appliance, if cord connected is not restricted to outdoor or fireplace use by a marking in accordance with 54.8. 用电源线进行连接的器具，而无标示54.8所述的语句。

44.2.4.2 A solid-fuel-fired grill-type electric broiler, barbecue unit, or the like is not acceptable for indoor use unless connected to a chimney in accordance with the Standard for Chimneys, Fireplaces, Vents and Solid Fuel Burning Appliances, NFPA 211–1992. 燃烧固体燃料的GRILL-TYPE ELECTRIC BROILER, BARBECUE UNIT等，除非与符合NFPA 211–1992要求的烟囱相连，否则不能在室内使用。

44.2.4.3 There shall be no ignition of an indicator test panel as the result of flame from burning fat or grease when the appliance is performing its intended function when tested in accordance with 44.2.4.4 – 44.2.4.7. The regulating thermostat is not to be defeated during this test. 在44.2.4.4–44.2.4.7的测试过程中，油脂燃烧产生的火焰应不引燃测试指示面板，温控式温控器应不被破坏掉。

44.2.4.4 The test panel is to consist of two layers of cheesecloth (see 35.1.28) secured to a wire frame in such a manner that no loose thread ends are visible on the underside. The area of the panel is not to be less than the active area of the heating element and is not to be larger than 4 inches (102 mm) beyond the sides of the appliance enclosure. 测试指示面板是由固定在电线支架上的两层粗棉布制成，从下面看不到松散的纱头。面板大小不小于发热丝的有效区域，而周边超出器具外壳的长度不大于4" (102mm)。

44.2.4.5 After the appliance has been subjected to maximum normal heating for 10 minutes, the cooking surface above the active element area is to be covered uniformly with 3-inch diameter (76-mm), 1-inch-thick (25 mm) pats of hamburger beef (adjacent edges touching before cooking begins) consisting of a mixture of 50 percent each by weight of lean beef and suet that have been ground together twice in succession.

器具在正常加热的最高设置温度下工作10分钟后，在位于发热丝有效区域上面的烹调区域均匀覆盖直径为3" (76mm)，厚度为1" (25mm) 的汉堡包肉团。

44.2.4.6 During the broiling of the beef pats on both sides, the indicator test panel is to be supported 8 inches (203 mm) above and parallel to the cooking surface. The panel is to remain in place throughout the test except when necessary

manipulations of the meat occur, such as placing the meat on the cooking surface, turning the meat over, or removing it. Flare-ups which occur as a direct result of such manipulation are to be allowed to subside or are to be deliberately extinguished, as by lifting the meat away from the cooking surface, before the test panel is replaced. A second loading of hamburgers is to be cooked immediately following completion of the first cycle. 在烘烤汉堡包过程中, 将测试指示面板支撑于烹调表面上方8" (203mm), 并与烹调表面平行。在整个测试过程, 测试指示面板一直保留在该位置, 但是, 如果在摆弄汉堡包(如取放或翻转汉堡包)时, 引燃测试指示面板, 则将汉堡包从烹调表面上移走, 让其熄灭, 再更换测试指示面板。在第一批汉堡包烤完后, 立即烤第二批。

44.2.4.7 During both test cycles, melted fat is to be allowed to accumulate in the intended manner except that any instructions for adding water or other similar material to the fat receptacle are to be disregarded. 44.2.5 Toasters, Toaster Ovens and Toaster Oven/Broilers在两个测试循环过程中, 允许熔化油脂按正常方式积聚起来, 但是, 不必按操作指示在油盘中加水或其它类似物质。

44.2.5.1 A toaster is to be operated as described in 44.1.5 without toast and with doors, or the equivalent, closed. In the case of an automatic toaster, any means employed for de-energizing the heating elements is to be defeated. Revised 44.2.5.1 effective November 30, 2001 多士炉: 门或等同装置处于关闭状态空载工作。对自动式多士炉, 防止升降机构动作。

44.2.5.2 There shall be no ignition of an indicator test panel as the result of flame from burning bread when an automatic toaster is operated toasting bread for one cycle with the color setting of the toaster set to maximum darkness. Two tests are to be performed. The toaster is to be loaded initially for the first test with one slice of bread and then to maximum capacity for the second test. The bread is to be slices of commercially available white bread, each weighing approximately 25 g. 自动式多士炉: 将颜色开关置于最深位置烤面包一个循环后, 面包燃烧产生的火焰应不引燃测试指示面板。进行两个测试: 第一个测试烤一片面包, 第二个测试烤最大容量面包。面包片为从商场里买到的白面包, 重约25克。

44.2.5.3 The test panel is to be that described in 44.2.4.4 and is to be supported 8 inches (203 mm) above and parallel to the top of the toaster. 测试指示面板为44.2.4.4所述的面板, 支撑于多士炉上面8" (203mm) 处, 并与多士炉顶面平行。Exception: For under-cabinet mounted toaster, the test panel shall be located on the surface directly above the toaster, with the closest spacing the mounting means will allow. 例外: 对嵌入式多士炉, 测试指示面板直接放于多士炉上方, 间隙为安装装置所允许的最小间隙。

44.2.5.3.1 An automatic toaster is to be operated with a simulated toast load as described in Figure 48.1, with the color setting of the toaster set to minimum, to determine the length of time for a toast cycle at this setting. This operation is to be repeated with the simulated toast load artificially jammed at its normal toasting position in the toaster slot so as to prevent its movement. As a result of this test, the heating elements of an automatic toaster shall de-energize upon completion of the toast cycle. Added 44.2.5.3.1 effective November 30, 2001

44.2.5.3.2 The two operations described in 44.2.5.3.1 shall be repeated with the color setting of the automatic toaster set to maximum. As a result of this test, the heating elements of an automatic toaster shall de-energize upon completion of the toast cycle. Added 44.2.5.3.2 effective November 30, 2001

44.2.5.4 There shall be no ignition of the bread load when a toaster oven or toaster oven/broiler is operated in the toasting mode for one cycle with the color setting set to maximum darkness. The appliance is to be loaded with any load up to maximum recommended capacity. Slices of commercially available white bread, each weighing approximately 25 g are to be used. If the toasting cycle does not terminate automatically, operation is to continue until ultimate results are obtained. The regulating thermostat is not to be defeated during this test.

TOASTER OVEN及TOASTER OVEN/BROILER: 将颜色开关置于最深位置, 在烤面包模式下工作一个循环后, 应不引燃面包。采用从商场里买到的, 重约25克的白面包做测试。装面包片于推荐的最大容量。如果循环不被自动终止, 则继续测试至得到最终结果。在该测试过程中, 温控式温控器应不被破坏掉。

44.2.5.5 A toaster oven or toaster oven/broiler is to be operated without any food load in the toasting mode with all temperature controls, other than the temperature limiting device, defeated. TOASTER OVEN及TOASTER OVEN/BROILER: 将温控装置(限温装置除外)破坏掉, 在烤面包模式下空载工作。

44.2.5.6 A toaster oven or toaster oven/broiler is to be operated at its maximum temperature setting in the oven mode, in its intended operating position, with the crumb tray in such a position as to cause maximum heating of the supporting surface. If the crumb tray is removable, it is to be removed. The temperature regulating control is not to be defeated for this test. Temperatures of the supporting surfaces shall comply with Table 35.1. TOASTER OVEN及TOASTER OVEN/BROILER: 在OVEN模式下, 将温度开关置于最高温度位置, 让其正常工作位置下工作, 面包屑盘位于使支撑面产生最高温度的位置。如果可以取掉面包屑盘, 则将其取掉。进行本测试时, 不要将温控器破坏掉。支撑面的温度应符合表35.1的要求。

44.2.5.7 With the oven door shut, the broiler pan removed, and crumb tray in place, a toaster oven or toaster oven/broiler is to be operated as described in 44.1.5 except that it is to be surrounded on five sides (top, front, back, left side, and right side) with two layers of cheesecloth (see 35.1.28). The cheesecloth is to be held in place by a steel wire frame extending out horizontally roughly one inch (2.5 cm) from the five exposed sides of the toaster oven. The toaster oven is to be placed on a supporting surface covered with two layers of tissue paper. For under-the-cabinet installation, a toaster oven or toaster oven/broiler is to be surrounded on five sides (bottom, front, back, left side, and right side) with two layers of cheesecloth held in place by a steel wire frame extending out horizontally roughly one inch (2.5 cm) from the five exposed sides of the toaster oven. For under-the-cabinet installation, the cheesecloth shall extend three inches (7.5 cm) vertically above the top

of the front of the appliance. A toaster oven or toaster oven/broiler provided with an automatic door opening feature is to have its door opened after the bread-load has ignited. Added 44.2.5.7 effective May 17, 2000

44.2.5.8 There shall not be any emission of flame as determined by ignition of the cheesecloth when a toaster oven or toaster oven/broiler is operated with a bread load conditioned as described in 44.2.5.10. Charring of the cheesecloth does not constitute a failure. Two tests are to be performed. The toaster oven or toaster oven/broiler is to be loaded initially for the first test with one slice of bread centered on the toasting surface and then to the manufacturer's specified maximum capacity with the bread equally spaced on the toasting surface for the second test. The slices of bread are to be ignited by

- repeatedly applying the toast cycle, or
 - operating the oven cycle (if any), or
 - having all temperature regulating devices defeated (non-resettable temperature limiting devices need not be defeated)
- The toast is to be allowed to burn until it is completely consumed, or until the flaming ceases. Added 44.2.5.8 effective May 17, 2000
- 44.2.5.9 If the bread-load does not ignite within 15 minutes of the start of the test described in 44.2.5.8, the test is to be repeated with a new bread-load and with the voltage increased by 5 Volts. If need be, this test procedure is to be repeated, each time with a new bread-load and voltage increased by an additional 5 Volts, until ignition of the bread-load occurs. Added 44.2.5.9 effective May 17, 2000

44.2.5.10 The bread is to be commercially available white bread weighing approximately 25 g. The bread is to be dried for one hour in open air at approximately 25°C with 50 percent relative humidity before the toaster oven or toaster oven/broiler is operated, as described in 44.2.5.8. Added 44.2.5.10 effective May 17, 2000

44.2.6 Warming trays and food warmers

44.2.6.1 The appliance is to be operated with the entire serving surface covered with a double layer of cheesecloth and with a 1-inch-thick (25-mm) hair-felt pad. If the thermostat cycles, the test is to be repeated with only two thirds of the serving surface covered and again with one-third of the serving surface covered. In the partial coverage test, the area of the tray farthest from the thermostat is to be covered. Operation under each of the above conditions is to be continuous for a period of 7 hours. 将整个加热表面用两层粗棉布及厚度为1" (25mm) 的毛毡垫盖住，让器具工作。如果温控器动作，则只盖住加热表面的2/3，再做测试。如果温控器再次动作，只盖住加热表面的1/3，再做测试。当局部覆盖加热表面时，盖住远离温控器的区域。在上述每种工作条件下，各连续工作7小时。

44.2.7 Broiler/ovens

44.2.7.1 A broiler, an oven, or a broiler/oven is to be operated at the maximum temperature setting until constant temperatures are obtained without any food load. **BROILER, OVEN及BROILER/OVENS**：将温度开关置于最高温度位置，器具在空载下工作直至得到恒定温度。

44.2.8 Table stoves

44.2.8.1 A sample of the appliance is to be operated continuously with each heating until covered with a cast-iron circular stove plate. An additional sample is to be operated in the same manner but with an aluminum plate. The cast iron plate to be used with a 6 inch (152 mm) or smaller surface unit is 7 – 8 inches (178 – 203 mm) in diameter and weighs approximately 3 lb (1.36 kg). The cast iron plate to be used with a larger surface unit is 10 – 11 inches (254 – 279 mm) in diameter and weighs approximately 7 lb (3.18 kg). The aluminum plates are to be of the same dimensions indicated above, except 1/4 inch (6.4 mm) thick and no weight is specified. 两个样品做测试。让器具连续工作，最后用圆形铸铁板盖在一个样品上，而用圆形铝板盖住另一个样品。若器具尺寸小于或等于6" (152mm)，铸铁板的直径为7-8" (178-203mm)，重约3 lb (1.36kg)；若器具尺寸大于6" (152mm)，铸铁板的直径为10-11" (254-279mm)，重约7 lb (3.18kg)。铝板尺寸与上述尺寸一样，只是厚度为1/4" (6.4mm)，对重量不作要求。

44.2.8.2 When the size of the table stove is such that when the stove plate is centered on a surface unit the plate touches the wall, the test is to be conducted with the table stove positioned as follows: 当TABLE STOVES的大小使得当将铁板或铝板置于其表面中央时，铁板或铝板碰到墙面，则测试时，TABLE STOVES按如下方式放置：

- With the plate centered on a surface so that the plate touches the wall, and将铁板或铝板置于表面中央，而铁板或铝板碰到墙面，以及
- With the plate off center and the stove as close to the wall as possible with the plate stable and touching wall. 铁板或铝板偏离表面中央，器具尽可能靠近墙面而铁板或铝板能平稳放置并碰到墙面。

44.2.8.3 In addition to the applicable test described in 44.2.1.1 – 44.2.8.2, a dual voltage appliance shall be subjected to the tests described in 44.1.2 – 44.1.4. These tests are subject to the test conditions described in 44.1.5 and 44.1.6 and to the acceptance criteria described in 44.1.7 – 44.1.11. There shall be no electrical or mechanical breakdown of the voltage selector switch.

双电压器具：除了进行44.2.1.1-44.2.8.2的适用测试外，还要进行44.1.2-44.1.4的测试。这些测试的测试条件如44.1.5及44.1.6，而合格指针如44.1.7-44.1.11。电压选择开关应无机械或电气故障。

45 Under-Cabinet and Wall Mounted Appliances-Impact Test 嵌装式器具及壁挂式器具的冲击测试

45.1 The impact test of 45.2 shall be conducted on all under-cabinet and wall mounted appliances without occurrence of any of the following conditions: 所有嵌装式器具和壁挂式器具要进行45.2的冲击测试。测试后，器具不可以出现以下现象：

- Making live parts accessible to contact with the articulate probe, see 6.13 and 6.14使带电零件被测试指碰到，见6.13及6.14节。

b) Producing any other condition that results in damage of the enclosure so as to adversely affect the function of any safety or constructional feature, such as thermostats, overload protective devices or strain relief. 产生损坏外壳的其它状况，从而对安全性或结构特征产生不良影响，如对温控器，过载保护装置或拉力消除装置产生不良影响。

c) Producing other conditions so that the appliance does not comply with the dielectric voltage-withstand requirements in Dielectric Voltage-Withstand Test, Section 38, after being subjected to the impact. 产生其它状况，使得器具不符合38章的高压测试要求。

d) Dislodging of the appliance or separable parts of the appliance. 使器具或器具的可分离部件掉出来。

45.2 A 1-1/2 ft-lbf (2.0 N·m) impact is to be performed on all exposed sections of the enclosure, while the unit is installed under a cabinet or on a wall. Each of three samples is to be subjected to one impact on each surface. The impact is to be imparted by swinging a 2-inch (50.8-mm) diameter steel sphere, weighing 1.18 lb (0.535 kg) from a height that will produce an impact of 1-1/2 ft-lbf (2.0 N·m). 当将器具安装到柜子里或墙上后，外壳的所有外露部分要进行1.5 ft-lbf(2.03J)的冲击测试。用三个样品做测试，在样品的每一面上做一次冲击测试。采用球摆式冲击测试，钢球直径为2”(50.8mm)，重量为1.18lb(0.535kg)，从所需高度落下，使其产生1.5 ft-lbf(2.03J)的冲能。

Exception No. 1: All glass surfaces need not comply with this requirement. 例外1：所有玻璃表面不必测试。

Exception No. 2: If the manufacturer elects, fewer than three samples may be used for the test in accordance with Figure 42.1 wherein each series consists of one impact. The overall performance is acceptable upon completion of any one of the procedures represented in Figure 42.1. 例外2：如果制造商选择按图42.1的测试方式，则测试样品可少于三个。一个系列号为一次冲击。完成图42.1所示的任一个流程，其整体性能均符合要求。

46 Loading Test 负载测试

46.1 A loading test is to be performed on the mounting brackets of an under-cabinet or wall mounted appliance with the appliance mounted in accordance with the manufacturer's installation instructions, using the hardware and construction as described. A bracket shall not break, loosen, or pull out of the wall nor shall any portion of the unit attached to the mounting means be adversely affected as a result of this test. 对嵌装式及墙挂式器具，当按制造商安装说明书所述的材料及结构将其安装起来后，对固定支架做负载测试。支架不能断裂，松动，或从墙体中拉出来，也不能对安装到支架上的器具部分产生不良影响。

46.2 The test load is to consist of the weight of the appliance plus three times the maximum normal load (food load, water, grounds, basket, and the like, based on cavity size and maximum recipe book weight recommendations). A gradually increasing force is to be applied to act vertically through the center of the gravity of the unit. The force is to be increased in a 5 to 10 second interval until the test load is applied to the mounting system and is to be sustained for a period of 1 minute. For this test an under-cabinet unit is to be mounted on a wood board with a minimum thickness as specified by the manufacturer and a wall unit is to be mounted on 3/8 inch (4.8 mm) thick wall board. 测试负载为器具的重量加上最大正常负载(食物、水、咖啡粉、篮子等等，根据容器的大小及菜谱的最大推荐重量)的3倍。通过器具的重心逐渐增大作用力，每隔5-10s增大一次，直至达到要求的测试力，然后维持1分钟。对该测试，内置式器具安装在制造商所规定的最小厚度木板上，而墙挂式器具安装在厚度为3/8”(4.8mm)的建筑纸板上。

46.3 If the mounting brackets are constructed of a thermoplastic material, they are to be conditioned for 7 hours in an air circulating oven maintained at 70°C (158°F) or 10°C (18°F) higher than that measured during the normal temperature test, whichever is higher, prior to performing the loading test.

如果固定支架材料为热塑性材料，则在做负载测试前，在恒温箱中煲机7小时，炉温为70°C (158°F) 或比正常温度测试时量得的温度高10°C (18°F)。

47 Temperature Probe Insertion Test 47 温控器插拔测试

47.1 Each of six samples is to be subjected to 50 cycles of insertion and withdrawal of the temperature-probe plug. The cycles are to be performed manually at a rate of speed no greater than 6 cycles per minute, under rated load. At the completion of the 50 cycles, the voltage drop at rated current shall not exceed 50 mV between the male and female contacts of the temperature probe plug. There shall be no mechanical failure of the temperature probe plug, nor shall there be any undue deterioration, pitting, or burning of the probe contacts.

用六个样品做测试，每个样品在额定负载下做50次插拔测试。手动测试，插拔速度不大于6次/min。完成后，在额定电流下，温控器的公端子与母端子之间的电压降不能超过50mV。温控器端子应无机械失效，触点处无明显劣化迹象，无麻点或燃烧黑迹。

48 Component Switches and Control Devices 48 开关组件及控制装置

48.1 Overload

48.1 过载测试

48.1.1 Motor switches 48.1.1 马达开关

48.1.1.1 A switch or other device that controls a motor employed in an appliance, unless acceptable for the application or unless so interlocked that it will never have to break the locked-rotor motor current, shall be capable of performing acceptably when subjected to an overload test consisting of 50 cycles of operation, making and breaking the locked-rotor current of the motor. There shall be neither electrical nor mechanical malfunction of the device, nor undue burning, pitting, or welding of the contacts. 控制马达的开关或其它组件，如未经检查适合使用，则应通过50个工作循环的过载测试，产生及断开马达的堵转电流。过载测试后，控制装置应而无电子或机械误动作，触片上无明显燃烧痕迹，无麻点或焊接痕迹。

48.1.1.2 To determine whether a switch or other control device is capable of performing acceptably in the overload test, the

appliance is to be connected to a grounded supply circuit of rated frequency and of voltage in accordance with 35.1.14, with the rotor of the motor locked in position. During the test, exposed dead metal parts of the appliance are to be connected to ground through a 3-A fuse, and the current-interrupting device, if single-pole, is to be located in an ungrounded conductor of the supply circuit. If the appliance is intended for use on direct current, or on direct current as well as alternating current, the test is to be conducted with direct current and exposed dead metal parts are to be so connected as to be positive with respect to a single-pole, current-interrupting device. The device is to be operated at the rate of 10 cycles per minute, except that a faster rate of operation may be employed if agreeable to all concerned. The performance is unacceptable if the fuse in the grounding connection opens during the test. 为确定控制马达的开关或其它组件是否符合48.1.1.1的要求，锁紧马达转子，将器具连到额定频率的接地电源电路上，电路电压如35.1.14所要求。器具的外露不带电金属零件通过一根3A保险丝接地，单极熔断装置连在电源电路的非接地导线上。对直流器具及交直两用器具，则用直流电源做测试，连接时使得外露不带电金属零件相对于单极电流切断装置的极性为正。测试时的工作速度为10个循环/Min，但如果相关各方均同意，可以采用更高速度。测试过程中，如果接地保险丝断开，则性能不合格。

48.1.2 Automatic controls 48.1.2 自动控制装置

48.1.2.1 An automatic control for temperature regulating or temperature limiting shall be capable of performing successfully for 50 cycles of operation, when the heater is connected to a supply circuit having a potential of 120 percent of the voltage specified in 35.1.14. There shall be neither electrical nor mechanical malfunction of the control, nor undue burning, pitting, or welding of the contacts. 用于控制温度或限制温度的自动控制装置，当器具在输入电压等于35.1.14规定电压的1.2倍下工作时，自动控制装置应能成功动作50次，而无电气或机械误动作，触点上无不合理的焊点。

48.1.2.2 In tests to determine whether an automatic control complies with the requirements in 48.1.2.1 and 48.1.2.3, the appliance is to be connected to a grounded supply circuit; the enclosure of the appliance, if of metal, is to be connected to ground through a 3-A fuse; and the control, if single-pole, is to be connected in an ungrounded conductor of the circuit. If the heater is intended for use on direct current, or on direct current as well as on alternating current, the test is to be conducted with direct current, and the enclosure is to be so connected as to be positive with respect to a single-pole automatic control. The device is to be operated at the rate of 10 cycles per minute, except that a faster rate of operation may be employed if agreeable to all concerned. The performance is unacceptable if the fuse in the grounding connections opens during the test. 在测试器具是否符合48.1.2.1及48.1.2.3的要求时，将器具连接到带接地的输入电路上；器具外壳如为金属，用3A保险丝将其接地；控制装置如为单刀，则与电路的非接地导线连接。对直流器具及交直两用器具，则用直流电源做测试，连接时使得外壳相对于单刀自动控制装置的极性为正。测试时的工作速度为10个循环/Min，但如果相关各方均同意，可以采用更高速度。测试过程中，如果接地保险丝断开，则性能不合格。

48.1.2.3 An automatic control intended for use on direct current, which is so constructed that the starting handle does not stay latched with the timing knob in all of its position settings, thereby resulting in a slow break of the switch contacts upon release of the handle, shall be capable of performing successfully when tested as follows. The switch shall be subjected to 50 cycles of operation at normal load by releasing the handle slowly and, during the test, the metal frame of the appliance shall be connected to ground through a 3-A fuse to give indication of a flashover, should this occur. The test shall be made following the overload test and preceding the endurance test on the control. See 48.1.2.1 and 48.2.1.1. 打算在直流电源下使用的自动控制装置，因其结构原因，当定时器旋钮处于设置位置时，自动控制装置的起动手柄不能处于锁住位置，这样，当松开手柄时，开关触点断开缓慢。自动控制装置进行如下测试时，应能成功动作：在正常负载下，慢慢松开手柄，一共测试50次。测试过程中，将器具的金属壳通过一根3A保险丝接地，让其熔断（如果发生熔断的话）。该测试在过载测试（见48.1.2.1）之后，而在耐久性测试之前（见48.2.1.1）。

48.2 Endurance 48.2 耐久性测试

48.2.1 Thermostats 48.2.1 温控器

48.2.1.1 A thermostat shall be capable of withstanding an endurance test which shall consist of the number of cycles indicated in Table 48.1. Unless it is specified that the test be made without load, the thermostat shall make and break the rated current of the appliance while connected to a circuit of rated voltage. There shall be neither electrical nor mechanical malfunction of the thermostat, nor undue burning, pitting, or welding of the contacts.

所有温控器应能通过表48.1所述的耐久性测试。除非规定为空载测试，否则，在器具的额定电压及额定电流下进行测试。温控器应无电子及机械误动作，触片上无明显燃烧痕迹，无麻点或焊接痕迹。

48.2.1.2 With reference to 48.2.1.1 and Table 48.1, thermostats are classified as follows: 关于 48.2.1.1 节及表 48.1，温控器分类如下：

a) A temperature-regulating thermostat is one which functions only to regulate the temperature of the appliance under normal conditions of use, and whose malfunction would not result in a risk of fire. 温度控制式温控器：其动作仅仅是控制器具的温度在正常使用状态下，其误动作不会引发火灾。

b) A temperature-limiting thermostat is one which functions only under conditions which produce abnormal temperatures. The malfunction of such a thermostat might or might not result in a risk of fire. 温度限制式温控器：仅在发生不正常温度时才动作，其误动作可能引发火灾，也可能不引发火灾。

c) A combination temperature-regulating and -limiting thermostat is one that functions to regulate the temperature of the heating appliance under normal conditions of use, and also serves to reduce the risk of a fire that might result from conditions of abnormal operation of the appliance. 联合型温控器：其动作将控制加热器具的温度在正常使用状态下，也用于防止器具在

非正常工作下引发火灾。

Table 48.1
Number of cycles of operation for endurance test

Type of thermostat	Automatically reset thermostat	Manually reset thermostat
Temperature regulating	A number of cycles equivalent to 1000 hours of intended operation of the appliance, but not less than 6000 cycles. However, the test may be omitted if, with the thermostat short-circuited, no temperature higher than the limits given in Table 35.1 are attained during the normal-temperature test of the appliance.	To be made the subject of special consideration ^a
Temperature-limiting ^b	A number of cycles equivalent to 100 hours of operation of the appliance under any condition which causes the thermostat to function, or 100,000 cycles, whichever is greater. However, the test may be omitted if, with the thermostat short-circuited, there is no evidence of risk of fire as described in 44.1.1 – 44.1.11 during the continuous abnormal operation of the appliance.	1000 cycles underload and 5000 cycles without load. However, the test may be omitted if, with the thermostat short-circuited, there is no evidence of risk of fire as described in 44.1.1 – 44.1.11 during continuous abnormal operations of the appliance.
Combination temperature-regulating and -limiting	100,000 cycles if, with the thermostat short-circuited, there is evidence of fire as described in 44.1.1 – 44.1.11. If there is no evidence of risk of fire under this condition, the thermostat is to be tested as a temperature-regulating thermostat (see above).	To be made the subject of special consideration.

^a If the operation of the thermostat controls the physical movement of a part of the appliance (such as in a pop-up type of automatic toaster), the test is to be so arranged that each cycle will involve the complete intended operation of the appliance.
^b See 25.1 and 25.2.

表 48.1 耐久性测试之工作循环次数

温控器类型	自动复位温控器	手动复位温控器
控制温度	相当于器具正常工作 1000 小时的次数，但不少于 6000 次。但是，在器具正常温度测试过程中，如果将温控器短路时，温度不高于表 35.1 的数值，则该测试可省略。	按特别考虑因素做 ^a
限制温度 ^b	相当于器具在导致温控器动作的任何状态下工作 100 小时的次数，或 100,000 次，两者取较大值。但是，如果将温控器短路时，在连续非正常工作测试期间，不发生 44.1.1—44.1.11 所述的火灾，则该测试可省略。	在负载下工作 1000 次，并在空载下工作 5000 次。但是，如果将温控器短路时，在连续非正常工作测试期间，不发生 44.1.1—44.1.11 所述的火灾，则该测试可省略。
联合型	如果将温控器短路的情况下，引发 44.1.1—44.1.11 所述的火灾，则工作 100,000 次；如不引发火灾，则按温度控制式温控器进行测试（见上面）。	按特别考虑因素做

^a 如果控制器具（如弹起式自动多士炉）零件的机械运动的温控器动作，则进行测试时，设法使每个循环相当于器具正常工作的工作循环。
^b 见 25.1 及 25.2。

48.2.2 Automatic toasters 自动多士炉

48.2.2.1 An automatic toaster shall be capable of withstanding an endurance test consisting of 6000 cycles of operation while loaded as outlined in 48.2.2.2. A complete cycle shall consist of the switch contacts making and breaking the rated current of the toaster and, except as indicated in 48.2.2.2, movement of the elevator mechanism completely throughout its normal travel. There shall be no electrical or mechanical malfunction with regard to opening the contacts and no welding or undue pitting of the switch contacts. In addition, the toaster shall comply with the test described in 44.2.5.2 and 44.2.5.3

following the endurance test. 在48.2.2.2的负载下，自动多士炉应能通过6000个工作循环的耐久性测试。一个完整的循环为：接通或断开多士炉的额定电流，并让其升降机构在整个正常行程内运动（48.2.2.2所述的除外）。在断开触点时，应无电气或机械误动作，触点处无焊点或明显麻点。另外，耐久性测试后，多士炉应能通过44.2.5.2及44.2.5.3的测试。

48.2.2.2 With reference to 48.2.2.1, each bread slot or space is to be loaded with a 50 g weight for the first 25 cycles and last 25 cycles, and a 25 g weight for the intervening 5950 cycles. The weights are to consist of the simulated toast load described in Figure 48.1. Lead shot (No. 7) is to be added to the simulated toast load as necessary to obtain the exact weights of the total loads. During the cycles using the 50 g weights, the elevator mechanism need not move through its complete travel but shall open the switch contacts providing power to the heating elements.

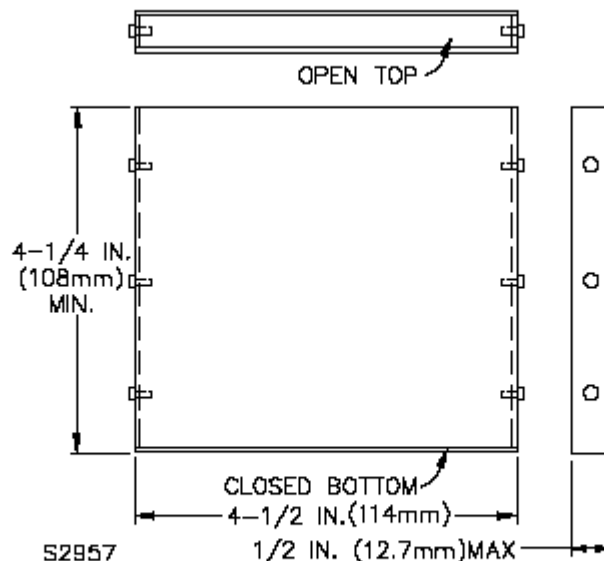
关于48.2.2.1，用图48.1所示的仿真负载。在最初25个循环及最后25个循环，在每个面包槽加入50克重量；余下的5950个循环，加入25克重量。必有需要，在仿真负载上加上#7铅丸，以获得准确重量。在加载50克的情况下，升降机构不必在其整个行程内运动，而只要断开发热丝电源开关触点。

48.2.2.3 During the endurance test described in 48.2.2.1 and 48.2.2.2, external fan cooling may be provided to shorten the cycle time, however, the temperatures obtained adjacent to temperature sensing components or other appropriate reference points shall not exceed those measured during the normal temperature test described in 35.2.5.1. Operation is to consist of simulating the toasting of bread with each cycle terminated by the toaster automatically. 在进行48.2.2.1及48.2.2.2的耐久性测试过程中，为了缩短循环时间，可采用外部风扇冷却，但是，在感温组件附近点或其它合适参照点测量得到的温度应不高于35.2.5.1正常温度测试过程中得到的相应温度。每个测试循环包括模拟烤面包并由多士炉自动结束。

48.2.2.4 The automatic toast feature of a toaster oven shall be capable of withstanding an endurance test consisting of 6000 cycles simulating the process of making toast. A complete cycle shall consist of the initiation of the toast cycle through use of the toast feature actuator, heating the oven to normal operating temperature and termination of the toast cycle by the toaster automatically. There shall be no electrical or mechanical malfunction with regard to opening the contacts, and there shall be no welding or undue pitting of the switch contacts. In addition, the toaster oven shall comply with the tests described in 44.2.5.4 following the endurance test. TOASTER OVEN应能通过6000个工作循环的耐久性测试。一个完整的循环为：将模式选择开关置于烤面包位置，加热至正常工作温度，自动结束。在断开触点时，应无电气或机械误动作，触点处无焊点或明显麻点。另外，耐久性测试后，烤箱应能通过44.2.5.4的测试。

48.2.2.5 During the endurance test described above, forced air cooling may be provided to shorten the cool down time, however temperatures obtained adjacent to temperature sensing components or other appropriate reference points shall not exceed those measured during the normal temperature test. During the test a simulated bread load need not be utilized. 在上述耐久性测试过程中，为了缩短循环时间，可采用强制性空气冷却装置，但是，在感温组件附近点或其它合适参照点测量得到的温度应不高于正常温度测试过程中得到的相应温度。测试时器具空载工作。

Figure 48.1
Simulated toast load



To be constructed to aluminum flashing approximately 0.010 inch (0.254 mm) thick. Outside surface to be painted with minimum 500°F (260°C) flat black engine paint. Total weight to be equal to or less than 25 g without lead shot.

48.2.2.6 A toaster oven and toaster oven/broiler shall be capable of withstanding an endurance test consisting of 6000 cycles of operation of opening and closing the door. During and at the conclusion of the test, the appliance shall meet the following criteria. TOASTER OVEN及TOASTER OVEN/BROILER应能通过6000次开关门动作的耐久性测试。测试过程中及测

试后，器具应能满足以下要求：

- a) There shall be no electrical or mechanical malfunction that could result in the likelihood of fire, electric shock or injury to persons. 产生的机械或电气故障应不会引发火灾，电击或伤害人体。
- b) There shall be no loosening or shifting of adjustments or parts that could result in the likelihood of fire, electric shock or injury to persons. 零件松动或位移应不会引发火灾，电击或伤害人体。
- c) There shall be no failure of applicable switches and contacts. 开关及触点应不会失效。

48.3 Limited short circuit 短路测试

48.3.1 Motor-control devices 马达控制装置

48.3.1.1 There shall not be any ignition of cotton surrounding the outer enclosure of the protective device (that in some cases, will be the enclosure of the motor that it protects) when three samples of a device controlling a motor are subjected to short circuits on a circuit limited to 200 A. 用三个样品做测试。在保护装置外壳（某些情况下，在保护装置所保护的马达外壳）包棉花，将马达控制装置连接于200A电路中，进行短路测试。棉花应不被引燃。

48.3.1.2 Usually, a motor is to be considered to comply with the requirement in 48.3.1.1 if it is equipped with an inherent overheating protector that complies with the requirements for such protectors. 通常，如果马达内置符合要求的过热保护装置，则认为符合48.3.1.1的要求。

48.3.1.3 For the tests mentioned in 48.3.1.1, the power factor of the test circuit is to be 0.9 – 1.0, and the circuit capacity is to be measured without the device in the circuit. 对48.3.1.1所提到的测试，测试电路的功率因子为0.9–1.0，不连接控制装置时测量电路电流。

48.3.1.4 In each case, a nonrenewable cartridge fuse is to be connected in series with the device under test; the fuse is to be of the maximum current rating that will be accommodated by a fuse-holder of the branch circuit to which the appliance would be connected. The test on one sample is to be made by closing the device on the short circuit. 每种情况下，用不可复位的管状保险丝与被测装置串联；用器具所连接的分支电路保险丝支架所允许的最大电流保险丝。闭合电路中的控制装置进行短路测试。

49 Permanence of Marking 标识的永久性测试

49.1 A required marking shall be molded, die-stamped, paint-stenciled, stamped or etched metal that is permanently secured, or indelibly stamped lettering on a pressure-sensitive label secured by adhesive that upon investigation is found to be acceptable for the application. Ordinary usage (including the likely exposure to weather and other ambient conditions), handling, storage, and the like of the equipment is to be considered in the determination of the acceptability of the application. 标识要求采用啤塑，模具冲压，油印，冲压或蚀刻金属等永久性标识方式。如果胶粘标签检验时符合要求，也可以采用。在确定是否可用时，要考虑器具一般使用情况（如受大气及其它环境条件作用），搬运，存储等因素。

49.2 Unless it has been investigated and found to be acceptable for the application, a pressure-sensitive label or label that is secured by cement or adhesive shall comply with the adhesion requirements in Table 7.1 for indoor equipment, and Table 7.2 for outdoor equipment in the Standard for Marking and Labeling Systems, UL 969. 胶粘标签，除非已对其检查证明符合使用要求，否则，其附着力应符合UL 969表7.1（对室内器具）或表7.2（对室外器具）的要求。

49.3 Unless otherwise indicated, a required cautionary marking shall be located on a part that would require tools for removal or that cannot be removed without impairing the operation of the product.

除非另有规定，否则，警告性标识应位于需借助于工具才能取下的零件上，或必须在器具不工作时才能取下的零件上。

50 Test for Permanence of Cord Tag for Outdoor-Use Appliances 50 室外使用器具电源线吊牌的永久性测试

50.1 General 50.1 总体要求

50.1.1 To determine compliance with 54.25, representative samples that have been subjected to the tests described in 50.1.3 – 50.1.6 shall meet the following requirements: 为确定器具是否符合54.25的要求，样品按50.1.3—50.1.6所述进行测试。测试后，应符合以下要求：

- a) The tag shall resist tearing for longer than 1/16 inch (1.6 mm) at any point; 在任一点上的撕裂长度不大于1/16”(1.6 mm);
- b) The tag shall not separate from the power supply cord; 标牌不能与电源线分离;
- c) There shall be no permanent shrinkage, deformation, cracking, or any other condition that will render the marking on the tag illegible; and 应无永久性收缩，变形，裂，或产生使标识不清晰的情况；及
- d) Overlamination shall remain in place and not be torn or otherwise damaged. The printing shall remain legible. 多层纸应完好，无撕裂及其它方式的损坏。印刷内容应清晰。

50.1.2 For each type of conditioning mentioned in 50.1.3 – 50.1.5, three samples of the tag applied to the power supply cord in the intended manner are to be used. If tags are applied by an adhesive, tests are to be conducted no sooner than 25 hours after application of the tag. 50.1.3—50.1.5所述的每种测试，用3个按设计方式装在电源线上的标牌做测试。如果采用胶粘法将标牌贴在电源线上，则在贴标牌25小时后做测试。

50.1.3 Three samples are to be tested as received.

用三个未做过测试的标牌做测试。

50.1.4 Following conditioning in an air-circulating oven at $60 \pm 1^\circ\text{C}$ ($140 \pm 1.8^\circ\text{F}$) for 240 hours, three samples are to be tested after 30 minutes of conditioning at a room temperature of $23 \pm 2^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$) and 50 \pm 5 percent relative humidity. 三个样品在温度为 $60.0 \pm 1.0^\circ\text{C}$ ($140.0 \pm 1.8^\circ\text{F}$)的恒温箱中处理240小时，接着在室温为 $23.0 \pm 2.0^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$)，相对湿度为(50 \pm 5)%的环境中放置30 min，然后做测试。

50.1.5 Three samples are to be tested within 1 minute after exposure for 72 hours to a humidity of 85 ± 5 percent at $32 \pm 2^\circ\text{C}$ ($89.6 \pm 6^\circ\text{F}$). 三个样品在湿度为 $(85 \pm 5)\%$ ，温度为 $32.0 \pm 2.0^\circ\text{C}$ ($89.6 \pm 3.6^\circ\text{F}$) 的恒湿箱中处理72小时，取出后在1 min内做测试。

50.1.6 Each sample is to consist of a length of power supply cord to which the tag has been applied. The power supply cord, with the attachment plug pointing up, is to be held tautly in a vertical plane. A force of 5 lbf (22.2 N) is to be applied to the upper-most corner of the tag farthest from the power supply cord, within 1/4 inch (6.4 mm) of the vertical edge of the tag. The force is to be applied vertically downward in a direction parallel to the major axis of the cord. In determining compliance with 50.1.1(d), manipulation is permissible, such as straightening of the tag by hand. To determine compliance with 50.1.1(d), each sample is to be scraped 10 times across printed areas and edges, with a force of approximately 2 lbf (8.9 N), using the edge of a 5/64 inch (2.0 mm) thick steel blade held at a right angle to the test surface.

每个样品为带标牌的一段电源线，连接插头朝上，拉紧的电源线位于垂直平面内。一个大小为5 lbf (22.2N) 的拉力作用在标牌上，力的作用点使得与电源线的距离最大，与标牌竖直边的距离小于1/4" (6.4mm)，力的方向竖直向下。为确定是否符合50.1.1(c)的要求，可以用手摆弄标牌，如将其拉直。为确定是否符合50.1.1(d)的要求，用刀刃厚度为5/64"(2.0 mm)的钢片，与测试表面垂直方向用大约为2 lbf (8.9N) 的力在印刷区域内沿着各边刮10次。

MANUFACTURING AND PRODUCTION-LINE TESTS 厂商生产线测试

51 Dielectric Voltage-Withstand Test 51 高压测试

51.1 Each appliance shall withstand without an indication of unacceptable performance as a routine production-line test, the application of a potential between the primary wiring, including connected components, and accessible metal parts that are likely to become energized, and between primary wiring and accessible low voltage (42.4 V peak or less) metal parts, including terminals. The test potential shall be 1200 V applied for 1 second or 1000 V applied for 1 minute.

51.1在例行的生产线测试中，高压测试应符合要求。测试电压施加于以下位置：

初级线路（包括连接元件）与可能变为带电的可触及金属零件之间，以及初级线路与可触及低压（峰值电压 $\leq 42.4\text{V}$ ）金属零件（包括端子）之间 测试电压可以是1200V，1s 或1000V，1min。

51.2 The appliance may be in a heated or unheated condition for the test. 测试时，器具可处于加热状态或非加热状态。

51.3 The test shall be conducted with the appliance complete – fully assembled. It is not intended that the appliance be unwired, modified, or disassembled for the test. 用完整器具（全部装配）进行测试。用于测试的器具不可以无接线，修改或拆开。

Exception No. 1: A part, such as a snap cover or a friction-fit knob, that would interfere with performance of the test need not be in place. 例外1：会影响测试性能的零件，如卡盖，或过盈配合旋钮，不必装上。

Exception No. 2: The test may be performed before final assembly if such a test represents testing the complete appliance.

例外2：测试可在最终装配前进行，如果这代表完整器具测试的话。

51.4 If the appliance employs a solid-state component that can be damaged by the test potential, the test on each appliance may be conducted before the component is electrically connected. In such a case, additional testing is to be made of a random sampling of each day's production with the circuitry rearranged to reduce the likelihood of damage to any solid-state component but retaining representative dielectric stress of the circuit.

如果器具采用可被测试电压损坏的固态元件，则可在连接这些元件前做测试。这种情况下，在每天的生产量中，再随机抽取样品做测试，但重新安排电路，以减少对固态零件的可能损坏而仍然保留电路应力。

51.5 The test equipment is to produce an output voltage that is not less than the factory test value specified, nor is the magnitude of the test voltage to be greater than 120 percent of the specified test potential when the tester is used in each of the following conditions: 当对测试装置进行调整以用于生产线测试并应用于下述两种情况时，其输出电压不小于工厂规定测试电压，但不高于规定测试电压的1.2倍。

a) If the test duration is one second, the output voltage is to be maintained within the specified range, 如测试时间为1s，输出电压维持在规定范围内。

1) When only a voltmeter having an input impedance of at least 2 megohms and a specimen of the product being tested are connected to the output terminals, and 当仅有一个输入阻抗 $\geq 2\text{M}\Omega$ 的电压表及一个被测器具连接到输出端，

2) When a relatively high resistance is connected in parallel with the voltmeter and the product being tested, and the value of the resistance is gradually reduced to the point where an indication of unacceptable performance just occurs. 阻值相当高的电阻与电压表及被测器具并连，然后逐渐降低电阻值，直至出现性能不合格点。

b) If the test duration is one minute, the output voltage is to be maintained within the specified range, by manual or automatic means, throughout the one minute duration of the test or until there is an indication of unacceptable performance. 如测试时间为1min，则在整个测试过程中，或直到发生不合格情况时，输出电压维持在规定范围内。

51.6 The specified control of the applied voltage, manual or automatic, shall be maintained under conditions of varying line voltage. Higher test potentials may be used if the higher dielectric stress is not likely to adversely affect the insulating systems of the product. 如果电网电压发生波动，应采取措施将施加电压控制在規定範圍內，不管是手动控制或自动控制。如果更高的电气应力不会对器具的绝缘系统产生不利影响，则可以使用更高的测试电压。

51.7 In addition to the characteristics indicated in 51.5, the test equipment is to have the following features and characteristics: 除了51.5所述的特点外，测试装置还须具备以下特点：

a) A means of indicating the test voltage that is applied to the product under test. This may be accomplished by sensing the

voltage at the leads or by equipment means. 具有用于指示施加在被测器具上的测试电压的装置。该装置可以测量引线电压或类似装置。

a) b) An output voltage that: 输出电压为:

- 1) Has a sinusoidal waveform, 正弦波形,
- 2) Has a frequency that is within the range of 40 – 70 Hz, and 频率介于40-70Hz间,
- 3) Has a peak value of the waveform that is not to be less than 1.3 and not more than 1.5 times the root-mean-square value. 峰值电压介于有效值的1.3倍-1.5倍之间

c) A means of effectively indicating unacceptable performance. The indication is to be: 可靠指示不合格性能的装置。指示装置应是:

- 1) Auditory if it can be readily heard above the background noise level, 如果在背景噪声下易于听到, 则为听觉装置
- 2) Visual if it commands the attention of the operator, 如果要求操作者注意, 则为视觉装置, 或
- 3) A device that automatically rejects an unacceptable appliance. 自动辨别不合格器具的装置。

If the indication of acceptable performance is auditory or visual, the indication is to remain active and conspicuous until the test equipment is reset manually.

如果不合格性能指示装置为听觉装置或视觉装置, 则其指示应显眼地一直保留到手动复位测试装置。

d) When the test equipment is adjusted to produce the test voltage and a resistance of 120,000 ohms is connected across the output, the test equipment is to indicate an unacceptable performance within 0.5 second. A resistance of more than 120,000 ohms may be used to produce an indication of unacceptable performance, if the manufacturer elects to use a tester having higher sensitivity. 当调节测试装置以产生测试电压, 并将120KΩ的电阻连接到输出端时, 测试装置应能在0.5s指出性能不合格。如果测试装置有更高的灵敏度, 则电阻阻值可大于120KΩ。

Exception: The sensitivity of the test equipment may be reduced, a lower value of resistance may be used, when testing an appliance intended to be permanently wired. 例外: 当测试永久連線器具時, 可以降低測試裝置的靈敏度, 使用較小阻值電阻。

51.8 There is not to be any transient voltage applied to the appliance under test that results in the instantaneous voltage applied to the product exceeding 120 percent of the peak value of the test voltage that the manufacturer elects to use for this test. This requirement applies for the entire duration of the test, including the time that the voltage is first applied to the product and the time that the voltage is removed from the product. 施加测试电压时, 其瞬间电压值应不能超过测试电压峰值的1.2倍。这个要求适用于整个测试过程, 包括施加电压时及断开电压时。

51.9 During the test, a sufficient number of primary switching components shall be in the on position so that all primary circuitry will be stressed. Both sides of the primary circuit of the appliance are to be connected together to one terminal of the test equipment. The second equipment terminal is to be connected to accessible dead metal. 测试过程中, 供电电路的所有开关组件应处于“ON”位置, 以便所有的供电电路均接通。器具供电电路的两端连到一起, 接到测试装置的一个接线端。测试装置的另一个接线端接到可触及不带电金属零件上。

Exception: Resistive-type appliances and appliance utilizing motors, relays, coils or transformers, having circuitry not subject to excessive secondary build-up in case of indication of unacceptable performance during the test, may be tested with only one side of the primary circuit connected to the dielectric test equipment. 例外: 电阻类器具, 以及采用马达、继电器、线圈或变压器的器具, 当测试过程中指示不合格时, 电路不受到过大二次感应电压影响, 则测试时, 可以只将器具供电电路的一端连接到高压测试仪。

52 Polarization and Grounding Continuity Tests 52 极性及接地连续性测试

52.1 Polarization test 52.1 极性测试

52.1.1 Each appliance provided with a polarized attachment plug (2-wire plug with one blade wider than the other) shall be tested for electrical-continuity between the grounded supply-circuit conductor of the attachment plug (wide blade of a 2-wire plug) and the part of the appliance that is intended to be connected to the grounded supply-circuit conductor. If the continuity cannot be readily determined by visual inspection and component checking, an electrical-continuity test is to be made.

带极性连接插头(2-芯插头, 其中一片插脚比另一片宽)的器具, 要测试连接插头接地导线(2-芯插头较宽的一片)与连接到接地导线的器具零件之间的电气连续性。如果不易于目视检查及元件检查, 则做电气连续性测试。

52.2 Continuity of grounding connection 52.2 接地连续性测试

52.2.1 Each cord-connected appliance having provision for grounding shall be tested, as a routine production-line test, to determine that grounding continuity exists between the ground blade of the attachment plug and the accessible dead metal parts of the appliance that are likely to become energized. 提供接地的带电源线器具, 应对其进行测试, 以确定连接插头的接地片与可能变为带电的器具可触及不带电金属零件之间存在接地连续性。该测试为生产线例行测试

52.2.2 Only a single test need be conducted if the accessible metal selected is conductively connected by design to all other accessible metal.

如果所选择的可触及金属零件, 在设计时连接到所有其它可触及金属零件上, 则仅做一次测试。

52.3 Electrical indicating device 52.3 电源指示装置

52.3.1 Any indicating device, such as an ohmmeter, a battery and buzzer combination, or the like, may be used to determine compliance with the tests described in 52.1.1 – 52.2.2. 任何指示装置, 如欧姆表, 电池与蜂鸣片组合等, 可用于指示

52.1.1—52.2.2的测试结果。

RATINGS 電氣參數

53 Details 53 细节

53.1 An appliance shall be rated in amperes, volt-amperes, or watts, and also in volts, and may be rated for alternating current only. The rating shall include the frequency if necessary because of motors, relay coils, or other control devices. The voltage rating shall be in accordance with any appropriate single voltage or range of voltages such as 100 – 120 and 220 – 240. 器具应标出电流值，伏安值；或功率及电压值（仅对交流电源）。如因控制装置需要，要标出频率值。額定電壓可以為一個值，或電壓範圍，如100-120V或220-240V。

53.2 If an appliance includes an attachment plug receptacle which is not intended as a disconnecting means for any part of the appliance or necessary accessory, and which may serve as a general-use outlet, the added load which the receptacle may impose on the appliance and its supply connections (not less than 660 W or 6 A) shall be taken into consideration in determining the electrical rating of the appliance.

如果器具帶有用于接插電源插頭的插座，而該插座不打算作為斷開電源的裝置卻可作為通用插座，則在確定器具的電氣參數時，應考慮插座施加于器具及電源連接（不小于660W或6A）的額外負載。

MARKINGS 标识

54 Details 54 细节

54.1 A warning or caution marking shall comply with all of the following requirements: 54.1 警告语应符合所有以下要求：

- a) The marking shall be permanently attached. 警告语应永久性附着
- b) The marking shall not be attached to parts removable by hand. 警告语不可以标在可直接由手取下的零件上
- c) The marking shall be attached to parts that cannot be removed without impairing the operation of the appliance or left off the appliance without being readily apparent. 警告语所在零件在不中断器具的工作下应不可以取下
- d) The marking shall have lettering that complies with the following requirements: 警告语字高应符合以下要求：
 - 1) The precautionary signal word (such as "DANGER", "WARNING", OR "CAUTION") shall be in letters not less than 3/32 inch (2.4 mm) high. 警告词（如"DANGER"，"WARNING"，或"CAUTION"），其字高应不小于3/32"(2.4mm)。
 - 2) If contrasting color is used, lettering other than signal words can be a minimum of 1/16 inch (1.6 mm) high. 如采用反白，除警告词外，其它警告语的字高不小于1/16"(1.6mm)。

54.2 All other markings required in this section shall be such that the marking is clear and legible under conditions of intended use of the appliance. 本章所要求的所有其它标识，在器具正常使用状况下应清晰易见。

54.3 An appliance shall be legible and permanently marked, where it will be plainly visible (after installation in the case of a permanently connected appliance), with: 应在器具易于见到的地方（對永久連線器具，指安裝后易于見到），清晰、永久性地标上以下内容：

- a) The manufacturer's name, trade name, trademark, or other descriptive marking by which the organization responsible for the product may be identified, 制造商名称，商标，或其它描述性标识，以标示负责产品的机构；
- b) The date or other dating period of manufacture not exceeding any three consecutive months, that may be abbreviated or in a nationally acceptable code, or in a code affirmed by the manufacturer, 制造日期或不超过三个连续月的日期段。可采用缩写形式，或国家性可接受的惯用代码，或由制造商确定的代码；
- c) A distinctive (catalog) (model) number or the equivalent, and 甄别号（目录号或机种号）或等同号码；
- d) The electrical rating. 电气參數額定值。

A date code repetition time cycle shall not be less than 10 years. An appliance intended for use on alternating current only or on direct current only shall be so marked.

日期码循环时间应不少于10年。對於只用于交流或只用于直流的器具，應該注明。

54.4 An appliance shall be marked, where readily visible, to indicate that the appliance is intended for household type usage, such as "Household Use Only", "Household Type", and the like. Lettering shall not be less than 3/32 inch (2.4 mm) high. 应在器具易于见到的地方标上如"Household Use Only"，"Household Type"等来表明器具只打算作为家用。其字高不小于3/32"(2.4mm)。

54.5 If a manufacturer produces or assembles appliances at more than one factory, each finished appliance shall have a distinctive marking – that may be in code – to identify it as the product of a particular factory. 如果制造商不只在一家工厂生产或组装该器具，则每个成品要有甄别标志（可以用代号）来识别特定工厂的产品。

54.6 Each individual heating element or unit that is a part of an appliance and that is replaceable in the field shall be plainly marked with its electrical ratings in amperes or watts, and also in volts, or with the manufacturer's part number. 对器具所采用的独立的、可随时更换的加热组件，每根加热组件均要明确标上其电流值或功率及电压，或标上制造商的零件编号。

54.7 An appliance whose acceptable performance depends upon its proper location or position shall be marked (such as "top" or "bottom") to indicate the way that it is to be installed or used, unless such position is obvious. 如果器具的性能与器具的方位有关，则应标明方位（如"TOP"或"BOTTOM"）来指示其安装或使用方位，除非该方位是显而易见的。

54.8 A cord-connected electrically heated grill-type broiler, barbecue unit, motor-operated spit for use with a charcoal brazier, or the like which does not comply with the requirements in 44.2.4.1 – 44.2.4.7, and a solid-fuel-fired unit shall be plainly

marked "Use only outdoors, do not expose to rain." 用电源线进行连接的电热式GRILL-TYPE BROILER, BARBECUE UNIT, 与碳火盆一起使用的电动式烤肉叉, 以及燃烧固体燃料的器具, 应明确地标上"USE ONLY OUTDOORS, DO NOT EXPOSE TO RAIN."

54.9 If the construction of an appliance contemplates disassembly by means of a tool for the purpose of cleaning or similar servicing by the user (including replacement of a replaceable overcurrent and/or over-temperature protective device) and, if such disassembly involves the exposure of persons to unintentional contact with any normally enclosed or protected live part, the appliance shall be plainly marked with a warning that such servicing should be done only while the appliance is disconnected from the supply circuit. See also 6

如果器具的结构使得在用户清洗或类似维护时(包括更换热断路器), 需借助于工具才能拆开器具, 并且, 拆开后, 将导致人体与受正常保护的带电零件产生意外接触, 则器具上应明白地标出警告: 只有在断开电源的情况下, 才能进行此类维护。参见 6.16节。

54.10 The crumb tray of a toaster shall be marked "WARNING – To prevent electric shock, unplug before cleaning" or with an equivalent statement following the WARNING. 多士炉面包屑盘应标上如下内容: "WARNING – TO PREVENT ELECTRIC SHOCK, UNPLUG BEFORE CLEANING"或以WARNING开头的类似内容。

54.11 The crumb door of an under-cabinet or wall mounted toaster shall be marked "WARNING – To Reduce the Risk of Fire or Electric Shock, Operate with Crumb Door Closed", or with an equivalent statement following the word WARNING 嵌装式及墙挂式多士炉, 应在面包屑门标上"WARNING – TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, OPERATE WITH CRUMB DOOR CLOSED"或以WARNING开头的类似语句。

54.12 If any point within a terminal box or wiring compartment of a permanently connected appliance in which field-installed conductors are intended to be connected (including such conductors themselves) attains a temperature higher than 60°C (140°F) during the normal-temperature test, the appliance shall be legibly marked "For supply connections, use ___ AWG or larger wires suitable for at least ___ °C (___ °F)" or with an equivalent statement, and the temperature value shall be in accordance with Table 54.1. The wire size need not be included if No. 14 AWG wire was used during the test. This wording shall be located at or near the point where the supply connections are to be made and shall be clearly visible during installation and examination of the supply-wiring connections.

对永久性联机器具, 在正常温度测试期间, 如果接线盒内任一点(包括导线本身)的温度超过60°C (140°F), 则应在器具上清楚地标上"FOR SUPPLY CONNECTIONS, USE _____ AWG OR LARGER WIRES SUITABLE FOR AT LEAST _____ °C(____ °F)"或类似语句。空白处的温度值见表54.1。测试时如果使用#14AWG线, 则不必注明线号。该语句应位于电源线连接处附近, 并且在连接电源线或检查电源线的连接情况时能清楚看到。

Table 54.1
Temperature for marking

Temperature attained in terminal box or compartment during test	Temperature marking
61 – 75°C (142 – 167°F)	75°C (167°F)
76 – 90°C (169 – 194°F)	90°C (194°F)

表 54.1 标示温度值

測試過程接線盒內的溫度	溫度標示值
61–75°C (142–167°F)	75°C (167°F)
76–90°C (169–194°F)	90°C (194°F)

54.13 If a specific spacing between a permanently connected appliance, or a cord-connected wall or under-cabinet mounted appliance, and an adjacent surface is necessary to prevent the attainment of a temperature higher than 90°C (194°F) on the latter when the appliance is operated normally, the appliance shall be marked "Do not install closer than ___ inches (or ___ millimeters) to a (vertical, horizontal, and the like) surface" or the equivalent. A diagram indicating the spacings is also acceptable. The value of the spacing to be used in the statement or diagram shall not be less than that necessary to prevent the attainment of temperatures higher than 90°C (194°F) on the walls when the appliance is tested in the corner described in 35.1.19 and 35.1.21. The statement or diagram shall be legible and so located that it will be clearly visible during installation and it shall also be visible during examination of the supply-wiring connections for a permanently connected appliance.

如果永久联机器具, 墙挂式器具或嵌装式器具与其相邻表面必须保留一定间隙, 才能使得当器具正常工作时, 相邻表面温度不高于90°C (194°F), 则器具应注明"Do not install closer than ___ inches (or ___ mm) to a (vertical, horizontal, and the like) surface"或类似语句。用图标表示间隙值也可以。用于该语句或示意图中的间隙值, 应不小于在35.1.19及35.1.21测试过程中使墙上温度不高于90°C (194°F) 所要求的间隙。该语句或示意图应清晰易见, 并位于安装过程中可清楚见到的地方, 对永久性联机器具, 还应使得在检查电源线的连接时可见到。

54.14 A cord-connected appliance that is required to have provision for grounding through the cord and plug in accordance with 27.6 shall be plainly marked "CAUTION – To ensure continued protection against risk of electric shock, connect to properly grounded outlets only" or with equivalent wording following the word CAUTION. 电源线带接地导线，电源线插头带接地片的器具（见27.6），应清楚地标上"CAUTION – TO ENSURE CONTINUED PROTECTION AGAINST RISK OF ELECTRIC SHOCK, CONNECT TO PROPERLY GROUNDED OUTLETS ONLY"或以CAUTION开头的类似语句。

54.15 An appliance provided with a flexible cord less than 4-1/2 ft (1.4 m) in length (see 10.2.1.1) shall be provided with instructions in accordance with 54.16. 电源线长度（见10.2.1.1）小于4-1/2 ft（1.4m）的器具，应有54.16的说明语句。

54.16 The instructions required in 54.15 are to include the following information: 54.15所要求的语句包括以下内容：

- a) A short power-supply cord (or detachable power-supply cord) is to be provided to reduce the risk resulting from becoming entangled in or tripping over a longer cord.
- b) Longer detachable power-supply cords or extension cords are available and may be used if care is exercised in their use.
- c) If a longer detachable power-supply cord or extension cord is used,
 - 1) The marked electrical rating of the cord set or extension cord should be at least as great as the electrical rating of the appliance, and
 - 2) The cord should be arranged so that it will not drape over the countertop or tabletop where it can be pulled on by children or tripped over unintentionally.

If the appliance is of the grounded type, the extension cord should be a grounding-type 3-wire cord.

54.17 For appliances intended for outdoor use, the instructions shall include 54.16 (b) and (c) and the following information: 对于打算在室外使用的器具，说明语句应包括54.16(b)及(c)及以下内容：

- a) Outdoor extension cords should be used with outdoor use products and are surface marked with suffix letters "W-A" and with a tag stating "Suitable for Use with Outdoor Appliances".
- b) A statement indicating that the connection to an extension cord should be kept dry and off the ground.
- c) Store products indoors when not in use – out of the reach of children.
- d) Do not clean this product with a water spray or the like. (This statement may be omitted if the results of a special water hose spray test are acceptable.) （如果用专用水管做淋水测试的测试结果符合要求，则省略该语句）

54.18 An appliance that is likely to be lifted and handled for cleaning purposes and has not been subjected to the Immersion Tests, in accordance with 35.1.6 and 37.8 shall be marked "Do not immerse in water" or with an equivalent wording. If the appliance is intended for partial immersion but not for complete immersion, it shall be marked "Do not immerse beyond this point" or with an equivalent wording to show the point beyond that it should not be immersed. 54.18 revised November 17, 1998 不打算浸于水中进行清洗的器具，除非已经过浸水检查，证明符合35.1.6节及37.8节的要求，否则，要标示"Do not immerse in water"，或类似语句。如器具仅可以一部分浸入而不可以全部浸入，则要标明"Do not immerse beyond this point"，或类似语句来指明器具浸水位置不可以超出此点。

54.19 An appliance that is intended for installation by a nonmetal enclosed wiring system only, shall be marked to indicate that it must be installed with such a wiring system. The marking shall be so located that it will be visible while power-supply connections to the appliance are being made. 对只能采用非金属接线盒的器具，应在连接电源线时易于见到的地方注明只能采用非金属接线盒。

54.20 An appliance that is intended for use with a thermostatically controlled appliance plug shall be permanently marked "Use only (manufacturer) (designation) temperature-controlling plug" or with an equivalent wording. 对于使用器具插头带温控器的器具，应永久性地标上"Use only (manufacturer) (designation) temperature-controlling plug"或类似语句。

54.21 A convection oven with a top-mounted control panel shall be marked "CAUTION – Hot Surface" if the temperatures on an external top front edge exceed the maximum acceptable temperatures specified in Table 36.1. Such marking shall be in letters not less than 3/32 inch (2.4 mm) high, shall be in contrasting colors and readily visible to the user, and shall clearly identify the surface that is hot. 对于控制面板安装在顶面的CONVECTION OVEN，如果前顶边的温度超过表36.1的限值，则应该标上"CAUTION – HOT SURFACE"，其字高不低于3/32"（2.4mm），采用相反颜色并易于被使用者见到，而且需清楚表明高温部分。

54.22 An under-cabinet or wall mounted appliance shall be marked "CAUTION – Hot Surface" if the temperatures on any exposed surface exceed the maximum acceptable temperatures specified in Table 36.1. Such marking shall be in letters not less than 3/32 inch (2.4 mm) high, shall be in contrasting colors and readily visible to the user, and shall clearly identify the surface that is hot. 嵌装式器具及墙挂式器具，如果外露表面温度超过表36.1的限值，则应该标上"CAUTION – HOT SURFACE"，其字高不低于3/32"（2.4mm），采用相反颜色并易于被使用者见到，而且需清楚表明高温部分。

54.23 An under-cabinet or wall mounted appliance shall be permanently marked with the following or equivalent "CAUTION – To reduce the risk of fire do not place any heating or cooking appliance beneath this unit". The marking is to be in lettering minimum 3/32 inch (2.4 mm) high, on the front of the appliance, or the front leading edge of the mounting bracket and shall be visible after the appliance is mounted. The lettering is to be on a contrasting background, or the letters are to be raised, or the equivalent so that the marking is readily readable. 嵌装式器具及墙挂式器具，应在器具的前面或固定支架的主要边上永久性注明"CAUTION — To reduce the risk of fire do not place any heating or cooking appliance beneath this unit"，并且在安装后该警告语仍可见。其字高不小于3/32"（2.4mm）。字体颜色与背景色相反，或采用凸字，或使字易读的其它方法。

54.24 A cord connected outdoor-use product shall be marked: "CAUTION – To reduce the risk of electric shock, keep

extension cord connection dry and off the ground”, or with an equivalent wording following the word “CAUTION”.

对于用电源线连接的室外使用器具，应该标上“CAUTION – TO REDUCE THE RISK OF ELECTRIC SHOCK, KEEP EXTENSION CORD CONNECTION DRY AND OFF THE GROUND”，或以CAUTION开头的类似语句。

54.25 The marking described in 54.24 may be provided on a tag that is permanently attached to the power supply cord. The tag material and means of attachment to the power supply cord shall comply with the requirements in Test for Permanence of Cord Tag for Outdoor-Use Appliances, Section 50. The tag and the printing there-on shall be resistant to water. 54.24所要求的语句，也标示于固定在电源线上的吊牌。吊牌材料及粘贴方法应符合本标准第50章的要求。吊牌及其印刷内容应能防水。

54.26 An appliance with a removable cooking container shall be marked with the word “CAUTION” and the following or the equivalent on the internal surface of the basic appliance: “TO REDUCE THE RISK OR ELECTRIC SHOCK, COOK ONLY IN REMOVABLE CONTAINER.” Such marking shall be in letters not less than 3/32 inch (2.4 mm) high. The lettering shall be on a contrasting background or the letters are to be raised or the equivalent so that the marking is readily readable. 对烹调容器可以取掉的器具，应在大身内表面上标上“CAUTION – TO REDUCE ELECTRIC SHOCK, COOK ONLY IN REMOVABLE CONTAINER”。其字高不小于3/32”(2.4mm)。字体颜色与背景色相反，或采用凸字，或使字易读的其它方法。

55 Carton Marking 彩盒字唛

55.1 A carton (individual marketing container) for an appliance shall be marked to indicate that the appliance is intended for household type usage, such as, “Household Use Only”, “Household Type”, and the like. The marking shall: 彩盒上应标明此器具仅供家庭使用的语句，如“Household Use Only”，“Household Type”等。该语句应：

- Be located on at least one outside surface and至少在彩盒的一面上标出，
- Appear in lettering not less than the height specified in Table 55.1. 其字高不小于表55.1的值

Table 55.1
Lettering height

Smallest dimension of the carton panel to be marked in inches (mm)		Minimum height of lettering in inches (mm)
More than	Less than or equal to	
0	6 (152)	1/8 (3.2)
6 (152)	10 (254)	3/16 (4.8)
10 (254)	–	1/4 (6.4)

表 55.1 字高

语句所在表面的最小尺寸, inch (mm)		最小字高, inch (mm)
>0,	≤6 (152)	1/8 (3.2)
>6 (152),	≤10 (254)	3/16 (4.8)
>10 (254)	/	1/4 (6.4)

INSTRUCTION MANUAL 说明书

56 General 总体要求

56.1 An instruction manual or the equivalent shall be provided with the appliance. The manual shall specifically warn the user against each potential risk and state the precautions that should be taken to guard against each risk. The safety instructions shall be a permanent part of the manual but separated in format from the other instructions, and shall appear before the operating instructions in the manual. 说明书应与器具一起提供。说明书上应详细警告各种潜在危险，并针对每种危险说明其预防措施。安全说明是说明书的一个固定部分，但格式上与其它部分分开，并位于操作说明部分之前。

56.2 The instruction manual shall include instructions or illustrations to identify important safety features. 说明书应包括指示内容或示意图，以辨别重要安全特征。

56.3 The instruction manual of a toaster-oven or toaster oven/broiler shall clearly include a description, in a pictorial presentation, of the location and operation of each control. TOASTER OVEN及TOASTER OVEN/BROILER：其說明書應採用圖示說明每一控制裝置的位置及其操作。

56.4 The pictorial presentation mentioned in 56.3 shall highlight the means by which the unit is turned on or off. 56.3所提到的圖示，應突出顯示器具的接通及斷開裝置。

56.5 The height of lettering in the text and illustrations of the safety instructions shall be as follows: 安全指示的字高如下：

- Upper case letters shall not be less than 1/12 inch (2.11 mm) in height, 大写字母字高不小于1/12”(2.11mm);
- Lower case letters shall not be less than 1/16 inch (1.6 mm) in height, 小写字母字高不小于1/16”(1.6mm);

c) The phrases "IMPORTANT SAFEGUARDS" and "SAVE THESE INSTRUCTIONS" shall be in letters no less than 3/16 inch (4.8 mm) in height. "IMPORTANT SAFEGUARDS", "SAVE THESE INSTRUCTIONS"等词，其字高不小于3/16"(4.8mm)。

56.6 The instruction manual shall include the important safeguards in All Appliances, Section 57 and the appropriate text from Specific Appliances, Section 58. 说明书应包括57章的安全指示及58章的适当语句。

56.7 Unless otherwise indicated, the text of the instructions shall be verbatim to, or in equally definitive terminology as, All Appliances, Section 57 and Specific Appliances, 58, except where specific conflict in the application of the text to a product exists or risk alluded to has been reduced. The items may be numbered, and the phrases "Read all Instructions" and "Save these Instructions" shall be first and last, respectively, in a list of items. Other important and safeguard items considered appropriate by the manufacturer may be inserted. 除非另有说明，否则，说明文字应逐字地，或其术语等同于57章及58章，但当语句与器具存在冲突时除外。可以对各条款进行编号，并且，"Read all Instructions"应位于该部分的最前面，而"Save these Instructions"应位于最后面。中间插入制造商认为合适的重要安全指示。

56.8 The manufacturer's instructions shall include a statement indicating that preheating of the appliance is not necessary if preheating the appliance prior to the temperature or abnormal tests was waived based on such instruction. See 35.1.29. 如果在正常温度测试或非正常工作测试前，没有预热，则说明书上应说明没必要预热器具。见35.1.29。

56.9 For a dual voltage rated appliance, procedures to be followed in changing the voltage selector, if provided and providing the correct supply connection means for each voltage setting shall be provided. In addition, the following wording or equivalent shall be provided: "For use in the U.S.A., the voltage selector switch should be placed in the 120 volt position. For use in several countries overseas, the voltage selector may need to be placed in the 240 volt position. Confirm the voltage available at each overseas location before using the appliance. For connection to a 240 volt supply, use an attachment plug adapter of the proper configuration for the power supply receptacle."

对双电压器具，应说明：(1) 改变电压选择开关（如果有电压选择开关的话）；(2) 提供每种电压的正确电源连接方法。另外，要有以下说明语句：“For use in the U.S.A., the voltage selector switch should be placed in the 120 V position. For use in several countries overseas, the voltage selector may need to be placed in the 240 V position. Confirm the voltage available at each overseas location before using the appliance. For connection to a 240 V supply, use an attachment plug adapter of the proper configuration for the power supply receptacle.”

56.10 An appliance provided with a 2-wire polarized attachment plug shall include the following or equivalent wording: "This appliance has a polarized plug (one blade is wider than the other). To reduce the risk of electric shock, this plug is intended to fit into a polarized outlet only one way. If the plug does not fit fully into the outlet, reverse the plug. If it still does not fit, contact a qualified electrician. Do not attempt to modify the plug in any way." 带2-芯极性连接插头的器具，应有以下说明语句：“This appliance has a polarized plug (one blade is wider than the other). To reduce the risk of electric shock, this plug is intended to fit into a polarized outlet only one way. If the plug does not fit fully into the outlet, reverse the plug. If it still does not fit, contact a qualified electrician. Do not attempt to modify the plug in any way.”

57 All Appliances 适合于所有器具的安全措施

57.1 The following applies to all appliances. 以下内容适用于所有器具。

IMPORTANT SAFEGUARDS

When using electrical appliances, basic safety precautions should always be followed including the following:

1. Read all instructions
2. Do not touch hot surfaces. Use handles or knobs.
3. To protect against electrical shock do not immerse cord, plugs, or (state specific part or parts in question) in water or other liquid.
4. Close supervision is necessary when any appliance is used by or near children.
5. Unplug from outlet when not in use and before cleaning. Allow to cool before putting on or taking off parts.
6. Do not operate any appliance with a damaged cord or plug or after the appliance malfunctions or has been damaged in any manner. Return appliance to the nearest authorized service facility for examination, repair, or adjustment.
7. The use of accessory attachments not recommended by the appliance manufacturer may cause injuries.
8. Do not use outdoors (this item may be omitted if the product is specifically intended for outdoor use).
9. Do not let cord hang over edge of table or counter, or touch hot surfaces.
10. Do not place on or near a hot gas or electric burner, or in a heated oven.
11. Extreme caution must be used when moving an appliance containing hot oil or other hot liquids.
12. Always attach plug to appliance first, then plug cord into the wall outlet. To disconnect, turn any control to "off", then remove plug from wall outlet.
13. Do not use appliance for other than intended use.
14. Save these Instructions.

58 Specific Appliances 具体器具

58.1 Baby food warmers/servers

1. "Before serving be sure food is at safe temperature."

2. "Before serving, unplug cord from wall outlet and dish. Do not leave cord within child's reach." 58.2 Broiler-ovens

1. "Use extreme caution when removing tray or disposing of hot grease."

2. "Do not clean with metal scouring pads. Pieces can break off the pad and touch electrical parts, creating a risk of electric

shock."

58.3 Bun/bread-warmers (fabric enclosed heater)

1. "Do not use metallic fasteners to hold the fabric in place. Sharp utensils should not be used."
2. "Do not crush or fold the heater."

58.4 Outdoor electric barbecues/grills

1. "Fuel, such as charcoal briquettes, is not to be used with appliance."
2. "Use only on properly grounded outlet."

58.5 Nonmetallic pots 非金屬鍋

1. "Avoid sudden temperature changes, such as adding refrigerated foods into a heated pot." (This may be omitted for vessels of materials which are capable of withstanding such temperature extremes "Avoid sudden temperature changes, such as adding refrigerated foods into a heated pot." (如果鍋的材料能承受這樣的高低溫，則可以省略掉)).

58.6 Toasters

1. "Oversize foods, metal foil packages, or utensils must not be inserted in a toaster as they may involve a risk of fire or electric shock."
2. "A fire may occur if toasters are covered or touching flammable material, including curtains, draperies, walls, and the like, when in operation."
3. "Do not attempt to dislodge food when toaster is plugged in." (This may be omitted if toaster employs sheathed type heating elements.)

58.7 Toaster-ovens (not broilers)

1. "Oversize foods or metal utensils must not be inserted in a toaster-oven as they may create a fire or risk of electric shock."
2. "A fire may occur if the toaster-oven is covered or touching flammable material, including curtains, draperies, walls, and the like, when in operation. Do not store any item on top of the appliance when in operation."
3. "Do not clean with metal scouring pads. Pieces can break off the pad and touch electrical parts involving a risk of electric shock."
4. "Extreme caution should be exercised when using containers constructed of other than metal or glass."
5. "Do not store any materials, other than manufacturers recommended accessories, in this oven when not in use."
6. "Do not place any of the following materials in the oven: (List all materials – that is, paper, cardboard, plastic, and the like)."
7. "Do not cover crumb tray or any part of the oven with metal foil. This will cause overheating of the oven."
8. The manufacturer shall explain how the toaster-oven is turned off. (An off means must be provided other than unplugging the cord.) 應說明如何關掉 toaster-oven (除了拔出電源線外，還需提供關閉開關)

58.8 Appliances with detachable handles 手柄可以拆下的器具

1. "Be sure that handles are assembled and fastened properly."
2. (The manufacturer shall supply explicit instructions detailing the proper assembly of the handles. 詳細說明手柄的正確安裝方法)
3. (The manufacturer shall explain how improper assembly of the handles can be determined. 說明如何判斷手柄裝得不好)
Exception: Items 2 and 3 may be located in any part of the Instruction Manual provided that the important safeguards state " See instructions regarding handles on Page _____" or the equivalent wording. 例外：如果在說明書的 Important Safeguards部分注明"SEE INSTRUCTIONS REGARDING HANDLES ON PAGE _____"或类似语句，則第2、3項所处的位置不作要求。

58.9 Under cabinet and wall mounted appliances 嵌狀式及牆掛式器具

1. "To reduce the risk of fire, do not place any heating or cooking appliance beneath the appliance."
2. "To reduce the risk of fire, do not mount unit over or near any portion of a heating or cooking appliance."
3. "To reduce the risk of electric shock, do not mount over a sink."
4. "To reduce the risk of fire, do not store anything directly on top of the appliance surface when the appliance is in operation."

58.10 Dual voltage rated appliances. 双电压器具

1. Be sure dual voltage selector, if provided, is in correct voltage position before operating.
Before plugging in, read the information about the dual voltage contained in instruction section of this manual."
2. "This appliance was set at the factory to be operated at ____ volts. Refer to operating instructions section of this manual for conversion to ____ volt operation" or equivalent. The blanks are to be filled in with the appropriate voltage information.
Exception: This construction does not apply if an appliance operates over a range of voltages and requires no adjustment by the user, such as an appliance that employs a positive temperature coefficient (PTC) heating element intended for use over a range of voltages and requiring no adjustment by the user. 例外：对于可在一个电压范围内工作而不要求用户对其进行调整的器具（如带PTC加热组件的器具，可在一个电压范围内工作而不要求用户对其进行调整），则不必标上这些内容。

58.10.1 Glass/Ceramic food warming surfaces: 1) Do Not Cook on Broken Cook-Top – If cook-top should break, cleaning solutions and spillovers may penetrate the broken cook-top and create a risk of electric shock.

2) Clean Cook-Top with Caution – If a wet sponge or cloth is used to wipe spills on a hot cooking area, be careful to avoid steam burn, some cleaners can produce noxious fumes if applied to a hot surface.

Added 58.10.1 effective November 17, 1999

58.11 A cautionary marking that is required to be on an appliance shall be repeated in its entirety or with an equivalent wording in the instruction manual. The marking may be included in the Important Safeguards. 要求标示于器具上的警告内容，也要求完整地在说明书中写出来。这些内容可位于"IMPORTANT SAFEGUARDS"部分。

59 User Maintenance 用户维护

59.1 The instruction manual shall include instructions and caution statements for cleaning, user-maintenance (such as lubrication or non-lubrication) operations recommended by the manufacturer, and shall warn a user that any other servicing should be performed by an authorized service representative. The manual or other literature packaged with the product shall also indicate that the product is for household use. 说明书应包括清洗及制造商所推荐的用户维护（如润滑或不润滑）的指示及警告语句，并警告用户其它维护工作应由有资格的维修机构来完成，同时说明该器具仅适于家庭使用。

59.2 Instructions for mounting an under-cabinet or wall mounted appliance shall be provided. The actual instructions shall be located on the appliance, or in the literature packed with the appliance. The actual instructions shall not be in the Important Safeguards, however, there may be a reference to them in the Important Safeguards. (Such as "Wall or under-the-cabinet mounting should follow the directions in the installation instructions.") 对嵌装式器具及墙挂式器具，应提供安装指南。具体安装指南应写在器具上，或写在与器具一起提供的说明书上。安装指南不能位于Important Safeguards部分，但是，在Important Safeguards部分可以参考安装部分（如"Wall or under-the cabinet mounting should follow the directions in the installation instructions"）。