UL 751

STANDARD FOR SAFETY

Vending Machines

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UL Standard for Safety for Vending Machines, UL 751

Ninth Edition, Dated July 18, 2016

Summary Of Topics

The revisions to ANSI/UL 751 dated October 2, 2018 reflects the latest ANSI affirmation date and includes the following changes in requirements:

Revisions To Update Requirements For Controls

Revision To And Addition Of Requirements To Prevent Remote Shut-Off Of Vending Machines

Revisions To Clarify The Scope Of The Standard

Revisions To And Addition Of Requirements To Address Switch Mode Power Supply Units Increasingly Used In Vending Machines

Revisions To Clarify Requirements For Vending Machines Having Two Supply Cords

Revisions To Marking Requirements To Clarify Application Of UL 969 Requirements

Revisions To EMI Filter Requirements To Specify An Alternate Compliance Option

Editorial Revisions To Clarify The Compliance Criteria Of the Leakage Current Test

Editorial Revisions To Include A List Of All Reference Standards (Designation And Title) Referenced In The Text Of The Standard

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated June 29, 2018.

In the revisions dated October 2, 2018 pages 54 and 55 have been intentionally deleted from the Standard due to the deletion or relocation of text.

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UL 751

Standard for Vending Machines

The First, Second, and Third editions were titled Standard for Safety for Vending and Amusement Machines.

First Edition – December, 1970
Second Edition – April, 1974
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Fifth Edition – May, 1990
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Eighth Edition – July, 2012

Ninth Edition

July 18, 2016

This ANSI/UL Standard for Safety consists of the Ninth Edition including revisions through October 2, 2018.

The most recent designation of ANSI/UL 751 as an American National Standard (ANSI) occurred on October 2, 2018. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at https://csds.ul.com.

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INTRODUCTION

1 Scope

1.1 These requirements cover self-contained, payment-accepting, vending machines that vend non-refrigerated products to be employed in accordance with ANSI/NFPA 70. Vending machines as covered by this standard are intended for indoor use only, except that they will be investigated for outdoor use or use in a protected location if so designated by the manufacturer. Vending machines may be battery operated and may be provided with a solar photovoltaic (PV) system. If a vending machine vends a non-refrigerated product but is provided with a refrigerated section, then the refrigerated section shall be evaluated to the relevant requirements in UL 541.

1.2 These requirements also cover vending machines intended for installation within motor fuel dispensing facilities in accordance with Supplement SA, Requirements for Vending Machines Intended for Installation within Motor Fuel Dispensing Facilities, and as defined by NFPA 30A.

1.3 These requirements do not cover sound-recording and reproducing machines.

1.4 These requirements do not cover vending machines intended to vend refrigerated products. Such products are covered by UL 541.

2 Units of Measurement

2.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

3 References

3.1 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.

ANSI Standards

ANSI Z97.1, *Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test*

ASME Standards

ASME B94.11, *Twist Drills*

ASTM Standards

ASTM A90/A90M, *Test Method of the Standard Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings*

ASTM A653/A653M, *Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process*

ASTM E162, *Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source*

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IEC Standards

IEC 60127-1, *Miniature Fuses: Part 1, Definitions for Miniature Fuses and General Requirements for Miniature Fuse-Links*

IEC 60335-1, *Safety of Household and Similar Electrical Appliances, Part 1: General Requirements*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and Measurement Techniques – Radiated, Radio-Frequency, Electromagnetic Field Immunity Test*

IEC 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and Measurement Techniques – Electrical Fast Transient/Burst Immunity Test*

IEC 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and Measurement Techniques – Surge Immunity Test*

IEC 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and Measurement Techniques – Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields*

IEC 61000-4-11, *Electromagnetic Compatibility (EMC) – Part 4-11: Testing and Measurement Techniques – Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests*

IEC 61000-4-13, *Electromagnetic compatibility (EMC) – Part 4-13: Testing and Measurement Techniques – Harmonics and Interharmonics Including Mains Signalling at a.c. Power Port, Low Frequency Immunity Tests*

IEC 61000-4-34, *Electromagnetic Compatibility (EMC) – Part 4-34: Testing and Measurement Techniques – Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests for Equipment with Input Current More Than 16 A Per Phase*

NEMA Standards

NEMA WD6, *Wiring Devices – Dimensional Requirements*

NFPA Standards

NFPA 30A, *Code for Motor Fuel Dispensing Facilities and Repair Garages*

ANSI/NFPA 70, *National Electrical Code*

UL Standards

UL 1, *Flexible Metal Conduit*

UL 4, *Armored Cable*

UL 6, *Electrical Rigid Metal Conduit – Steel*

UL 20, *General-Use Snap Switches*

UL 44, *Thermoset-Insulated Wires and Cables*

UL 62, *Flexible Cords and Cables*

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UL 83, *Thermoplastic-Insulated Wires and Cables*

UL 94, *Tests for Flammability of Plastic Materials for Parts in Devices and Appliances*

UL 101, *Leakage Current for Appliances*

UL 157, *Gasket and Seals*

UL 197, *Commercial Electric Cooking Appliances*

UL 224, *Extruded Insulating Tubing*

UL 244A, *Solid-State Controls for Appliances*

UL 248-1, *Low-Voltage Fuses – Part 1: General Requirements*

UL 248-4, *Low-Voltage Fuses – Part 4: Class CC Fuses*

UL 248-5, *Low-Voltage Fuses – Part 5: Class CC Fuses*

UL 248-8, *Low-Voltage Fuses – Part 8: Class J Fuses*

UL 248-9, *Low-Voltage Fuses – Part 9: Class K Fuses*

UL 248-10, *Low-Voltage Fuses – Part 10: Class L Fuses*

UL 248-11, *Low-Voltage Fuses – Part 11: Plug Fuses*

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UL 310, *Electrical Quick-Connect Terminals*

UL 486A-486B, *Wire Connectors*

UL 486C, *Splicing Wire Connectors*

UL 486E, *Equipment Wiring Terminals for Use with Aluminum and/or Copper Conductors*

UL 489, *Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures*

UL 489A, *Circuit Breakers For Use in Communications Equipment*

UL 496, *Lampholders*

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UL 510, *Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape*

UL 514A, *Metallic Outlet Boxes*

UL 514B, *Conduit, Tubing, and Cable Fittings*

UL 514C, *Nonmetallic Outlet Boxes, Flush Device Boxes, and Covers*

UL 514D, *Cover Plates for Flush-Mounted Wiring Devices*

UL 541, *Refrigerated Vending Machines*

UL 542, *Fluorescent Lamp Starters*

UL 635, *Insulating Bushings*

UL 710B, *Recirculating Systems*

UL 719, *Nonmetallic Sheathed Cables*

UL 723, *Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source*

UL 746C, *Polymeric Materials – Use in Electrical Equipment Evaluations*

UL 746E, *Polymeric Materials – Industrial Laminates, Filament Wound Tubing, Vulcanized Fibre, and Materials Used in Printed Wiring Boards*

UL 758, *Appliance Wiring Material*

UL 797, *Electrical Metallic Tubing – Steel*

UL 810, *Capacitors*

UL 817, *Cord Sets and Power Supply Cords*

UL 840, *Insulation Coordination Including Clearances and Creepage Distances for Electrical Equipment*

UL 870, *Wireways, Auxiliary Gutters and Associated Fittings*

UL 917, *Clock-Operated Switches*

UL 923, *Microwave Cooking Appliances*

UL 935, *Fluorescent-Lamp Ballasts*

UL 943, *Ground Fault Circuit Interrupters*

UL 969, *Marking and Labeling Systems*

UL 1004-2, *Impedance Protected Motors*

UL 1004-3, *Thermally Protected Motors*

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UL 1004-7, *Electronically Protected Motors*

UL 1012, *Power Units Other Than Class 2*

UL 1029, *High-Intensity-Discharge Lamp Ballasts*

UL 1030, *Sheathed Heating Elements*

UL 1059, *Terminal Blocks*

UL 1077, *Supplementary Protectors for Use in Electrical Equipment*

UL 1283, *Electromagnetic Interference Filters*

UL 1310, *Class 2 Power Units*

UL 1412, *Fusing Resistors and Temperature-Limited Resistors for Radio- and Television-Type Appliances*

UL 1434, *Thermistor-Type Devices*

UL 1441, *Coated Electrical Sleeving*

UL 1446, *Insulating Materials – General*

UL 1449, *Surge Protective Devices*

UL 1557, *Electrically Isolated Semiconductor Devices*

UL 1565, *Positioning Devices*

UL 1577, *Optical Isolators*

UL 1642, *Lithium Batteries*

UL 1703, *Flat-Plate Photovoltaic Modules and Panels*

UL 1741, *Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources*

UL 1977, *Component Connectors for Data, Signal, Control and Power Applications*

UL 2054, *Household and Commercial Batteries*

UL 4248-1, *Fuseholders – Part 1: General Requirements*

UL 4248-4, *Fuseholders – Part 4: Class CC*

UL 4248-5, *Fuseholders – Part 5: Class G*

UL 4248-8, *Fuseholders – Part 8: Class J*

UL 4248-9, *Fuseholders – Part 9: Class K*

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UL 4248-11, *Fuseholders – Part 11: Type C (Edison Base) and Type S Plug Fuse*

UL 4248-12, *Fuseholders – Part 12: Class R*

UL 4248-15, *Fuseholders – Part 15: Class T*

UL 5085-1, *Low Voltage Transformers – Part 1: General Requirements*

UL 5085-2, *Low Voltage Transformers – Part 2: General Purpose Transformers*

UL 5058-3, *Low Voltage Transformers – Part 3: Class 2 and Class 3 Transformers*

UL 8750, *Light Emitting Diode (LED) Equipment For Use in Lighting Products*

UL 60065, *Audio, Video and Similar Electronic Apparatus – Safety Requirements*

UL 60335-1, *Household and Similar Electrical Appliances, Part 1: General Requirements*

UL 60384-14, *Fixed Capacitors for Use in Electronic Equipment – Part 14: Sectional Specification: Fixed Capacitors for Electromagnetic Interference Suppression and Connection to the Supply Mains*

UL 60691, *Thermal-Links – Requirements and Application Guide*

UL 60730-1, *Automatic Electrical Controls – Part 1: General Requirements*

UL 60730-2-6, *Automatic Electrical Controls – Part 2-6: Particular Requirements for Automatic Electrical Pressure Sensing Controls Including Mechanical Requirements*

UL 60730-2-9, *Automatic Electrical Controls – Part 2-9: Particular Requirements for Temperature Sensing Controls*

UL 60939-3, *Passive Filter Units for Electromagnetic Interference Suppression – Part 3: Passive Filter Units for Which Safety Tests are Appropriate*

UL 60950-1, *Information Technology Equipment – Safety – Part 1: General Requirements*

UL 61058-1, *Switches for Appliances – Part 1 General Requirements*

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4 Terminology

4.1 In the following text, a requirement that does not apply to all of the types of vending machines covered by this standard is identified by a specific reference in that requirement to the type or types of vending machine involved. Absence of such specific reference or use of the term vending machine indicates that the requirement applies to all types of vending machines unless the context indicates otherwise.

4.2 Unless otherwise specified, values of voltage and current referred to are rms values.

5 Glossary

5.1 For the purpose of this standard the following definitions apply.

5.1.1 ACCESSORY – A device or component intended for installation in or connection to a vending machine for the purpose of modifying or supplementing the functions of the vender. It is intended for installation by the serviceman or another equally qualified person in the field. An accessory may be dependent upon the vending machine for electrical power, signaling, switching, or the like.

5.2 BARRIER – A partition for isolating high-voltage electrical components, separating ignition sources from flammable materials, isolating moving parts and protection of wiring.

5.3 CABINET – The part of the equipment that provides physical protection to insulated wiring, enclosures, moving parts, motors, enclosed electrical parts, tubing or other parts that may cause injury to persons.

5.3.1 CAPACITOR, CLASS Y – Capacitor or resistor-capacitor unit of a type suitable for use in situations where failure of the capacitor could lead to danger of electric shock. (Examples would include capacitors connected across the primary and secondary circuits where electrical isolation is required to prevent an electric shock or between hazardous live parts and accessible parts.)

5.4 CELL – The basic photovoltaic device that generates electricity when exposed to sunlight.

5.5 CHARGE CONTROLLER – Equipment that controls dc voltage or dc current, or both, used to charge a battery.

5.6 COMPONENT – A device or fabricated part of the vending machine covered by the scope of a safety standard dedicated to that purpose. If incorporated in a vending machine, a product that is otherwise typically field installed (e.g. luminaire) is considered to be a component. Unless otherwise specified, materials that compose a device or fabricated part, such as aluminum or copper, are not considered components. Generally, components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under specific, limited conditions, such as certain temperatures not exceeding specified limits.

5.7 CONTROL, OPERATING – A device or assembly of devices, the operation of which starts or regulates the end product during normal operation. For example, a thermostat, the failure of which a thermal cutout/limiter or another layer of protection would mitigate the risk of electric shock, is considered an operating control. Operating controls are also referred to as ″regulating controls″. Appendix A specifies control functions that are not considered to result in a risk of fire, electric shock, or injury to persons.

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5.8 CONTROL, PROTECTIVE – A device or assembly of devices, the operation of which is intended to reduce the risk of fire, electric shock, or injury to persons during normal and reasonably anticipated abnormal operation of the appliance. For example, a thermal cutout/limiter, or any other control/circuit relied upon for normal and abnormal conditions, is considered a protective control. Protective controls are also referred to as ″limiting controls″ or ″safety controls″ and are investigated under normal and single-fault conditions. Appendix A specifies control functions that are considered to result in a risk of fire, electric shock, or injury to persons. Such functions may also be defined as ″safety critical″.

5.9 CONVERTER – A device that accepts ac or dc power input and converts it to another form of ac or dc power.

5.10 ELECTRONIC COMPONENT – A part in which electrical conduction is achieved principally by electrons moving through a vacuum, gas or semiconductor. A metal oxide varistor (MOV) is considered to be an electronic component, but neon indicators are not.

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5.11 ELECTRONIC DISCONNECTION – The de-energizing of a load within an appliance by an electronic device of a circuit. No electro-mechanical component having an air gap, such as a switch, contactor or relay is used to de-energize the load.

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5.12 ENCLOSURE – The part of the equipment that does one or more of the following:

a) Isolates ignition sources;

b) Renders inaccessible all or any part(s) of the equipment that may otherwise present a risk of electric shock; or

c) Retards propagation of flame initiated by electrical disturbances occurring within.

5.13 FIELD-WIRING TERMINAL – Any terminal to which a supply or other wire can be connected by an installer in the field, unless the wire is provided as part of the vending machine and a pressure terminal connector, soldering lug, soldered loop, crimped eyelet, or other means for making the connection is factory-assembled to the wire.

5.14 FUNCTIONAL PART – A part other than an enclosure or cabinet used to maintain the intended relative physical position of fixed or moving parts, or maintain the integrity of the structure.

5.15 GROUNDING, FUNCTIONAL – Grounding of a point in an appliance which is necessary for a purpose other than safety.

5.16 HIGH-VOLTAGE CIRCUIT – A high-voltage circuit is one involving a potential of not more than 600 volts and having circuit characteristics in excess of those of a low-voltage circuit as defined in 5.21.

5.17 IGNITION SOURCE – Any high-voltage electrical component not located within an enclosure.

5.18 INTERACTIVE SYSTEM – A solar photovoltaic system providing power to a vending machine and operating in parallel with and may deliver power to an electrical production and distribution network.

5.19 INVERTER – Equipment that is used to change voltage level or waveform, or both, of electrical energy and typically changes dc input to an ac output.

5.20 INDOOR LOCATION – Inside a building where not normally subjected to the effects of weathering.

5.21 LOW-VOLTAGE CIRCUIT – A low-voltage circuit is one involving a potential of not more than 30 volts alternating current, 42.4 volts peak or direct current, and supplied by a standard Class 2 transformer or by a suitable combination of transformer and fixed impedance having output characteristics in compliance with those required for a Class 2 transformer.

5.22 MODULE – A complete, environmentally protected unit consisting of solar cells, optics, and other components, exclusive of the tracker, designed to generate dc power when exposed to sunlight.

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5.23 MOTOR CONTROLLER – Any device normally used to start and stop a motor, such as a switch, thermostat, pressure limiting control, or the like.

5.24 NONFUNCTIONAL PART – A part of the equipment that does not perform a specific function.

5.25 NONFUNCTIONAL PART, SMALL – A nonfunctional part having an area of less than 1 ft^2(0.093 m^2) located so it cannot propagate flame from one area to another, and does not connect a possible source of ignition to the other ignitable parts.

5.26 OUTDOOR LOCATION – In the open and subjected to the full effects of weathering.

5.26.1 POTENTIALLY HAZARDOUS FOOD – A natural or synthetic substance intended for internal human consumption and which requires temperature control since it is capable of supporting growth of toxic microorganisms.

5.27 PROTECTED LOCATION – In an area that is partially protected from the effects of weathering through the use of a roof, canopy, marquee, or the like.

5.28 PROTECTIVE ELECTRONIC CIRCUIT (PEC) – An electronic circuit that prevents a risk of fire, electric shock or injury to persons under abnormal operating conditions.

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5.29 ROUTE PERSON – A person who regularly opens a vending machine for such purposes as cleaning, removing coins, making minor adjustments, price changing, and replenishing the product supply.

5.30 SERVICE PERSON – A person who may periodically open a vending machine to repair or maintain electrical or mechanical components.

5.31 SOLAR PHOTOVOLTAIC (PV) SYSTEM – The total components and subsystems that, in combination, convert solar energy into electric energy suitable for connection to a load such as a vending machine.

5.32 STAND-ALONE SYSTEM – A solar photovoltaic system that supplies power independently of an electrical production and distribution network. Such a system is not intended to be connected to an electrical production and distribution network.

5.32.1 SWITCH MODE POWER SUPPLY UNIT – Electronic device incorporating transformer(s) and electronic circuitry(ies), that converts electrical power into single or multiple power outputs by rapidly switching a solid-state device on and off. It may also isolate the input circuit from the output circuit and regulate and/or convert the output voltage and current. The device may consist of one or more individual units with identical or different waveforms and frequencies including dc output.

5.33 THERMISTOR – A thermally sensitive semiconductor resistor, which shows over at least part of its resistance/temperature characteristic a significant non-linear change in its electrical resistance with a change in temperature. A thermistor may be either of the positive temperature coefficient (PTC) type or of the negative temperature coefficient (NTC) type.

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5.34 VENDING MACHINE – Any self-service device that dispenses products or merchandise without the necessity of replenishing the device between each vending operation and designed to require insertion of a coin, paper currency, token, card, key or receipt of payment by other means.

5.35 VOLTAGE FOLDBACK – A circuit design feature intended to protect the power supply output transistors. When overcurrent is drawn by the load, the supply reduces the output voltage and current to within the safe power dissipation limit of the output transistors.

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CONSTRUCTION

6 General

6.1 If the deterioration or breakage of any part that contains, conducts, or otherwise contacts a liquid could result in a risk of fire, electric shock, or injury to persons, the part shall be of a material resistant to corrosion by the liquid to be used therein and shall have sufficient strength for the pressures involved.

6.2 If a liquid, powder, or other material that must be replenished, removed, or replaced is present, spilled material shall be prevented from contacting live parts, and any other risk of fire, electric shock, or injury to persons that could result from filling, emptying, storing, normal movement of the vending machine, or the like, shall be prevented from occurring.

6.3 A component shall:

a) Comply with the safety standard covering that component;

b) Be used in accordance with its rating(s) established for the intended conditions of use;

c) Be used within its established use limitations or conditions of acceptability; and

d) Comply with the applicable requirements of this end product standard.

Exception: A component of a product covered by this standard is not required to comply with a specific component requirement that:

a) Involves a feature or characteristic not required in the application of the component in the product;

b) Is superseded by a requirement in this standard; or

c) Is separately investigated when forming part of another component, provided the component is used within its established ratings and limitations.

6.4 A component that is also required to perform other necessary functions, such as overcurrent protection, ground-fault circuit interruption, surge suppression, any other similar functions, or any combination thereof, shall comply additionally with the requirements of the applicable standard(s) covering products that provide those functions.

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7 Nonmetallic Parts

7.1 All nonmetallic parts, other than small nonfunctional parts, shall comply with Sections 8 – 10 and Table 74.1.

7.2 In addition to the requirement in 7.1, nonmetallic materials that serve as electrical insulation or that directly support live parts shall comply with the requirements for electric insulation in UL 746C.

8 Nonmetallic Materials

8.1 Materials shall be classified with respect to flammability characteristics that are established by the tests specified in UL 94.

8.2 Materials shall be assigned flammability ratings based on greatest to least resistance to flame and are identified as: 5VA, 5VB, V-0, V-1, V-2, HF-1, HF-2, HB, and HBF.

8.3 In reference to 8.2, the assigned flammability rating shall be appropriate for the material-use application in accordance with Nonmetallic Material Ignition Sources Separation, Section 9 and Table 74.1.

9 Nonmetallic Material Ignition Sources Separation

9.1 Parts formed from nonmetallic materials that are rated HB or HBF and positioned as shown in Figure 9.1 shall be separated from ignition sources by means of a barrier, extending at least to the boundary surface of the space whenever such parts are located:

a) Below an ignition source and within Space A;

b) Above an ignition source and within Space B; and

c) In the vertical plane relative to an ignition source and within Space C.

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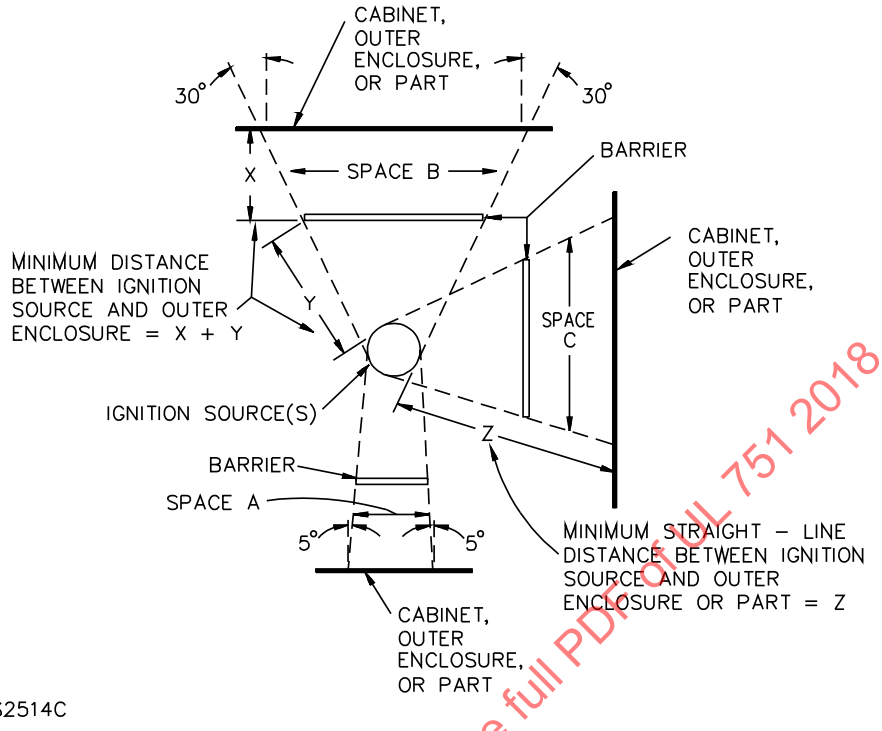
Figure 9.1
Separation of ignition sources from nonmetallic materials



9.2 The HB or HBF materials referenced by 9.1 shall be located such that the distance between:

a) High-voltage wiring not employing VW-1 insulation and the HB or HBF materials shall be a minimum of 2 inches (51 mm); and

b) Any other ignition source and the HB or HBF materials shall be a minimum of 4 inches (102 mm).

9.3 With reference to 9.2 and Figure 9.1, the minimum distance for HB or HBF materials located:

a) Above the ignition source shall be as shown in Distance X + Y; and

b) In the vertical plane relative to the ignition source shall be as shown in straight-line Distance Z.

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10 Nonmetallic Material Application and Location

10.1 Nonmetallic materials shall comply with the applicable tests as described in Table 74.1.

10.2 Nonmetallic fasteners used as a part of the enclosure shall comply with the Fastener Strength Test, Section 75.

11 Barriers

11.1 A barrier shall be formed from one or more of the following:

a) Metal, minimum 0.005 inch (0.13 mm) thick;

b) Fiberglass, minimum 0.5 inch (12.7 mm) thick;

c) A nonmetallic material rated 5VA;

d) A nonmetallic material evaluated to the 127 mm (5 inch) End Product Flame Test as described in UL 746C;

e) Vulcanized fiber, varnished cloth or phenolic composition, minimum 0.028 in. (0.71 mm) thick; or

f) Any other material or construction determined to be equivalent to (a) to (e).

11.2 A barrier shall be secured to the mounting surface such that tools are required for its removal.

11.3 Other than as specified in 19.1.4, 26.8 and 47.4(d) a nonmetallic barrier that isolates ignition source(s) shall comply with the enclosure requirements of Table 74.1.

11.4 A nonmetallic barrier providing mechanical protection shall comply with the cabinet requirements of Table 74.1.

12 Frame and Enclosure

12.1 A vending machine shall be formed and assembled so that it will have the strength and rigidity necessary to resist the abuses to which it may be subjected, without increasing the risk of fire, electric shock, or injury to persons due to total or partial collapse with resulting reduction of spacings, loosening or displacement of parts, or other serious defects.

12.2 Among the factors taken into consideration when an enclosure is being judged are:

a) Mechanical strength;

b) Resistance to impact;

c) Moisture-absorptive properties;

d) Combustibility;

e) Resistance to distortion at temperatures to which the material may be subjected under conditions of normal or abnormal usage; and

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