



# UL 1083

## STANDARD FOR SAFETY

Household Electric Skillets and Frying-Type Appliances

[ULNORM.COM](https://www.ulnorm.com) : Click to view the full PDF of UL 1083 2023

[ULNORM.COM](https://ULNORM.COM) : Click to view the full PDF of UL 1083 2023

UL Standard for Safety for Household Electric Skillets and Frying-Type Appliances, UL 1083

Sixth Edition, Dated January 9, 2009

### **Summary of Topics**

***This revision to ANSI/UL 1083 dated March 3, 2023 includes UL 969A as an Alternative to Existing Permanency of Marking Requirements for Cord Tags; Section [50](#) title, [50.1.1](#), [50.2.1](#), [54.14](#), and [56.11](#).***

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 revised requirements are substantially in accordance with Proposal(s) on this subject dated June 10, 2022 and January 20, 2023.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical photocopying, recording, or otherwise without prior permission of UL.

UL provides this Standard "as is" without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability or fitness for any purpose.

In no event will UL be liable for any special, incidental, consequential, indirect or similar damages, including loss of profits, lost savings, loss of data, or any other damages arising out of the use of or the inability to use this Standard, even if UL or an authorized UL representative has been advised of the possibility of such damage. In no event shall UL's liability for any damage ever exceed the price paid for this Standard, regardless of the form of the claim.

Users of the electronic versions of UL's Standards for Safety agree to defend, indemnify, and hold UL harmless from and against any loss, expense, liability, damage, claim, or judgment (including reasonable attorney's fees) resulting from any error or deviation introduced while purchaser is storing an electronic Standard on the purchaser's computer system.

No Text on This Page

ULNORM.COM : Click to view the full PDF of UL 1083 2023

**JANUARY 9, 2009**  
(Title Page Reprinted: March 3, 2023)



**ANSI/UL 1083-2023**

1

## **UL 1083**

### **Standard for Household Electric Skillets and Frying-Type Appliances**

First Edition – April, 1973  
Second Edition – November, 1979  
Third Edition – August, 1987  
Fourth Edition – July, 1995  
Fifth Edition – August, 2002

#### **Sixth Edition**

**January 9, 2009**

This ANSI/UL Standard for Safety consists of the Sixth Edition including revisions through March 3, 2023.

The most recent designation of ANSI/UL 1083 as an American National Standard (ANSI) occurred on March 3, 2023. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

The Department of Defense (DoD) has adopted UL 1083 on October 20, 2010. The publication of revised pages or a new edition of this Standard will not invalidate the DoD adoption.

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>.

Our Standards for Safety are copyrighted by ULSE Inc. Neither a printed nor electronic copy of a Standard should be altered in any way. All of our Standards and all copyrights, ownerships, and rights regarding those Standards shall remain the sole and exclusive property of ULSE Inc.

**COPYRIGHT © 2023 ULSE INC.**

No Text on This Page

[ULNORM.COM](https://ULNORM.COM) : Click to view the full PDF of UL 1083 2023

## CONTENTS

### INTRODUCTION

1	Scope .....	7
2	Components .....	7
3	Undated References .....	7
4	Units of Measurement .....	7
5	Glossary .....	7

### CONSTRUCTION

6	General .....	9
7	Frame and Enclosure .....	10
8	Assembly .....	17
9	Corrosion Protection .....	18
10	Supply Connections .....	18
	10.1 General .....	18
	10.2 Strain relief .....	21
	10.3 Pin terminals .....	21
	10.4 Bushings .....	23
11	Current-Carrying Parts .....	23
12	Internal Wiring .....	24
	12.1 General .....	24
	12.2 Protection of wiring .....	24
	12.3 Splices .....	25
13	Heating Elements .....	26
14	Electrical Insulation .....	27
	14.7 Film-coated wire (magnet wire) .....	28
15	Thermal Insulation .....	28
16	Thermal Cutoffs .....	28
17	Lampholders .....	28
18	Switches .....	29
19	Dual Voltage Appliances .....	30
20	Controls and Control Circuits .....	30
	20.1 General .....	30
	20.2 Terminals of safety devices .....	30
	20.3 Controls .....	30
20A	Electromechanical and Electronic Controls .....	31
20B	Controls – End Product Test Parameters .....	32
	20B.1 General .....	32
	20B.2 Auxiliary controls .....	32
	20B.3 Operating controls (regulating controls) .....	32
	20B.4 Protective controls (limiting controls) .....	33
	20B.5 Controls using a temperature sensing device .....	35
21	Spacings .....	35
	21.1 General .....	35
	21.2 Barriers .....	35
21A	Spacings On Printed-Wiring Boards .....	36
22	Overheating Protection .....	36
23	Grounding .....	37
24	Protection Against Personal Injury .....	38
24A	Ground-Fault, Arc-Fault, and Leakage Current Detectors/Interrupters .....	39
24B	Surge Protective Device .....	40

**PERFORMANCE**

25	General .....	40
26	Power Input Test .....	40
27	Leakage Current Test .....	40
28	Operational Tests .....	42
29	Calibration Tests of Probe-Type Temperature Controls .....	42
30	Mechanical Abuse .....	43
31	Normal Temperature Test.....	43
	31.1 General.....	43
	31.2 Specific test conditions.....	47
32	Insulation Resistance and Leakage Current Tests as a Result of Moisture .....	50
	32.1 General.....	50
	32.2 Gasket & seal aging tests .....	50
	32.3 Immersion .....	50
	32.4 Cool-down leakage current.....	51
33	Dielectric Voltage-Withstand Test .....	52
34	Strain Relief Test .....	53
35	Push-Back Relief Test .....	53
36	Metal Enclosure Impact Test .....	54
37	Stability Test .....	57
38	Dynamic Stability Test – Deep Fryers, Cooker/Fryers, and Oil Fondues .....	58
39	Impact after Dynamic Stability Test .....	60
40	Deep Fryer, Cooker/Fryer, and Oil Fondue Cycling Test.....	63
41	Handle and Feet Strength Tests.....	63
42	Detachable Power-Supply Cord Separation Test – Deep Fryers, Cooker/Fryers, and Oil Fondues .....	65
43	Thermal Degradation Test.....	65
44	Mechanical Endurance Test .....	65
45	Broken Element Test .....	66
46	Abnormal Operation Test .....	66
	46.1 General.....	66
	46.2 Specific test conditions.....	67
	46.3 Deep fryers/cooker-fryers/oil fondues .....	68
	46.4 Skillets.....	68
	46.5 Waffle bakers, sandwich grills, hamburger makers, contact grills, and donut makers .....	68
	46.6 Corn poppers .....	68
	46.7 Griddles and crepe makers.....	69
47	Temperature Probe Insertion Test .....	69
48	Control Devices Tests .....	69
	48.1 Automatic controls .....	69
	48.2 Endurance test for thermostats .....	70
49	Permanence of Marking .....	70
50	Permanence of Cord Tag – Deep Fryers and Cooker/Fryers .....	71
	50.1 General.....	71
	50.2 Test method .....	71

**MANUFACTURING AND PRODUCTION TESTS**

51	Dielectric Voltage-Withstand Test .....	72
52	Polarization and Grounding Continuity Tests.....	73
	52.1 Polarization test.....	73
	52.2 Continuity of grounding connection .....	74
	52.3 Electrical indicating device.....	74

**RATINGS**

53 Details ..... 74

**MARKINGS**

54 Details ..... 74  
55 Carton Marking ..... 78

**INSTRUCTIONS**

56 General ..... 78  
57 All Appliances ..... 80  
58 Specific Appliances ..... 81  
59 User Maintenance ..... 83

**APPENDIX A**

**APPENDIX B**

B.1 Food Color Charts ..... 85

ULNORM.COM : Click to view the full PDF of UL 1083 2023

No Text on This Page

[ULNORM.COM](https://ULNORM.COM) : Click to view the full PDF of UL 1083 2023

## INTRODUCTION

### 1 Scope

1.1 These requirements cover portable electric household skillets and other frying-type appliances, rated at 125 V or less, for use in ordinary locations in accordance with the National Electrical Code, NFPA 70.

1.2 Frying-type appliances in this standard include frying-pans, sauce-pans, griddles, corn poppers, deep fryers, oil fondues, low temperature fondues, tempuras, woks, waffle makers, sandwich makers, contact grills, and other similar appliances which may or may not be thermostatically controlled.

1.2.1 These requirements do not cover skillets or frying-type appliances with marked capacities of more than 5.3 quarts (5 liters) of cooking oil.

1.3 These requirements do not cover skillets or frying-type appliances intended for outdoor use, warming trays, or appliances that are covered in individual requirements that are separate from this standard.

1.4 In the following text, a requirement which applies to one type of equipment coming within its scope (skillet, waffle-maker, 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 or 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.

1.5 A heating appliance covered by this Standard and intended to cook with oil to a depth greater than 0.5 inches (13 mm) during normal operation shall be subjected to the additional requirements for Deep Fryers / Cooker Fryers / Oil Fondues specified in this Standard.

### 2 Components

Section 2 deleted

### 3 Undated 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.

### 4 Units of Measurement

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

4.2 Unless indicated otherwise, all voltages and current values mentioned in this Standard are root-mean-square (rms).

### 5 Glossary

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

5.1.1 COOKER / FRYER – An adjustable thermostatically controlled heating appliance intended to cook at various temperature levels. One of the functions is as a deep fryer.

5.1.2 DEEP FRYER – A thermostatically controlled heating appliance intended to cook food loads submerged in hot oil. The appliance is intended to have an oil depth greater than 0.5 inches (13 mm) during normal operation.

5.1.3 FRYING PAN, FRYPAN, SKILLET – A heating appliance having a flat pan with flared or straight sides intended to cook with an amount of oil, 0.5 inches (13 mm) or less as measured from the center of the pan, for frying, searing, or browning foods.

5.1.3.1 LARGE ITEM – As applied to a Deep Fryer or Cooker/Fryer, an individual food item weighing 5 lbs (2.27 kg) or more intended to be cooked whole.

5.1.4 LOW TEMPERATURE FONDUE – A heating appliance intended to cook or warm melted cheese, chocolate, or other liquid sauces. The maximum obtainable temperature of the food medium does not exceed 110°C (230°F) and does not advertise the use as an oil fondue.

5.1.5 OIL FONDUE – A heating appliance intended to cook various food loads while submerged in hot oil to a depth greater than 0.5 inches (13 mm) during normal operation.

5.1.6 WOK – A heating appliance having a round curved bottomed cooking pan used with an amount of oil filled to a depth of 0.5 inches (13 mm) or less, for stir frying.

5.2 TEMPERATURE-REGULATING THERMOSTAT – A thermostat that functions only to regulate the temperature of the heating appliance under normal conditions of use, and whose malfunction would not result in a risk of fire.

5.3 TEMPERATURE-LIMITING THERMOSTAT – A thermostat that functions only under conditions that produce abnormal temperatures. The malfunction of such a thermostat might not result in a risk of fire.

5.4 TEMPERATURE-REGULATING AND LIMITING THERMOSTAT – A thermostat that functions to regulate the temperature of the heating appliance under normal conditions of use, and also serves to prevent a fire that may result from conditions of abnormal operation of the appliance.

5.5 APPLIANCE COUPLER – A single-outlet, female contact device for attachment to a flexible cord as part of a detachable power-supply cord to be connected to an appliance inlet (motor attachment plug).

5.6 APPLIANCE INLET (Motor Attachment Plug) – A male contact device mounted on an end product appliance to provide an integral blade configuration for the connection of an appliance coupler or cord connector.

5.7 APPLIANCE (FLATIRON) PLUG – An appliance coupler type of device having a cord guard and a slot configuration specified for use with heating or cooking appliances.

5.8 COMPONENT – A device or fabricated part of the appliance covered by the scope of a safety standard dedicated to the purpose. When incorporated in an appliance, equipment 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 thermoplastic or copper, are not considered components.

5.9 CONTROL, AUTOMATIC ACTION – A control in which at least one aspect is non-manual.

5.10 CONTROL, AUXILIARY – A device or assembly of devices that provides a functional utility, is not relied upon as an operational or protective control, and therefore is not relied upon for safety. For example, an efficiency control not relied upon to reduce the risk of electric shock, fire, or injury to persons during normal or abnormal operation of the end product is considered an auxiliary control.

5.11 CONTROL, MANUAL – A device that requires direct human interaction to activate or rest the control.

5.12 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 reduce the risk of electric shock, fire, or injury to persons, is considered an operating control.

5.13 CONTROL, PROTECTIVE – A device or assembly of devices, the operation of which is intended to reduce the risk of electric shock, fire 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. (During the testing of the protective control/circuit, the protective functions are verified under normal and single-fault conditions of the control.)

5.14 CONTROL, TYPE 1 ACTION – The actuation of an automatic control for which the manufacturing deviation and the drift (tolerance before and after certain conditions) of its operating value, operating time, or operating sequence has not been declared and tested under this standard.

5.15 CONTROL, TYPE 2 ACTION – The actuation of an automatic control for which the manufacturing deviation and the drift (tolerance before and after certain conditions) of its operating value, operating time, or operating sequence have been declared and tested under this standard.

5.16 CORD CONNECTOR – A female contact device wired on flexible cord for use as an extension from an outlet to make a detachable electrical connection to an attachment plug or, as an appliance coupler, to an equipment inlet.

## CONSTRUCTION

### 6 General

6.1 Only materials that are intended for the particular use shall be used in an appliance. It shall be made and finished with the degree of uniformity and grade of workmanship practicable in a well-equipped factory.

6.2 A component of a product covered by this Standard shall:

- a) Comply with the requirements for that component as indicated in the individual section covering that component;
- b) Be used in accordance with its rating established for the intended conditions of use;
- c) Be used within its established use limitations or conditions of acceptability;
- d) Additionally comply with the applicable requirements of this end product Standard; and
- e) Not contain mercury, unless used within a fluorescent, high intensity discharge, or neon lamp bulb.

*Exception No. 1: 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.*

*Exception No. 2: A component complying with a component standard other than those cited in this Standard is acceptable if:*

- a) *The component also complies with the applicable component standard indicated in this Standard; or*
- b) *The component standard:*
  - 1) *Is compatible with the ampacity and overcurrent protection requirements in the National Electrical Code, NFPA 70, where appropriate;*
  - 2) *Considers long-term thermal properties of polymeric insulating materials in accordance with the Standard for Polymeric Materials – Long Term Property Evaluations, UL 746B; and*
  - 3) *Any use limitations of the other component standard is identified and appropriately accommodated in the end use application. For example, a component used in a household application, but intended for industrial use and complying with the relevant component standard may assume user expertise not common in household applications.*

6.3 A component that is also intended to perform other functions, such as over current protection, ground-fault circuit-interruption, surge suppression, any other similar functions, or any combination thereof, shall comply additionally with the requirements of the applicable UL standard that cover devices that provide those functions.

*Exception: Where these other functions are not required for the application and not identified as part of markings, instructions, or packaging for the appliance, the additional component standard need not be applied.*

6.4 A component not anticipated by the requirements of this end product standard, not specifically covered by the component standards noted in this Standard, and that involves a risk of fire, electric shock, or injury to persons, shall be additionally investigated in accordance with the applicable UL standard, and shall comply with [6.2](#) (b) – (e).

6.5 With regard to a component being additionally investigated, reference to construction and performance requirements in another UL end product standard is suitable where that standard anticipates normal and abnormal use conditions consistent with the application of this end product Standard.

## **7 Frame and Enclosure**

7.1 The frame and enclosure of an appliance shall be strong and rigid enough to resist the abuses likely to be encountered during normal 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 which alone or in combination constitute an increase in the risk of fire, electric shock, or injury to persons.

7.2 An appliance shall be provided with an enclosure of material acceptable for the particular application, which shall house all electrical parts, except a supply cord that may present a risk of fire, electric shock, or injury to persons under any condition of use.

7.3 In the case of an appliance employing oil or grease in its cooking operation, special consideration is to 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.

7.4 Among the factors that shall be taken into consideration when an enclosure is being judged for acceptability are its:

- a) Physical strength;
- b) Resistance to impact;
- c) Moisture-absorptive properties;
- d) Combustibility;
- e) Resistance to corrosion; and
- f) Resistance to distortion at temperatures to which the enclosure may be subjected under conditions of normal or abnormal use.

A nonmetallic enclosure shall comply with 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 Tests, Section 36, for resistance to impact.

*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 46.*

*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 specified in 43.1 shall be conducted.*

7.5 A thermoplastic enclosure of an appliance provided with overheating protection (Overheating Protection, Section 22) 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.

7.6 Cast- and sheet-metal portions of the enclosure shall be no thinner than indicated in Table 7.1 unless the enclosure is found to be acceptable when judged under considerations such as mentioned in 7.4.

**Table 7.1**  
**Minimum acceptable thicknesses of enclosure metal**

Metal	At small, flat, unreinforced surfaces and at surfaces that are reinforced by curving, ribbing, or the like or are otherwise of a shape and/or size to provide equivalent physical strength		At relatively large unreinforced flat surfaces	
	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 <sup>a</sup>	(0.66 <sup>a</sup> )	0.026	(0.66)

Table 7.1 Continued on Next Page

Table 7.1 Continued

Metal	At small, flat, unreinforced surfaces and at surfaces that are reinforced by curving, ribbing, or the like or are otherwise of a shape and/or size to provide equivalent physical strength		At relatively large unreinforced flat surfaces	
	Inches	(mm)	Inches	(mm)
Galvanized sheet steel	0.029 <sup>a</sup>	(0.74 <sup>a</sup> )	0.029	(0.74)
Nonferrous sheet metal	0.036 <sup>a</sup>	(0.91 <sup>a</sup> )	0.036	(0.91)

<sup>a</sup> Thinner sheet metal may be employed if found to be acceptable when the enclosure is judged under considerations such as those mentioned in [7.4](#).

7.7 Electrical parts of an appliance, except the radiating portion of an open-wire element of a waffle-maker-type appliance with removable grids and its terminal connections immediately adjacent to the radiating element, shall be located or enclosed so that protection against unintentional contact with uninsulated live parts is provided.

7.8 The enclosure shall be constructed so that molten metal, burning insulation, flaming particles, or the like does not fall on the supporting surface.

7.9 The requirement in [7.8](#) necessitates that an enclosure bottom with an opening be provided with a barrier above or below the opening if the opening is:

a) Under a motor unless:

- 1) The structural parts of the motor or of the appliance provide the equivalent of such a barrier;
- 2) The protection provided with the motor is such that no burning insulation or molten material falls to the surface that supports the appliance when the motor is energized under each of the following fault conditions:
  - i) Open main winding;
  - ii) Open starting winding;
  - iii) Starting switch short-circuited; and
  - iv) 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.
- 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; or
- 4) The motor complies with the requirements for impedance-protected motors.

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.

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.

d) Under field and factory-made splices and overload and overcurrent protective devices.

*Exception: A barrier is not required if the opening is not within the area under the component requiring a barrier as illustrated by Line D in [Figure 7.1](#).*

7.10 The barrier mentioned in [7.9](#) shall be:

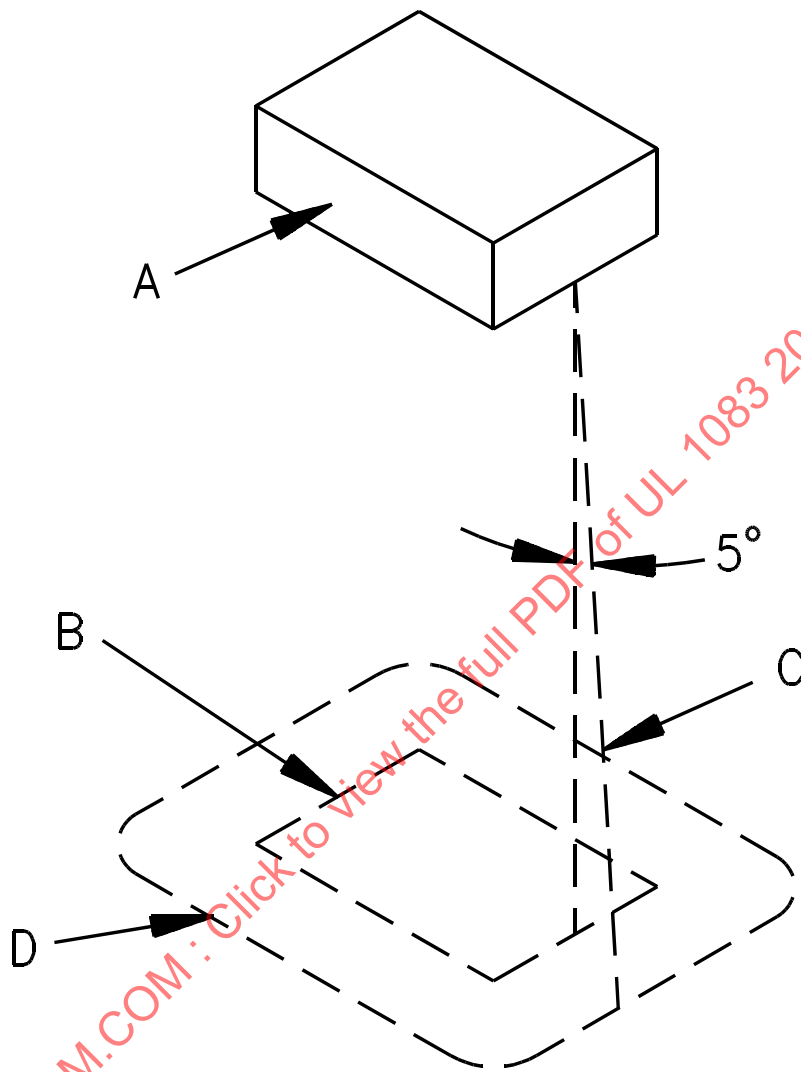
- a) Of metal, ceramic, or a material that is acceptable as an enclosure in accordance with [7.4](#);
- b) Horizontal; and
- c) Located as indicated in [Figure 7.1](#), and shall not have an area less than that described in [Figure 7.1](#).

7.11 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 7.2](#), 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.

7.12 An opening that has a minor dimension of 1 inch (25.4 mm) or more, in an enclosure, as illustrated in [Figure 7.3](#), 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.

ULNORM.COM : Click to view the full PDF of UL 1083 2023

**Figure 7.1**  
**Location and extent of barrier**



EB120B

A – Region to be shielded by barrier. This consists of the entire component if it is not otherwise shielded and consists of the unshielded portion of a component that is partially shielded by the component enclosure or equivalent.

B – Projection of outline of component on horizontal plane.

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

- 1) Tangent to the component;
- 2) 5 degrees from the vertical; and
- 3) Oriented so that the area traced out on a horizontal plane is maximum.

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