UL 1086

STANDARD FOR SAFETY

Household Trash Compactors

UL Standard for Safety for Household Trash Compactors, UL 1086

Sixth Edition, Dated August 15, 2016

SUMMARY OF TOPICS

This new edition of ANS/UL 1086 is being issued to include an alternative method for evaluating protective electronic circuits and controls using requirements based on the Standard for Safety of Household and Similar Electrical Appliances, Part 1: General Requirements, UL 60335-1

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated March 25, 2016 and June 17, 2016.

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Standard for Household Trash Compactors

First Edition – September, 1976
Second Edition – February, 1979
Third Edition – December, 1991
Fourth Edition – February, 1996
Fifth Edition – June, 2005

Sixth Edition

August 15, 2016

This ANSI/UL Standard for Safety consists of the Sixth Edition.

The most recent designation of ANSI/UL 1086 as an American National Standard (ANSI) occurred on August 15, 2016. ANSI approval for a standard does not include the Cover Page, Transmittal Pages and Title Page.

The Department of Defense (DoD) has adopted UL 1086 on August 12, 1994. 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 http://csds.ul.com.

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INTRODUCTION

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INTRODUCTION

1 Scope

1.1 These requirements cover trash compactors that are rated 250 V or less and intended for household use to reduce the volume of waste prior to disposal; and that are intended to be employed in accordance with the National Electrical Code, NFPA 70.

2 General

2.1 A component used with an appliance covered by this standard shall comply with the standard or other requirements for the component. See Appendix A for a list of standards covering components generally used in the products covered by this standard.

Exception: A component is not required to comply with a specific requirement that:

a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or

b) Is superseded by a requirement in this standard.

2.2 A component shall be used in accordance with its rating established for the intended conditions of use.

2.3 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.

3 Units of measurement

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

4 Undated References

4.1 In the following text, a requirement that applies only to a specific type of trash compactor is so identified by a specific reference in that requirement to the type involved. Absence of such specific reference or use of the term appliance indicates that the requirement applies to all trash compactors covered by this standard unless the context indicates otherwise.

4.2 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.

5 Glossary

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

5.2 CONVERTIBLE APPLIANCE – A free-standing or portable appliance that is intended to be converted to an undercounter or recessed appliance.

5.3 FREESTANDING APPLIANCE – An appliance that is not intended for attachment to the building structure or to adjacent cabinets or appliances.

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

5.5 LOW-VOLTAGE CIRCUIT – A circuit involving a peak open-circuit potential of not more than 42.4 V supplied by a primary battery, by a Class 2 transformer, or by a combination of a transformer and a fixed impedance that as a unit, complies with all performance requirements for a Class 2 transformer. A circuit derived from a line-voltage circuit by connecting a resistance in series with the supply circuit as a means of limiting the voltage and current, is not considered to be a low voltage circuit.

5.6 OPERATING CONTROL – Control, the operation of which starts or regulates the appliance during normal operation.

5.7 PORTABLE APPLIANCE – A cord-connected appliance mounted on wheels, casters, or the equivalent, and intended to be moved about.

5.8 PROTECTIVE CONTROL – Control, the operation of which is intended to prevent the risk of fire, electric shock, or injury to persons during normal or abnormal operation of the appliance.

5.9 RECESSED APPLIANCE – An appliance that is intended for installation and use with the rear and both sides located adjacent to cabinets, walls, or other appliances. A recessed appliance may be such as to permit location under a countertop.

5.10 SAFETY CRITICAL FUNCTION (SCF) – Control, protection and monitoring functions which are being relied upon to reduce the risk of fire, electric shock or injury hazards.

5.11 TEMPERATURE-LIMITING DEVICE – A device that functions:

a) Only under conditions that produce abnormal temperatures; and

b) That is not intended to function during normal operation of the appliance.

5.12 TEMPERATURE-REGULATING DEVICE – A device that:

a) Regulates temperature; and

b) Functions during normal operation of the appliance.

5.13 TEMPERATURE-REGULATING AND –LIMITING (Combination) DEVICE – A device that functions to:

a) Regulate the temperature under normal conditions of use; and

b) Limit abnormal temperatures that might result from conditions of abnormal operation of the appliance.

5.14 UNDERCOUNTER APPLIANCE – An appliance intended for installation under a countertop, and for attachment to the building structure or to adjacent cabinets, walls, or appliances.

CONSTRUCTION

6 General

6.1 An appliance shall employ materials that are acceptable for the use.

7 Frame And Enclosure

7.1 An appliance 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 a risk of fire, electric shock, or injury to persons due to total or partial collapse with resulting reduction of spacings, loosening or displacement of parts, or other serious defects.

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

7.3 Among the factors to be taken into consideration when an enclosure is being judged are the:

a) Mechanical 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 during normal or abnormal use.

For a nonmetallic enclosure, all of these factors are to be considered with respect to thermal aging.

7.4 A cast- or sheet-metal section of an enclosure shall have a thickness not less than that specified in Table 7.1.

Exception: An enclosure or part of an enclosure that complies with 32.6 – 32.8 is not required to comply with this requirement.

7.5 Electrical parts of an appliance shall be located or enclosed so that protection against unintentional contact with uninsulated live parts and internal wiring will be provided.

7.6 The enclosure of an appliance shall be such as to prevent molten metal, burning insulation, flaming particles, or the like from falling on combustible materials, including the surface upon which the appliance is supported and inside the compacting compartment.

Table 7.1
Thickness of metal enclosure

Metal	Minimum thickness					
	At small, flat unreinforced surfaces and at surfaces of a shape or size that provides adequate mechanical strength		At surfaces to which a wiring system is to be connected in the field		At relatively large unreinforced flat surfaces	
	inch	(mm)	inch	(mm)	inch	(mm)
Die-cast metal	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	(0.66)	0.032	(0.81)	0.026	(0.66)
Galvanized sheet steel	0.029	(0.74)	0.034	(0.86)	0.029	(0.74)
Nonferrous sheet metal other than copper	0.036	(0.91)	0.045	(1.14)	0.036	(0.91)
Copper	0.033	(0.84)	0.043	(1.09)	0.033	(0.84)

7.7 The requirement in 7.6 necessitates that a switch, a relay, a solenoid, or the like, be completely and individually enclosed except for terminals, unless it can be shown that breakdown of the component would not result in a risk of fire, or unless there are no openings in the enclosure through which molten metal, burning insulation, flaming particles, or the like, can fall. See 48.1.1 and 48.1.2. It will also necessitate the use of a barrier of noncombustible material:

a) Under a motor unless:

1) The structural parts of the motor or of the appliance provide the equivalent of such a barrier;

2) The protection provided with the motor is such that no burning insulation or molten material falls to the surface that supports the appliance or into the compacting compartment when the motor is energized under each of the following fault conditions:

i) Open main winding,

ii) Open auxiliary winding,

iii) Starting switch short-circuited, and

iv) Capacitor of a permanent-split-capacitor motor short-circuited and the rotor locked – the short-circuit is to be applied before the motor is energized; or

3) The motor is provided with a thermal motor protector – a protective device that is sensitive to temperature and current – that will prevent the temperature of the motor windings from exceeding:

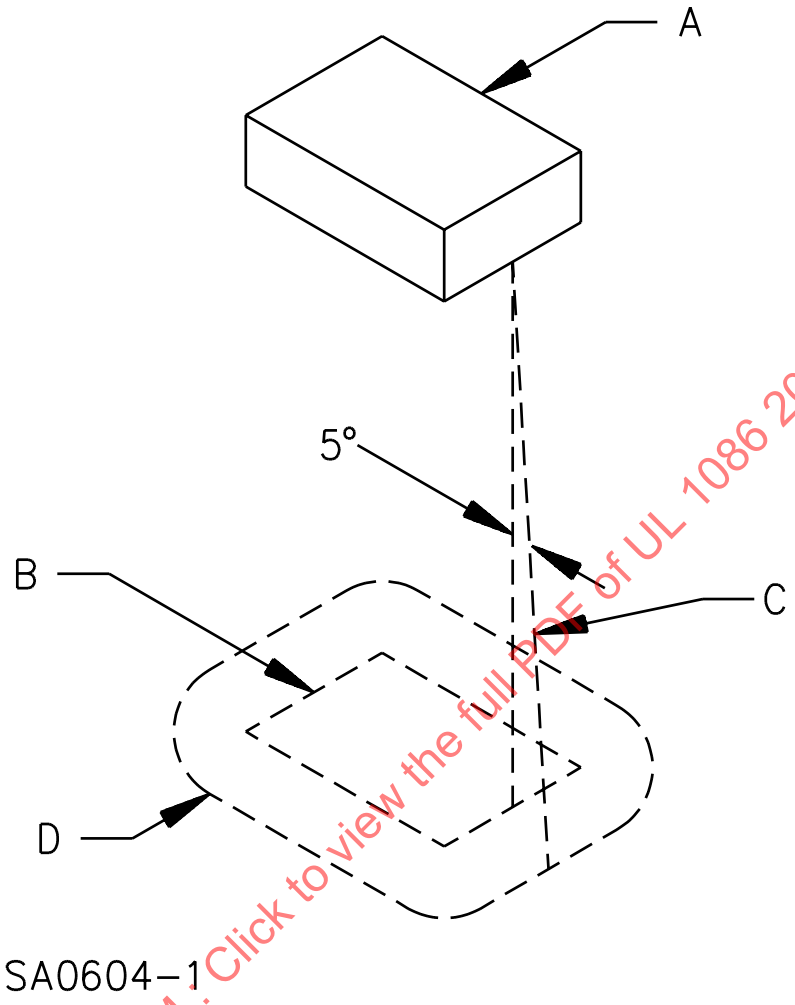
i) 125°C (257°F) when the motor is running at the maximum load at which it can operate without causing the protector to cycle, and

ii) 150°C (302°F) with the rotor of the motor locked.

b) Under wire, unless its insulation is flame-retardant, such as neoprene- or thermoplastic-insulated wires.

7.8 The barrier mentioned in 7.7 shall be horizontal, shall be located as illustrated in Figure 7.1, and shall have an area in accordance with that illustration. Openings for drainage, ventilation, and the like, may be employed in the barrier provided such openings would not permit molten metal, burning insulation, or the like to fall on combustible material.

Figure 7.1
Location and extent of barrier



NOTES –

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 which 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. When moving, the line is always:

1) tangent to the component,
2) 5 degrees from the vertical, and
3) so oriented 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.

8 Accessibility Of Uninsulated Live Parts And Film-Coated Wire

8.1 To reduce the likelihood of unintentional contact that may involve a risk of electric shock from an uninsulated live part or film-coated wire, an opening in an enclosure shall comply with either (a) or (b).

a) For an opening that has a minor dimension (see 8.5) less than 1 inch (25.4 mm), such a part or wire shall not be contacted by the probe illustrated in Figure 8.1.

b) For an opening that has a minor dimension of 1 inch (25.4 mm) or more, such a part or wire shall be spaced from the opening as specified in Table 8.1.

Exception: A motor other than one used in a hand-supported portion of an appliance need not comply with these requirements if it complies with the requirements in 8.2.

8.2 With respect to a part or wire as mentioned in 8.1, in an integral enclosure of a motor as mentioned in the exception to 8.1:

a) An opening that has a minor dimension (see 8.5) less than 3/4-inch (19.1 mm) is acceptable if:

1) Film-coated wire cannot be contacted by the probe illustrated in Figure 8.2;

2) In a directly accessible motor (see 8.6), an uninsulated live part cannot be contacted by the probe illustrated in Figure 8.3; and

3) In an indirectly accessible motor (see 8.6), an uninsulated live part cannot be contacted by the probe illustrated in Figure 8.4.

b) An opening that has a minor dimension of 3/4-inch (19.1 mm) or more is acceptable if a part or wire is spaced from the opening as specified in Table 8.1.

8.3 The probes mentioned in 8.1 and 8.2 and illustrated in Figures 8.1 – 8.4 shall be applied to any depth that the opening will permit, and shall be rotated or angled before, during, and after insertion through the opening to any position that is necessary to examine the enclosure. The probes illustrated in Figures 8.1 and 8.3 shall be applied in any possible configuration; and, if necessary, the configuration shall be changed after insertion through the opening.

Figure 8.1
Articulate probe with web stop