UL 430

STANDARD FOR SAFETY

Waste Disposers

UL Standard for Safety for Waste Disposers, UL 430

Eighth Edition, Dated September 8, 2015

Summary of Topics

This revision of ANSI/UL 430 dated September 14, 2021 includes the replacement of the reference to UL 508C, Standard for Power Conversion Equipment, with a reference to UL 61800-5-1, Standard for Adjustable Speed Electrical Power Drive Systems – Part 5-1: Safety Requirements – Electrical, Thermal and Energy; 5.5.4.1 and 5.13.4.4

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 February 5, 2021 and June 18, 2021.

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Standard for Waste Disposers

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The Department of Defense (DoD) has adopted UL 430 on August 5, 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 https://csds.ul.com.

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INTRODUCTION

1 Scope

1.1 These requirements cover motor operated household and commercial disposers rated 600 V or less and intended to be used in accordance with the National Electrical Code, ANSI/NFPA 70. These disposers are intended to convert organic types of waste material to a form that can be accommodated by plumbing systems. The requirements also cover field-installed control assemblies and accessories specifically intended for use with disposers covered by this standard.

1.1.1 These requirements also cover rechargeable battery-powered appliances with rechargeable non-user-replaceable and/or user-replaceable batteries; see Supplement SC.

1.2 These requirements do not cover an incinerator-type disposer or a disposer using a universal motor with a rating greater than 250 V.

2 Units of Measurement

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

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 Glossary

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

4.2 BARRIER – A part of a disposer that functions to reduce the risk of access to current-carrying parts or internal wiring through openings in the enclosure that involves a risk of electric shock or injury to persons, or reduces the risk of fire or injury to persons as a result of molten metal or burning insulation being expelled through openings in the enclosure under abnormal conditions.

4.3 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.

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

4.5 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 fire, electric shock, or injury to persons during normal or abnormal operation of the end product is considered an auxiliary control.

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

4.7 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 fire, electric shock, or injury to persons, is considered an operating control.

4.8 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 whereby during the evaluation of the protective control/circuit, the protective functions are verified under normal and single-fault conditions of the control. For example, a thermal cutout/limiter, or any other control/circuit relied upon for normal and abnormal conditions, is considered a protective control.

4.9 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 end product standard.

4.10 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 end product standard.

4.11 DECORATIVE PART – A part used for no function other than appearance.

4.12 ENCLOSURE – That portion of a disposer that:

a) Renders inaccessible any part that presents a risk of electric shock or injury to persons;

b) Reduces the risk of flame propagation initiated by electrical disturbances occurring within; or

c) Both.

A grill, guard, panel, barrier, or similar part forms part of an enclosure if it reduces the risk of contact with an uninsulated current-carrying part or a part that presents a risk of injury to persons.

4.13 FUNCTIONAL PART – A part that is necessary for the intended operation of the disposer, the deterioration of which may result in a risk of fire, electric shock, or injury to persons.

4.14 HOPPER – A container that funnels material into the disposer prior to the reduction process.

CONSTRUCTION

5 Components

5.1 General

5.1.1 A component of a product covered by this standard shall:

a) Comply with the requirements for that component as indicated in 5.2 – 5.19;

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;

d) Additionally comply with the applicable requirements of this end product standard; and

e) Not contain mercury.

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 that complies with a UL component standard other than those specified in 5.2 – 5.19 is acceptable if:

a) The component also complies with the applicable component standard specified in 5.2 – 5.19; or

b) The component standard:

1) Is compatible with the ampacity and overcurrent protection requirements in the National Electrical Code, ANSI/NFPA 70, where applicable;

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 are 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.

5.1.2 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.

5.1.3 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(s) 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(s) need not be applied.

5.1.4 A component not anticipated by the requirements of this end product standard, not specifically covered by the component standards in 5.2 – 5.19, 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 5.1.1(b) – (e).

5.1.5 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.

5.2 Attachment plugs, receptacles, connectors, and terminals

5.2.1 Attachment plugs and receptacles shall comply with the Standard for Attachment Plugs and Receptacles, UL 498. See 5.2.9.

Exception No. 1: Attachment plugs and appliance couplers integral to cord sets or power supply cords that are investigated in accordance with the Standard for Cord Sets and Power Supply Cords, UL 817 are not required to comply with UL 498.

Exception No. 2: A fabricated pin terminal assembly need not comply with UL 498 if it complies with the requirements in Accessibility of Uninsulated Live Parts and Film Coated Wire, Section 7.3, Polymeric Materials, Section 8, Current Carrying Parts, Section 12, Electrical Insulation, Section 14, and Spacings, Section 24, of this end product standard, as well as the applicable performance requirements when tested in this end product standard.

5.2.2 Quick-connect terminals, both connectors and tabs, for use with one or two 22 – 10 AWG copper conductors, having nominal widths of 2.8, 3.2, 4.8, 5.2, and 6.3 mm (0.110, 0.125, 0.187, 0.205, and 0.250 in), intended for internal wiring connections in appliances, or for the field termination of conductors to the appliance, shall comply with the Standard for Electrical Quick-Connect Terminals, UL 310.

Exception No. 1: Other sizes of quick-connect terminals shall be investigated with respect to crimp pull out, insertion-withdrawal, temperature rise, and all tests shall be conducted in accordance with UL 310.

Exception No. 2: A connector that complies with UL 310 may be used with an appropriately sized tab that complies with the material, configuration, and dimensional requirements for production tabs as specified in UL 310. The connector is the part of a quick-connect terminal that is pushed onto the male tab, and the tab is the part that receives the female connector.

5.2.3 Single and multipole connectors for use in data, signal, control and power applications within and between electrical equipment, and that are intended for factory assembly to copper or copper alloy conductors, or for factory assembly to printed wiring boards, shall comply with the Standard for Component Connectors for Data, Signal, Control and Power Applications, UL 1977. See 5.2.9.

5.2.4 Wire connectors shall comply with the Standard for Wire Connectors, UL 486A-486B.

5.2.5 Splicing wire connectors shall comply with the Standard for Splicing Wire Connectors, UL 486C.

5.2.6 Multi-pole splicing wire connectors that are intended to facilitate the connection of hard-wired utilization equipment to the branch-circuit conductors of buildings shall comply with the Standard for Insulated Multi-Pole Splicing Wire Connectors, UL 2459. See 5.2.9.

5.2.7 Equipment wiring terminals for use with all alloys of copper, aluminum, or copper-clad aluminum conductors, shall comply with the Standard for Equipment Wiring Terminals for Use with Aluminum and/or Copper Conductors, UL 486E.

5.2.8 Terminal blocks shall comply with the Standard for Terminal Blocks, UL 1059, and, if applicable, be suitably rated for field wiring.

Exception: A fabricated part performing the function of a terminal block need not comply with UL 1059 if the part complies with the requirements in Polymeric Materials, Section 8, Wiring Terminals and Leads, Section 11.2.4, Current-Carrying Parts, Section 12, Electrical Insulation, Section 14 and Spacings, Section 21, of this end product standard, as well as the applicable performance requirements when tested in the end-product. This exception does not apply to protective conductor terminal blocks.

5.2.9 Female devices (such as receptacles, appliance couplers, and connectors) that are intended, or that may be used, to interrupt current in the end product, shall be suitably rated for current interruption of the specific type of load, when evaluated with its mating plug or connector. For example, an appliance coupler that can be used to interrupt the current of a motor load shall have a suitable horsepower rating when tested with its mating plug.

5.3 Boxes, conduits, and raceways

5.3.1 Electrical boxes and the associated bushings, conduits, fittings, and raceways of the types specified in Chapter 3, Wiring Methods and Materials, of the National Electrical Code, ANSI/NFPA 70, and that comply with the relevant UL standard (such as the Standard for Flexible Metal Conduit, UL 1, the Standard for Metallic Outlet Boxes, UL 514A, the Standard for Conduit, Tubing, and Cable Fittings, UL 514B, the Standard for Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers, UL 514C, the Standard for Cover Plates for Flush-Mounted Wiring Devices, UL 514D, and the Standard for Electrical Metallic Tubing – Steel, UL797) and 5.1 are considered to comply with the requirements of this end product standard.

5.4 Capacitors and filters

5.4.1 The component requirements for capacitors and filters are specified in Controls – End Product Test Parameters, Section 19.

5.5 Controls

5.5.1 General

5.5.1.1 Auxiliary controls shall be evaluated in accordance with the applicable requirements of this end product standard and the parameters in Controls – End Product Test Parameters, Section 19.

5.5.1.2 Operating (regulating) controls shall be evaluated in accordance with the applicable component standard requirements specified in 5.5.2 – 5.5.7, and if applicable, the parameters in Controls – End Product Test Parameters, Section 19, unless otherwise specified in this end product standard.

5.5.1.3 Operating controls that rely upon software for the normal operation of the end product where deviation or drift of the control may result in an increased risk of fire, electric shock, or injury to persons shall comply with one of the following:

a) The Standard for Tests for Safety-Related Controls Employing Solid-State Devices, UL 991; and the Standard for Software in Programmable Components, UL 1998; or

b) The Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1.

5.5.1.4 Electronic protective (limiting) controls that do not rely upon software as a protective component shall comply with the applicable component standard requirements specified in 5.5.2 – 5.5.7, and if applicable, the parameters in Controls – End Product Test Parameters, Section 19, unless otherwise specified in this end product standard. See also 5.5.1.5, 5.13.4.4, and 42.5.

5.5.1.5 Electronic protective controls that do not rely upon software as a protective component and that comply with one of the following standards are considered to comply with 5.5.1.4:

a) The Standard for Tests for Safety-Related Controls Employing Solid-State Devices, UL 991; or

b) The Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1, except the Controls Using Software requirements, Clause H 11.12.

5.5.1.6 Electronic protective controls that rely upon software as a protective component shall comply with one of he following:

a) The Standard for Tests for Safety-Related Controls Employing Solid-State Devices, UL 991, and the Standard for Software in Programmable Components, UL 1998; or

b) The Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1.

5.5.1.7 An electronic, auxiliary or operating control (e.g. a non-protective control), the failure of which would not increase the risk of electric shock, fire, or personal injury, need only be subjected to the applicable requirements of this end product standard. See Switches and Controls, Section 18 and Abnormal Operation Test, Section 58.

5.5.1.8 An electronic circuit that complies with the requirements in Alternative Requirements for the Evaluation of Electronic Circuits, Supplement SA is considered to comply with the requirements of a control in 5.5.1 – 5.5.7.

5.5.2 Electromechanical and electronic controls

5.5.2.1 A control, other than as specified in 5.5.3 – 5.5.7, shall comply with the applicable requirements of this end product standard, or comply with one of the following:

a) The Standard for Solid-State Controls for Appliances, UL 244A;

b) The Standard for Temperature-Indicating and -Regulating Equipment, UL 873; or

c) The Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1.

5.5.3 Liquid level controls

5.5.3.1 A liquid level control shall comply with one of the following:

a) The Standard for Solid-State Controls for Appliances, UL 244A;

b) The Standard for Temperature-Indicating and -Regulating Equipment, UL 873;

c) The Standard for Industrial Control Equipment, UL 508; or

d) The Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1, and;

1) *Deleted*

2) *Deleted*

3) The Standard for Automatic Electrical Controls for Household and Similar Use; Part 2: Particular Requirements for Automatic Electrical Air Flow, Water Flow and Water Level Sensing Controls, UL 60730-2-15.

5.5.3.2 A switch employed as part of a water level detection mechanism shall comply with one of the switch standards specified in Switches, Section 5.20.

5.5.4 Motor and speed controls

5.5.4.1 A control used to start, stop, regulate or control the speed of a motor shall comply with the applicable requirements of this end product standard, or comply with one of the following:

a) The Standard for Solid-State Controls for Appliances, UL 244A;

b) The Standard for Temperature-Indicating and -Regulating Equipment, UL 873;

c) The Standard for Industrial Control Equipment, UL 508;

d) The Standard for Power Conversion Equipment, UL 508C;

e) The Standard for Adjustable Speed Electrical Power Drive Systems – Part 5-1: Safety Requirements – Electrical, Thermal and Energy, UL 61800-5-1, or

f) The Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1.

5.5.5 Pressure controls

5.5.5.1 A pressure control shall comply with one of the following:

a) The Standard for Temperature-Indicating and – Regulating Equipment, UL 873;

b) The Standard for Industrial Control Equipment, UL 508; or

c) The Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1; and the Standard for Automatic Electrical Controls – Part 2-6: Particular Requirements for Automatic Electrical Pressure Sensing Controls Including Mechanical Requirements, UL 60730-2-6.

5.5.6 Temperature controls

5.5.6.1 A temperature control shall comply with one of the following:

a) The Standard for Solid-State Controls for Appliances, UL 244A;

b) The Standard for Temperature-Indicating and -Regulating Equipment, UL 873;

c) The Standard for Industrial Control Equipment, UL 508; or

d) The Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1; and the Standard for Automatic Electrical Controls – Part 2-9: Particular Requirements for Temperature Sensing Controls, UL 60730-2-9.

5.5.6.2 A temperature sensing positive temperature coefficient (PTC) or a negative temperature coefficient (NTC) thermistor, that performs the same function as an operating or protective control shall comply with the one of the following:

a) The Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1; and the Standard for Automatic Electrical Controls – Part 2-9: Particular Requirements for Temperature Sensing Controls, UL 60730-2-9, with Annex J; or

b) The Standard for Thermistor-Type Devices, UL 1434.

5.5.6.3 A thermal cutoff shall comply with the Standard for Thermal-Links – Requirements and Application Guide, UL 60691.

5.5.7 Timer controls

5.5.7.1 A timer control shall comply with one of the following:

a) The Standard for Solid-State Controls for Appliances, UL 244A; or

b) The Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1; and the Standard for Automatic Electrical Controls for Household and Similar Use; Part 2: Particular Requirements for Timers and Time Switches, UL 60730-2-7.

5.6 Cords, cables, and internal wiring

5.6.1 A cord set or power supply cord shall comply with the Standard for Cord Sets and Power Supply Cords, UL 817.

5.6.2 Flexible cords and cables shall comply with the Standard for Flexible Cords and Cables, UL 62. Flexible cord and cables are considered to comply with this requirement when pre-assembled in a cord set or power supply cord that complies with the Standard for Cord Sets and Power Supply Cords, UL 817.

5.6.3 Internal wiring composed of insulated conductors shall comply with the Standard for Appliance Wiring Material, UL 758.

Exception No. 1: Insulated conductors need not comply with UL 758 if they comply with one of the following:

a) The Standard for Thermoset-Insulated Wires and Cables, UL 44;

b) The Standard for Thermoplastic-Insulated Wires and Cables, UL 83;

c) The Standard for Fixture Wire, UL 66; or

d) The applicable UL standard(s) for other insulated conductor types specified in Chapter 3, Wiring Methods and Materials, of the National Electrical Code, ANSI/NFPA 70.

Exception No. 2: Insulated conductors for specialty applications (e.g. data processing or communications) and located in a low-voltage circuit not involving the risk of fire, electric shock or injury to persons need not comply with UL 758.

5.7 Film-coated wire (magnet wire)

5.7.1 The component requirements for film coated wire and Class 105 (A) insulation systems are not specified.

5.7.2 Film coated wire in intimate combination with one or more insulators, and incorporated in an insulation system rated Class 120 (E) or higher, shall comply with the magnet wire requirements in the Standard for Systems of Insulating Materials – General, UL 1446.

5.8 Gaskets and seals

5.8.1 Gaskets and seals that are relied upon to prevent water entrance into electrical compartments and flooding of electrically live parts shall comply with the requirements in Physical Properties of Gaskets and Seals Test, Section 40.

5.9 Ground-fault, arc-fault, and leakage current detectors/interrupters

5.9.1 Ground-fault circuit-interrupters (GFCI) for protection against electrical shock shall comply with the Standard for Ground-Fault Circuit-Interrupters, UL 943. The following statement, or equivalent, shall be included as a marking near the GFCI, or as an instruction in the manual: "Press the TEST button (then RESET button) every month to assure proper operation."

5.9.2 Appliance-leakage-current interrupters (ALCI) for protection against electrical shock shall comply with the Standard for Appliance-Leakage-Current Interrupters, UL 943B.

5.9.3 With respect to 5.9.2, an ALCI is not considered an acceptable substitute for a GFCI when the National Electrical Code, ANSI/NFPA 70 requires a GFCI.

5.9.4 Equipment ground-fault protective devices shall comply with the Standard for Ground-Fault Sensing and Relaying Equipment, UL 1053, and the applicable requirements in the Standard for Ground-Fault Circuit-Interrupters, UL 943.

5.9.5 Arc-fault circuit-interrupters (AFCI) shall comply with the Standard for Arc-Fault Circuit-Interrupters, UL 1699. See Arc-Fault and Leakage Current Detectors/Interrupters, Section 26.

5.9.6 Leakage-current detector-interrupters (LCDI) and any shielded cord between the LCDI and appliance shall comply with the Standard for Arc-Fault Circuit-Interrupters, UL 1699. See Arc-Fault and Leakage Current Detectors/Interrupters, Section 26.

5.10 Heating elements and heaters

5.10.1 Electric resistance heating elements shall comply with the construction requirements in:

a) The Standard for Electric Heating Appliances, UL 499; or

b) The Standard for Sheathed Heating Elements, UL 1030.

5.10.2 Thermistor-type heaters (e.g. PTC and NTC heaters) shall comply with the Standard for Thermistor-Type Devices, UL 1434.

5.11 Insulation systems

5.11.1 Materials used in a Class 105 (A) insulation system shall comply with the requirements in Insulation Systems, Section 17.

5.11.2 Materials used in an insulation system that operates above Class 105 (A) temperatures shall comply with the Standard for Systems of Insulating Materials – General, UL 1446.

5.11.3 All insulation systems employing integral ground insulation shall comply with the requirements specified in the Standard for Systems of Insulating Materials – General, UL 1446.

5.12 Marking and labeling systems

5.12.1 A marking and labeling system shall comply the requirements in Permanence of Marking Tests, Section 47.

5.13 Motors and motor overload protection

5.13.1 General

5.13.1.1 General-purpose type motors having a NEMA frame size shall comply with the requirements specified in 5.15.2. This includes fractional HP motors rated up to 1 HP (typically NEMA frame sizes 42, 48, or 56), and integral HP motors rated 1 HP and greater (typically NEMA frame sizes 140 – 449T).

5.13.1.2 Motors not enclosed, or partially enclosed, by the end product enclosure shall comply with the requirements specified in 5.13.2 or 5.13.3.

5.13.1.3 Component type motors completely enclosed within the end product enclosure shall comply with the requirements specified in 5.13.2 or 5.13.3.

5.13.2 General-purpose type motors

5.13.2.1 A general-purpose type motor shall comply with the Standard for Rotating Electrical Machines – General Requirements, UL 1004-1.

5.13.3 Component type motors

5.13.3.1 Component type motors shall comply with either 5.13.3.2 or 5.13.3.3.

5.13.3.2 The motor shall comply with the Standard for Rotating Electrical Machines – General Requirements, UL 1004-1 except as noted in Table 5.1.

Table 5.1
Superseded requirements

UL 1004-1 exempted requirement	Superseded by UL 430 requirements
Current and Horsepower Relation	Paragraph 16.4
Cord-Connected Motors	Section 11.1
Factory Wiring Terminals and Leads	Section 13
Electrical Insulation	Sections 8 and 14
Non-Metallic Functional Parts	Sections 8, 14, and 16
Solid-State Controls, 7.2	Section 5.5.2
Non-metallic enclosure thermal aging, 9.1.4	Section 8
Motor enclosure, 9.2 – 9.4	Sections 7 and 8
Grounding	Section 25
Ventilation Openings, only applicable where the openings are on surfaces considered to be the appliance enclosure.	Section 7
Accessibility of Uninsulated Live Parts, Film-Coated Wire, and Moving Parts	Section 7.3
Protection Against Corrosion	Section 10
Available fault current ratings for motor start and running capacitors, Paragraph 26.6: not applicable for cord and plug connected appliances.	Section 22
Switch, is not applicable to centrifugal starting switches	Section 18
With the exception of Resilient Elastomer Mounting and Electrolytic Capacitor Tests, the performance tests in the Standard for Rotating Electrical Machines – General Requirements, UL 1004-1 are not applicable	All applicable performance tests
Only the following marking requirements in UL 1004-1 are applicable: manufacturer's name or identification; rated voltage; rated frequency; number of phases if greater than 1; and multi-speed motors, other than a shaded-pole or a permanent-split-capacitor motor, shall be marked with the amperes and horsepower at each speed	Paragraph 63.1

5.13.3.3 The motor shall comply with the applicable component requirements for Components, Section 5, the following construction requirements, and the applicable performance requirements (when tested in conjunction with the end product), of this end product standard:

a) Polymeric Materials, Section 8;

b) Corrosion Protection, Section 10;

c) Terminal Compartment, Section 11 (11.2.1.1);

d) Current-Carrying Parts, Section 12;

e) Internal Wiring, Section 13;

f) Electrical Insulation, Section 14;

g) Motors, Section 16;

h) Capacitors, Section 22;

i) Spacings, Section 24; and

j) Grounding, Section 25.

5.13.4 Motor overload protection

5.13.4.1 Thermal protection devices integral with the motor shall comply with one of the following:

a) The Standard for Overheating Protection for Motors, UL 2111;

b) The Standard for Thermally Protected Motors, UL 1004-3; or

c) The Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1, and the Standard for Automatic Electrical Controls for Household and Similar Use; Part 2 Particular Requirements for Thermal Motor Protectors, UL 60730-2-2, in conjunction with the Standard for Thermally Protected Motors, UL 1004-3 (to evaluate the motor-protector combination).

5.13.4.2 Impedance protection shall comply with the Standard for Impedance Protected Motors, UL 1004-2.

5.13.4.3 Electronic protection integral to the motor shall comply with the Standard for Electronically Protected Motors, UL 1004-7, or the requirements in Alternative Requirements for the Evaluation of Electronic Circuits, Supplement SA.

5.13.4.4 Except as indicated in 5.13.4.3, electronically protected motor circuits shall comply with one of the following. See 5.5.4 for basic control requirements:

a) The Standard for Tests for Safety-Related Controls Employing Solid-State Devices, UL 991. When the protective electronic circuit is relying upon software as a protective component, it shall comply with the requirements in the Standard for Software in Programmable Components, UL 1998. If software is relied upon to perform a safety function, it shall be considered software Class 1;

b) The Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1. If software is relied upon to perform a safety function, it shall be considered software Class B;

c) The Standard for Power Conversion Equipment, UL 508C, when no software is relied upon to perform a safety function. If software is relied upon to perform a safety function, the circuit shall additionally comply with applicable requirements in (a), (b), or (e) of this section;

d) The Standard for Adjustable Speed Electrical Power Drive Systems – Part 5-1: Safety Requirements – Electrical, Thermal and Energy, UL 61800-5-1, when no software is relied upon to perform a safety function. If software is relied upon to perform a safety function, the circuit shall additionally comply with applicable requirements in (a), (b), or (e) of this section; or