



UL 79

STANDARD FOR SAFETY

Power-Operated Pumps for Petroleum
Dispensing Products

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UL Standard for Safety for Power-Operated Pumps for Petroleum Dispensing Products, UL 79

Tenth Edition, Dated April 29, 2016

Summary of Topics

This revision of ANSI/UL 79 dated March 19, 2021 includes the Endurance Test; [45.2](#)

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The revised requirements are substantially in accordance with Proposal(s) on this subject dated January 15, 2021.

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UL 79

Standard for Power-Operated Pumps for Petroleum Dispensing Products

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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 products described in [1.2](#). Requirements for the installation and use of these products are included in the Flammable and Combustible Liquids Code, NFPA 30; the Automotive and Marine Service Station Code, NFPA 30A; and the National Electrical Code, NFPA 70.

1.2 These requirements cover electrically-, hydraulically-, or pneumatically-driven power-operated pumps for use with petroleum products in the following applications:

a) Self-contained flammable liquid dispensing devices and submerged pumps used in storage tanks that provide the petroleum product to remote control flammable liquid dispensing devices. They are intended for operation at discharge pressures of 50 pounds per square inch (psig) (345 kPa), or the marked maximum discharge pressure rating, when less, with the ambient and liquid temperature within the range of minus 20°F (minus 29°C) – 125°F (52°C).

b) Flammable liquid dispensing systems to transfer the petroleum product from a tank or container to a vehicle or another container. They are intended for operation at the marked maximum discharge pressure, or less, with the ambient and liquid temperature within the range of minus 20°F (minus 29°C) – 125°F (52°C).

c) Vapor recovery applications for flammable liquid dispensing devices. They are intended to operate under a vacuum at the inlet and a maximum discharge pressure of 50 psig (345 kPa), or marked discharge pressure, whichever is less.

1.3 These requirements do not cover:

a) Oil burner pumps, which are evaluated under the Standard for Pumps for Oil-Burning Appliances, UL 343.

b) Pumps for engine-powered automotive equipment.

c) Pumps for marine use which are evaluated under the Standard for Mechanically and Electrically Operated Fuel Pumps for Marine Use, UL 1130.

d) Pumps for use in chemical, petrochemical, or petroleum processing plants; utility power plants; petroleum production facilities; pipeline pump stations; pipeline or marine terminals; or bulk plant distribution and related facilities.

e) Pumps used in mobile applications, such as on tank trucks, portable tanks, or portable containers mounted on vehicles.

f) Pumps rated more than 600 volts.

g) Pump assemblies also provided with a flammable liquid meter or electrically-operated shutoff valve, which are evaluated in accordance with the Standard for Power-Operated Dispensing Devices for Petroleum Products, UL 87.

1.4 The pump assembly is not prohibited from being constructed such that it provides for the installation and use of a flammable liquid hose and hose nozzle valve.

1.5 "Petroleum Products," as used herein, means gasoline, gasoline/alcohol blends up to 15% Ethanol or 15% Methanol, diesel fuel, fuel oil, lubricating oil, and the vapors of these fuels. Other petroleum products are not prohibited from being used in the pump when the materials comply with the requirements

in Materials, Section 5, when the pump is evaluated using the additional liquids, and the additional petroleum products are marked on the pump as indicated in 74.1(f).

2 General

2.1 Components

2.1.1 Except as indicated in 2.1.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of typical standards covering components used in the products covered by this standard.

2.1.2 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.

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

2.1.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

2.1.5 Electrical components, including motors and wiring, when incorporated by a manufacturer in an assembly with a pump, and including the means provided in the pump assembly for electrical connections, shall comply with the requirements for equipment for use in hazardous locations, Class I, Group D, National Electrical Code, NFPA 70, Articles 500 and 501.

2.2 Units of measurement

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

2.3 Undated references

2.3.1 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.

3 Glossary

3.1 For the purposes of these requirements, the following definitions apply.

3.2 HAZARDOUS LOCATIONS – Locations in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixture.

3.3 INTRINSICALLY SAFE CIRCUIT – A circuit incapable of releasing sufficient electrical energy under normal or abnormal conditions to cause ignition of a specific hazardous atmospheric mixture. Abnormal conditions include unintentional damage to any part of the equipment or wiring, insulation or other malfunction of electrical components, application of overvoltage, adjustment and maintenance operations, and other similar conditions.

3.4 LINE-VOLTAGE CIRCUIT – A circuit involving a potential of not more than 600 volts and having circuit characteristics in excess of those of a low-voltage circuit.

3.5 LOW-VOLTAGE CIRCUIT – A circuit involving a peak open-circuit potential of not more than 42.2 volts supplied by:

- a) A battery;
- b) A Class 2 transformer; or
- c) A combination of a transformer and a fixed impedance that, as a unit, complies with the performance requirements for Class 2 transformers in accordance with the Standard for Low Voltage Transformers – Part 1: General Requirements, UL 5085-1 and the Standard for Low Voltage Transformers – Part 3: Class 2 and Class 3 Transformers, UL 5085-3.
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 a low-voltage circuit.

3.6 RAINPROOF ENCLOSURE – An enclosure that prevents the entrance of a beating rain to the extent that there is no wetting of electrical parts and no water enters a compartment housing field installed wiring.

CONSTRUCTION

4 Assembly

4.1 The construction of a pump shall be such that parts can be assembled in the intended manner after being dismantled to the extent needed for replacement of parts or for other maintenance or servicing.

4.2 When a pump requires the use of special pipe flanges, gaskets, bolts, or other special fittings or parts for making connections, such parts shall be furnished as part of the pump assembly.

4.3 A product shall be formed and assembled so that it has the strength and rigidity required to resist the abuses to which it is subjected without resulting in the risk of fire, electric shock, or injury to persons due to total or partial collapse with:

- a) Resulting reduction of spacings;
- b) Loosening or displacement of parts; or
- c) Other defects.

4.4 A pump-motor assembly to be shipped from the manufacturer disassembled shall be provided with the marking described in [74.9](#).

5 Materials

5.1 A metal part to be used for bodies or closures shall be inherently resistant to the action of the liquid to be handled. Other parts in contact with the liquid to be handled shall be resistant to the action of such liquid when malfunction of the part results in:

- a) Leakage;
- b) Malfunction of equipment connected to the outlet of the pump; or
- c) A risk of injury to persons.

5.2 With reference to the requirement in [5.1](#), an elastomeric part used in contact with liquid or vapor shall have the following properties when tested as specified in the Standard for Gaskets and Seals, UL 157:

- a) Those properties relating to minimum tensile strength and elongation after oven aging, as specified in UL 157. The service temperature used to determine the conditioning time and temperature for oven aging is to be 140°F (60°C), unless the product is designated for use at a higher temperature, or the temperature of the component measured during the temperature test is higher.
- b) Low temperature rating of minus 20°F (minus 29°C).
- c) Volume change and extraction as specified in the requirements for UL 157, for end-use applications of gasoline, gasoline/alcohol blends up to 15% Ethanol, gasoline/alcohol blends up to 15% Methanol, diesel fuel, fuel oil, and lubricating oil. Other end-use applications, when marked on the pump, shall use the fluids marked for exposure.

Exception No. 1: Polytetrafluoroethylene (PTFE) is considered to comply with the requirements of this paragraph.

Exception No. 2: When an elastomeric part does not comply with the requirements described in (a) – (c), the pump assembly shall be evaluated in accordance with [5.5](#).

Exception No. 3: Testing with methanol is only required when the product is specifically rated for methanol blend use.

5.3 An elastomeric part forming a part that is depended on for protection of electrical components from rain or submersion in water shall have the following physical properties when tested as specified in the Standard for Gaskets and Seals, UL 157:

- a) Those properties relating to minimum tensile strength and elongation after oven aging, as specified in UL 157. The service temperature used to determine the conditioning time and temperature for oven aging is to be 140°F (60°C), unless the product is designated for use at a higher temperature, or the temperature of the component measured during the temperature test is higher.
- b) Low temperature rating of minus 20°F (minus 29°C).

5.4 The Standard for Gaskets and Seals, UL 157, provides for the testing of either finished elastomeric parts, or sheet or slab material. Sheet or slab material is to be tested when the elastomeric parts are O-rings having a diameter of less than 1 inch (25.4 mm). The material tested is to be the same as that used in the product, regardless of whether finished elastomeric parts, or sheet or slab material is tested.

5.5 When the limits for tensile strength and elongation, volume change or extraction, aging, or low temperature are exceeded, the gasket material may be retested in the complete pump assembly after conditioning as outlined below.

5.6 When the limits for tensile strength, elongation, volume change or extraction are exceeded, the complete assembly constructed with the gasket installed as intended shall be filled with the appropriate test fluid for 70 hours at room temperature, and then shall comply with the requirements for the Leakage Test, Section [43](#) and the Hydrostatic Strength Test, Section [49](#).

5.7 Where the oven aging results are not in accordance with [5.2](#)(c), the complete assembly with the gasket installed as intended, shall be placed in an air oven for the same duration and at the same temperature used when testing the gasket material, and then shall comply with the Leakage Test, Section [18](#), and the Hydrostatic Strength Test, Section [49](#), while at the test temperature.