

UL 144

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LP-Gas Regulators

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UL 144

Standard for LP-Gas Regulators

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An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

Revisions of this Standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest set of revised requirements.

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FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this standard, and that involves a risk of fire or of electric shock or injury to persons shall be evaluated using appropriate additional component and end-product requirements to maintain the level of safety as originally anticipated by the intent of this standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this standard does not comply with this standard. Revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this standard.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

INTRODUCTION

1 Scope

1.1 These requirements cover pressure regulators for use with LP-Gas equipment.

1.2 Regulators covered by these requirements are intended for use in non-refrigerated systems in accordance with the following standards:

- a) Liquefied Petroleum Gas Code, (National Fire Codes, Vol. 2) NFPA 58;
- b) National Fuel Gas Code (IAS/A.G.A. Z223.1), NFPA 54;
- c) Outdoor Cooking Gas Appliances, IAS/A.G.A. Z21.58; and
- d) Standard on Recreational Vehicles (RVIAA119.2) (National Fire Codes, Vol. 7), NFPA 501C.

1.3 These requirements do not cover:

- a) Compressed gas regulators;
- b) Gas appliance pressure regulators;
- c) Regulators for use in chemical, petroleum, or utility power plants; pipeline or marine terminals; or related storage facilities at such plants or terminals;
- d) Combination gas control valves for gas appliances;
- e) Regulators for use in oxygen-fuel, gas-welding, and cutting operations; and
- f) Regulators for use in engine fuel (automotive and/or marine) applications.

The requirements for (a) – (e) are covered in the Standard for Compressed Gas Regulators, UL 252, and in the Standard for Gas Appliance Pressure Regulators, IAS/A.G.A. Z21.18, and in the Standard for Combination Gas Controls for Gas Appliances, IAS/A.G.A. Z21.78, respectively.

1.4 The assigning of flow ratings to regulators is not within the scope of these requirements, and observations of flow values are required to ascertain stability characteristics within the manufacturer's rated capacity. These requirements include tests to verify outlet pressure stability characteristics within the manufacturer's rated capacity. The manufacturer is to submit this data prior to the investigation of the device. See the Flow Test, Section 22, regarding the outlet pressure instability definition.

1.5 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this standard, and that involves a risk of fire or of electric shock or injury to persons shall be evaluated using appropriate additional component and end-product requirements to maintain the level of safety as originally anticipated by the intent of this standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this standard does not comply with this standard. Revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this standard.

1.5 revised June 14, 2000

2 General

2.1 Units of measurement

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

2.1.1 revised June 14, 2000

2.2 Components

2.2.1 Except as indicated in 2.2.2, a component of a product covered by this standard shall comply with the requirements for that component.

2.2.2 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.

2.2.2 revised June 14, 2000

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

2.2.3 revised June 14, 2000

2.2.4 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.

2.2.4 revised June 14, 2000

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.

2.4 Terminology

2.4.1 The term "regulator" as used in this standard refers to a device placed in a gas line for reducing, controlling, and maintaining the pressure in that portion of the piping system downstream of the device.

3 Glossary

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

3.2 LOCKUP PRESSURE – The outlet pressure of the regulator under no-flow conditions.

3.3 OVER-PRESSURE SHUTOFF DEVICE – A device that shuts off the flow of LP-Gas vapor when the outlet pressure of the regulator reaches a predetermined maximum pressure.

3.3.1 REGULATOR, AUTOMATIC CHANGEOVER – An integral two stage regulator that combines two high pressure regulators and a second stage regulator into a single unit. It incorporates two inlet connections and a service-reserve indicator and is designed for use with dual or multiple cylinder

installations. The system automatically changes the LP-Gas vapor withdrawal from the designated service cylinder(s) when depleted to the designated reserve cylinder(s) without interruption of service. The service-reserve indicator gives a visual indication of the cylinder(s) that are supplying the system.

3.3.1 added January 13, 2000

3.4 REGULATOR, FIRST-STAGE – A type of high-pressure regulator for LP-Gas vapor service designed to reduce pressure from the container to a nominal pressure of 2 – 10 psig (13.7 – 68.7 kPa).

3.4 revised June 29, 2001

3.5 REGULATOR FLOW CAPACITY – The maximum flow rate of a regulator at conditions as specified by the manufacturer, usually given in units of BTU/hr and which is based upon factory setting of inlet and outlet (delivery) pressures.

3.6 REGULATOR, HIGH-PRESSURE – A pressure regulator for LP-Gas liquid or vapor service designed to reduce pressure from the container to a lower pressure in excess of 1.0 psig (6.9 kPa).

3.6 revised June 29, 2001

3.7 REGULATOR, INTEGRAL TWO-STAGE – A pressure regulator that combines a high pressure regulator and a second-stage regulator into a single unit.

3.8 REGULATOR, SECOND-STAGE – A pressure regulator for LP-Gas vapor service designed to reduce first-stage regulator outlet pressure to a pressure equal to or less than 14 inch (356 mm) water column [nominal 11 inch (279 mm) water column].

3.8 revised June 29, 2001

3.9 REGULATOR, SINGLE-STAGE – A pressure regulator for LP-Gas vapor service designed to reduce pressure from the container to a pressure of 1 psig (6.9 kPa) or less [nominal 11 inch (279 mm) water column].

3.9 revised June 29, 2001

3.10 REGULATOR, SPECIAL-PURPOSE HIGH PRESSURE – A pressure regulator for LP-Gas designed to reduce the prevailing cylinder, tank or other pressure in excess of 1 psig (6.9 kPa) to a lower pressure. This regulator is not intended for installation in two-stage piping systems that serve 1/2 psi appliance systems.

3.10 revised January 13, 2000

3.10.1 REGULATOR, SPECIAL PURPOSE LOW PRESSURE – A pressure regulator for LP-Gas vapor service designed to reduce high pressure or first stage regulator outlet pressure to a maximum pressure of 1 psig (6.9 kPa) or less. This regulator is not intended for installation in two-stage piping systems that serve 1/2 psi appliance systems.

3.10.1 revised June 29, 2001

3.10.2 REGULATOR, TWO PSIG SERVICE – A type of high-pressure regulator for LP-Gas vapor service designed to reduce first-stage regulator outlet pressure to a pressure of 2.5 psig (17.2 kPa) or less [nominal 2 psig (13.8 kPa)].

3.10.2 revised June 29, 2001

3.10.3 REGULATOR, INTEGRAL TWO PSIG SERVICE – A pressure regulator that combines a high pressure regulator and a two psig service regulator into a single unit.

3.10.3 added January 13, 2000