



UL 125

Underwriters Laboratories Inc. Standard for Safety

Flow Control Valves for Anhydrous Ammonia and LP-Gas



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UL Standard for Safety for Flow Control Valves for Anhydrous Ammonia and LP-Gas, UL 125

Eighth Edition, Dated June 10, 2009

Summary of Topics

Revisions to ANSI/UL 125 include the following changes: clarification for type of valve to be subject to stem torque test; clarification of test samples; clarification of suitable materials for LP-Gas and NH3 Valves; and minor editorial corrections.

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. Changes in requirements are marked with a vertical line in the margin and are followed by an effective date note indicating the date of publication or the date on which the changed requirement becomes effective.

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated August 12, 2011.

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The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

The following table lists the future effective dates with the corresponding item.

Future Effective Date	References
January 28, 2014	6.14, 34.1, 34.2, 34.3, 34.4 and 34.5

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Standard for Flow Control Valves for Anhydrous Ammonia and LP-Gas

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Eighth Edition

June 10, 2009

This ANSI/UL Standard for Safety consists of the Eighth Edition including revisions through November 10, 2011.

The most recent designation of ANSI/UL 125 as an American National Standard (ANSI) occurred on November 10, 2011. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or effective date information.

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

1 Scope

1.1 These requirements cover the following types of anhydrous ammonia and liquefied petroleum gas (LP-Gas) valves that are used to control the flow of liquid and/or vapor into and out of containers, or in piping systems between containers, or between containers and utilization equipment, and are for use at temperatures within the range of minus 40°F (minus 40°C) to 130°F (55°C):

- a) Shut-off Valves (primary or secondary, and manual or automatic),
- b) Excess Flow Valves,
- c) Back Pressure Check Valves,
- d) Filler Valves,
- e) Vapor Return Valves,
- f) Actuated Liquid Withdrawal Excess-Flow Valves,
- g) Multiple function valves,
- h) Internal valve,
- i) Emergency shutoff valve,
- j) Lever operated transfer valve and
- k) LP-Gas Hose Nozzle Valve.

1.1 revised February 26, 2010

1.2 Valves covered by these requirements are for use in systems and facilities covered in the following Standards:

- a) Safety Requirements for the Storage and Handling of Anhydrous Ammonia, ANSI/CGA G-2.1 (ANSI K61.1);
- b) Liquefied Petroleum Gas Code , NFPA 58; and
- c) Utility LP-Gas Plant Code, NFPA 59.

1.3 These requirements do not cover shut-off valves of the type commonly referred to as "cylinder valves" used on containers constructed under Department of Transportation (DOT) Specifications. Requirements for these valves are contained in the Standard for Cylinder Valves, UL 1769.

1.3 revised June 10, 2009

1.4 These requirements do not cover safety relief valves. Requirements for these valves are contained in the Standard for Safety Relief Valves for Anhydrous Ammonia and LP Gas, UL 132.

1.4 added June 10, 2009

1.5 These requirements do not cover automatic shutoff valves that use electricity to actuate the valve member. Requirements for these valves are contained in the Standard for Electrically Operated Valves, UL 429.

1.5 added June 10, 2009

1.6 These requirements do not apply to LP-Gas valves for use on containers or in systems for the following:

- a) Refrigerated storage systems and
- b) Marine and pipeline terminals, chemical plants, natural gas processing plants, refineries or tank farms, where "tank farms" do not include storage at industrial locations.

1.7 These requirements do not apply to valves for anhydrous ammonia for use on containers or in systems for the following:

- a) Refrigerated storage systems,
- b) Ammonia manufacturing plants,
- c) Refrigeration plants where ammonia is used solely as a refrigerant, and
- d) Ammonia transportation pipelines.

1.8 Except for such observations as are required to ascertain performance characteristics, the assigning of flow capacity ratings, other than for excess flow valves, is not within the scope of these requirements.

1.8 revised June 10, 2009

1.9 *Deleted June 10, 2009*

2 Service Pressure Rating

2.1 The service pressure rating of a valve intended for use in anhydrous ammonia service shall not be less than 250 pounds per square inch (psi) (1.7 MPa) and shall not exceed 1/5 of its hydrostatic strength test pressure.

2.1 revised June 10, 2009

2.2 The service pressure rating of a valve intended for use in LP-Gas service shall not exceed 1/5 of its hydrostatic strength test pressure and shall be in accordance with Table 2.1.

2.2 added June 10, 2009

Table 2.1
Service pressure rating of LP-Gas valves

Table 2.1 added June 10, 2009

Service	Minimum pressure rating
LP-Gas vapor at operating pressure of 125 psi (0.9 MPa) gauge or less	125 psi (0.9 MPa) gauge
LP-Gas liquid, or vapor at operating pressure over 125 psi (0.9 MPa) gauge and at or below container pressure	250 psi (1.7 MPa) gauge
Higher than container pressure	350 psi (2.4 MPa) gauge, or the MAWP, whichever is higher

3 General

3.1 Components

3.1.1 Except as indicated in 3.1.2, a component of a product covered by this standard shall comply with the requirements for that component.

3.1.2 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.

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

3.1.4 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.

3.2 Undated references

3.2.1 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.

3.3 Units of measurement

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

4 Glossary

4 added June 10, 2009

4.1 ACTUATED LIQUID WITHDRAWAL EXCESS FLOW VALVE – A type of excess flow valve that must have its mating fitting connected to allow flow of fluid. It is intended to be installed into a container opening to allow for fluid evacuation.

4.2 BACK PRESSURE CHECK VALVE – A type of valve that allows fluid flow in only one direction. The amount of flow allowed in the reverse direction is outlined in the seat leakage test. The type of seat material used; i.e. resilient or metal-to-metal, further categorizes back pressure check valves.

4.3 EMERGENCY SHUTOFF VALVE^a – A shutoff valve incorporating thermal and manual means of closing that also provides for remote means of closing.

4.4 EXCESS FLOW CHECK VALVE (or EXCESS FLOW VALVE) – A valve designed to close when the liquid or vapor passing through it exceeds a prescribed flow rate.

4.5 FILLER VALVE – A type of valve connected to a container that is intended under normal operation to allow fluid flow into a container for filling purposes, but not out of the container.

4.6 INTERNAL VALVE^a – A container primary shutoff valve having the following features:

- a) The seat and seat disc remain inside the container so that damage to parts exterior to the container or mating flange does not prevent effective sealing of the valve;
- b) The valve is designed for the addition of a means for remote closure and is also designed for automatic shutoff when the flow through the valve exceeds its maximum rated flow capacity or when pump actuation differential pressure drops to a predetermined point.

4.7 LEVER OPERATED TRANSFER VALVE – A manual, primary type of shutoff valve that is intended to be used at the end of a transfer hose used during the filling of containers.

4.8 LIQUEFIED PETROLEUM GAS (LP-GAS OR LPG) – Any material having a vapor pressure not exceeding that allowed for commercial propane, as defined in Standard Specification for Liquefied Petroleum (LP) Gases, ASTM D1835, that is composed predominantly of the following hydrocarbons, either by themselves (excluding propylene) or as mixtures: propane, propylene, butane (normal butane or isobutane) and butylenes.

4.9 LP-GAS HOSE NOZZLE VALVE – A lever operated self closing fuel transfer valve that is used with a LP-Gas dispenser to dispense LP-Gas into a container on a vehicle.

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4.10 MULTIPLE FUNCTION VALVE (or MULTIPLE HEAD VALVE) – A valve incorporating several types of valves into a single unit or body.

4.11 SHUTOFF VALVE – A type of valve that incorporates a seat and seat disc member that will close an internal orifice to prevent further flow of fluid through the valve. Shutoff valves are further categorized as primary or secondary, and manual or automatic.

4.12 SHUTOFF VALVE, AUTOMATIC – A type of shutoff valve that uses energy (other than electricity) to open and close the valve member, based upon some external input.

4.13 SHUTOFF VALVE, MANUAL – A type of valve that incorporates a handle, lever, handwheel or other element that anticipates human manipulation of the element to close the valve member.

4.14 SHUTOFF VALVE, PRIMARY – A type of valve suitable for installation where a positive shut-off is required.

4.15 SHUTOFF VALVE, SECONDARY – A type of valve suitable for installation only in branch or bypass piping where a positive shut-off is not essential.

4.16 VAPOR RETURN VALVE – A type of valve intended for vapor use only, which is used to equalize pressure between the supply container and the container being filled.

CONSTRUCTION

5 General

5.1 A valve shall include all of the components required for its normal function and installation, and shall be furnished as a single unit or assembly.

5.2 When a valve is of a design which requires the use of special pipe flanges, gaskets, bolts, or other special fittings or parts for making a proper installation, such parts shall be furnished by the manufacturer with each valve.

5.3 *Relocated as 17.1 June 10, 2009*

5.4 A seat disc shall be attached to its poppet or holder, or otherwise assembled so as to prevent it from becoming dislocated under service conditions. The means to secure the disc shall not rely on cement or adhesive.

5.5 A brazing material used for joining liquid-confining parts of a valve for LP-Gas shall have a melting point (solidus temperature) of no less than 1,000°F (538°C). Brazing shall not be used on valves for anhydrous ammonia. See 6.5.

5.6 A valve with socket or butt weld ends shall be constructed so that it is capable of being installed without damaging nonmetallic seats or seals. Instructions for accomplishing this shall accompany each valve.

5.7 Two or more subassemblies intended to be assembled in the field as a unit shall be capable of being joined together without requiring any of the subassemblies to be cut, drilled, or welded.

5.7 added June 10, 2009

5.8 The construction of a valve shall be such that parts can be reassembled after being dismantled to the extent provided for routine maintenance.

5.8 added June 10, 2009

6 Materials

6.1 An operating or pressure-confining part of a valve shall have the strength and durability to provide reliable service of the part and of the assembly.

Revised 6.1 effective June 10, 2011

6.2 To comply with 6.1, a material for pressure-confining parts of a valve for LP-Gas shall have a minimum melting point (solidus temperature) of not less than 1500°F (816°C).

Exception No. 1: Valves that are part of a meter assembly, lever operated transfer valves and LP-Gas hose nozzle valves shall have a melting point (solidus temperature) of not less than 950°F (510°C) and a tensile strength of not less than 10,000 psi (68.9 MPa) at 400°F (204°C).

Exception No. 2: A valve disc or soft seat, a seal ring, a diaphragm, or a gasket is not required to comply with this requirement.

Exception No. 3: Pressure confining stems or poppets of filler valves and vapor return valves shall have a melting point (solidus temperature) of not less than 950°F (510°C) and a tensile strength of not less than 10,000 psi (68.9 MPa) at 400°F (204°C).

6.2 revised November 10, 2011

6.3 To comply with 6.1, a material for pressure-confining parts of valves for anhydrous ammonia and operating parts of all valves shall have a melting point (solidus temperature) of not less than 950°F (510°C) and a tensile strength of not less than 10,000 psi (68.9 MPa) at 400°F (204°C).

Exception No. 1: A valve disc or soft seat, a seal ring, a diaphragm, a gasket or an internal operating part, is not required to comply with this requirement.

Exception No. 2: A handle or lever on a shut off service valve having an inlet connection not greater than ½ in. NPT is not required to comply with this requirement. See Impact Test, Section 38.

6.3 revised November 10, 2011

6.4 A part in contact with the fluid to be handled shall be resistant to the action of such fluid.

6.4 revised June 10, 2009

6.5 Ammonia containing minute quantities of water reacts rapidly with cadmium, copper, zinc, and many alloys, especially those of copper base. Only iron, steel, and certain nonferrous alloys, determined to be satisfactory for ammonia service, are to be used in contact with anhydrous ammonia.