
Rules of Department of Agriculture

Division 90—Weights and Measures

Chapter 10—Liquefied Petroleum Gases

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Title 2—DEPARTMENT OF AGRICULTURE

Division 90—Weights and Measures Chapter 10—Liquefied Petroleum Gases

2 CSR 90-10.010 Installing, Metering, Transporting, Licensing for LPG (Rescinded November 11, 1977)

AUTHORITY: section 323.020, RSMo 1969. Original rule filed Sept. 8, 1969, effective Sept. 18, 1969. Rescinded: Filed July 13, 1977, effective Nov. 11, 1977.

2 CSR 90-10.011 Inspection Authority—Duties

PURPOSE: This rule sets out the authority and duties of the inspection authority and has been developed in the interest of safety to life and property. These rules do not apply to public utilities regulated by the Missouri Public Service Commission.

(1) The director of agriculture is the officer in charge of the collection of meter inspection fees, liquefied petroleum gas (LPG) meter inspection and safety in the storage, handling, transportation and use of liquefied petroleum gas in the Department of Agriculture referred to as the inspection authority.

(2) The inspection authority shall have discretionary authority to require annual pressure testing of all LPG piping systems serving schools, churches, nursing homes, resorts, mobile home parks, public housing, hospitals, amusement parks, summer camps (Boy Scout, Girl Scout, church, etc.) and other public buildings and institutions. It shall be the responsibility of the owner, administrator, superintendent, director or other responsible person directly associated with any of the piping systems serving any of the listed public buildings, mobile home parks, summer camps (Boy Scout, Girl Scout, church, etc.), amusement parks and institutions to assume full responsibility to secure the annual pressure test of the LPG system on or before September 1 of each calendar year with the exception of summer camps and amusement parks which shall be completed on or before June 1 of each calendar year. A copy of the test report shall be submitted to the inspection authority within five (5) days after completion of the test. Failure to complete the required annual pressure tests may be due cause to consider the LPG system unsafe for continued use and shall be reason to place the system out of service until the time a pressure

test is completed and the system found to be free of leaks and safe for continued operation.

(3) The standards for storage and handling of LPGs and the standards for the installation of gas appliances and gas piping as published in the National Fire Protection Association publications, Numbers 54, 58, 59, 501A and 501C will be adhered to by the inspection authority in the course of administering its duties. These are adopted as rules in 2 CSR 90-10.020, 2 CSR 90-10.040, 2 CSR 90-10.060 and 2 CSR 90-10.090.

(4) For the purpose of ascertaining whether any container or system complies with all rules regulating the storage and handling of LPGs and the installation of appliances and piping—

(A) The inspection authority and/or the authorized agents, deputies and inspectors shall have free access, at reasonable times and upon reasonable notice, to any premises where a LPG container or system is offered for sale, stored, being repaired, installed or being used; and

(B) Owners, operators, drivers, custodians and occupants of transport vehicles, during reasonable hours and upon reasonable request of the inspection authority, shall permit inspection of that vehicle.

(5) Any person, firm, corporation or others making LPG installations or supplying fuel for installations, upon reasonable request, shall furnish reasonable and pertinent information as may be considered necessary by the inspection authority to determine that there is compliance with the rules.

(6) An exception to these regulations may be approved by the inspection authority after sufficient evidence is supplied showing that the exception will provide a level of safety at least equivalent to that contemplated by the regulations.

(7) The provisions of these regulations shall not be construed as prohibiting the continued use of an installation which received the written approval of the inspection authority at the time of installation or was in compliance with safety standards and codes at the time of installation, unless circumstances of a hazardous nature justify correction for the benefit of public safety.

(8) If the director of the Department of Agriculture determines that any LPG container constitutes an immediate danger to the public or property, s/he shall require the

immediate removal of liquid and vapor LPG from the container by a registered LPG dealer or company. If the director determines that any LPG appliance, equipment or system constitutes an immediate danger to the public and property, s/he shall require the immediate disconnection by a registered LPG dealer or company from the LPG container.

AUTHORITY: section 323.020, RSMo 1986. Original rule filed July 13, 1977, effective Nov. 11, 1977. Amended: Filed May 2, 1985, effective Sept. 27, 1985. Amended: Filed March 3, 1989, effective June 29, 1989. Amended: Filed April 3, 1990, effective June 28, 1990.*

**Original authority: 323.020, RSMo 1947.*

2 CSR 90-10.012 Registration—Training

PURPOSE: This rule sets forth registration, training and examination requirements for persons applying for or holding registrations to ensure the safety of life and property.

PUBLISHER'S NOTE: The forms referenced in this rule may be accessed through the Missouri Department of Agriculture's website at www.mda.state.mo.us or by request from the agency at (573) 751-4278.

(1) As a prerequisite to registration in this state and receiving a numbered certificate of registration to engage in the business of selling at retail liquefied petroleum gas (LPG), or in the business of handling or transporting LPG over the highways of this state, or in the business of installing and servicing equipment and appliances for use with LPG in this state, application shall be made to the director of agriculture on forms prescribed for this purpose with such reasonable information as shall be deemed necessary.

(2) All persons applying for registration to engage in the business of handling, storing or transporting LPGs or in the business of installing, repairing or servicing piping, equipment or appliances for use with LPGs shall be properly trained and experienced in the work, familiar with all safety precautions required and comply with all requirements of Chapter 323, RSMo and the rules pursuant to it.

(3) Every individual applying for registration to engage in the business of handling, storing or transporting LPGs or in the business of installing, repairing or servicing piping, equipment or appliances for use with LPGs

must score at least seventy-five percent (75%) on a written examination administered by the Division of Weights and Measures before approval of registration will be granted.

(4) Every individual, except clerical personnel and others not actually handling LPGs or servicing appliances or equipment, within any business involved in handling, storing or transporting LPGs or involved in the installation, repairing or servicing of piping, equipment or appliances for use with LPGs must attend and complete an initial training program, including the passing of a written examination with a score of at least seventy-five percent (75%). Every individual subject to the requirements of this section shall attend refresher training at least once every three (3) years. New employees shall be trained by their employer until such time that training is available through a state-approved training program. Each training program's curriculum must be based on the National Propane Gas Association's (NPGA) Certified Employee Training Program (CETP) or equivalent, structured to meet the trainees needs, and approved by the director. All training programs submitted to the director must contain information on applicable statutes and regulations governing liquefied petroleum gases; must be resubmitted to the director for review and approval on an annual basis or at such time change has been made; and any training program that, through audit, does not meet the approved training program criteria, may be rejected for use by the director.

(5) Residents of states other than Missouri who desire to engage in or continue to do business in this state shall submit an application for registration on forms furnished for this purpose by the director of agriculture. Qualifications and approval for this registration permit will be determined on the basis outlined in Chapter 323, RSMo. The information submitted shall be related to the requirements of this state and any additional provisions required by the LPG inspection authority of their state residency in determining eligibility for registration.

(6) Registration shall be filed at the time of or before commencing operations by the classes described in this section. The registrant shall notify the inspection authority within ten (10) days after discontinuance of his/her individual operations, providing the name of his/her successor organization, if any. The classes are—

(A) Class I—General LP gas operation. The storage, sale, transportation and distribution of LP gas at retail-wholesale and the installation, service and repair of appliances, equipment and piping for use with LP gas. This does not include LP gas carburetion or liquid meter service or repair;

(B) Class II—Installer and service of low pressure systems. The installation, service and repair of appliances, equipment and piping for use with LP gas. This class applies to only the low pressure portion of the LP gas system downstream of the first stage regulator and those systems addressed in NFPA 54;

(C) Class III—Installer and service of high pressure systems. The installation, service and repair of piping and equipment for use with LP gas. This class applies to only the high pressure portion of the LP gas system upstream of the first stage regulator and those systems addressed in NFPA 58;

(D) Class IV—Installer and service of high and low pressure. The installation, service and repair of appliances, equipment and piping for use with LP gas, the installation of LP gas cylinders and tanks and the delivery of LP gas cylinders. This class applies to both high and low pressure portions of LP gas systems as addressed in NFPA 54 and NFPA 58;

(E) Class V—LP service station operator (metered sales). The retail operation of an LP gas service station consisting of LP gas storage containers, piping, pumps, and other pertinent equipment utilized to fill portable LP gas containers by weight;

(F) Class VI—LP gas dispenser operator (non-metered sales). The retail operation of an LP gas dispensing station consisting of an LP gas storage container(s), piping, pumps and other pertinent equipment utilized to fill portable LP gas containers by weight;

(G) Class VII—Cylinder exchange dealer. The operation of an LP gas cylinder exchange business whereby Department of Transportation (DOT) cylinders are stored in a secured cage or area and exchanged with customers (full cylinder for empty cylinder). This does not include the filling of any cylinder or tank on premises;

(H) Class VIII—Cylinder sales and service. An operation or business engaged in the filling, distribution and service of LP gas cylinders;

(I) Class IX—Carburetion. An operation or business engaged in the installation and services of LP gas carburetion systems;

(J) Class X—Liquid meter repair and service. The installation, repair and service of LP gas meters utilized for liquid LP gas deliveries, i.e., bobtail delivery truck meters; and

(K) Class XI—Transporters. An operation engaged in the business of transporting LP gas.

(7) Each registrant shall be issued a certificate of registration which shall bear a permanent identifying number. This certificate shall be displayed in a conspicuous location in the office at the address for which issuance was made.

(A) This same number shall be used as an identifying number to be conspicuously displayed on each and every motor vehicle used by the registrant for the transportation of liquefied petroleum gas over the highways of this state.

(B) The number shall be preceded by the letters LPG MO.

(C) The letters and numbers shall be in a color contrasting with the background color, at least two inches (2") in height, painted with a minimum stroke width of one-fourth inch (1/4").

(D) The letters and numbers shall be located in clear view on the rear of each truck and bulk tank or on each side of a truck not equipped with a tank body.

(E) Trucks and truck tanks shall be numbered consecutively or by some other method of identification which has been approved by the inspection authority. This method of identification shall be used and placed on the tank or truck following the identifying number.

(8) Each transporter making delivery to a bulk plant or any similar type delivery of LPG over the highways of this state, shall have the LPG MO identifying number printed or written on each ticket delivered to each consignee in this state receiving a product which is transported by the registered transporter.

AUTHORITY: section 323.020, RSMo 2000. Original rule filed July 13, 1977, effective Nov. 11, 1977. Amended: Filed May 2, 1985, effective Sept. 27, 1985. Amended: Filed March 3, 1989, effective June 29, 1989. Amended: Filed Nov. 13, 1997, effective June 30, 1998. Amended: Filed Dec. 3, 2001, effective June 30, 2002.*

**Original authority: 323.020, RSMo 1947, amended 1994, 1998.*

2 CSR 90-10.013 Installation Requirements

PURPOSE: This rule sets out the minimum general standards governing design, construction, location and installation of equipment for storing and handling liquefied

petroleum gas. These minimum general standards are designed to assure the required safety for life and property. The requirements contained in this rule will insure the safety of life and property.

PUBLISHER'S NOTE: The forms referenced in this rule may be accessed through the Missouri Department of Agriculture's website at www.mda.state.mo.us or by request from the agency at (573) 751-4278.

(1) Prior to installation, two (2) copies of the detailed plans of the proposed liquefied petroleum gas (LPG) installation covering the LPG system and piping, including the size and total storage capacity of all LPG storage tanks shall be forwarded to the inspection authority for consideration and approval for installations at buildings of public assembly or use such as schools, churches, recreational halls, tourist courts, hotels, hospitals, sanitariums, convalescent homes, nursing homes, rest homes, four (4)-unit apartments and larger or similar types of public buildings having institutional occupancies, for new construction, major renovations or additions to these installations and mobile home parks, shopping center areas, service stations, bulk plants, industrial plants and other similar locations of public gathering. When approval is granted, one (1) copy of the plans will be returned to the party submitting the original proposal. Final inspection and approval is required before placing the installation into service. If installation of the proposed LPG system has not begun within ninety (90) days from the date of approval by the state LPG inspection authority, new plans shall be resubmitted prior to the time installation does begin.

(2) Detailed plans shall be furnished to the inspection authority for approval before installation of LPG containers having a water capacity of ten thousand (10,000) gallons or more, or two (2) or more containers that are to be connected and have a combined capacity of ten thousand (10,000) gallons or over, or when LPG in the liquid phase is to be withdrawn or of a container charging plant where portable containers are to be recharged and filled regardless of the capacity of the storage containers used as the supply for filling containers and cylinders.

(3) The following requirements shall be met on plans that shall be submitted to the inspection authority of Missouri for approval before starting construction:

(A) Two (2) complete copies of the plans shall be submitted to the inspection authority together with detailed specifications;

(B) Plans shall be on good quality paper, legible and contain the information required by this section;

(C) Plans and specifications are to be accompanied by a written application on a form prescribed by the inspection authority and shall include the following:

1. The address of the proposed location and the name and mailing address of the owner or builder;

2. An outline of the boundary lines of the property owned or leased;

3. A diagram showing adjoining property on all sides and the distance to all adjacent buildings and roadways;

4. A diagram showing the location and sizes of each container or containers on the plot of ground to be used;

5. A diagram pinpointing each location where liquid transfer will be made, such as loading, unloading and bottling;

6. A general layout of piping, pipe supports and pipe protection; the location, size and type of each important piece of equipment, gate valve, excess flow valve, pressure relief valve, hose, regulator and all other important parts of the system planned;

7. The location of each building or shed to be built on the property and each sewer or drain opening;

8. The location of electrical lines and poles and telephone poles if located twenty-five feet (25') or less from storage tanks or liquid transfer areas;

9. The location of the electrical service pole;

10. The location of fences;

11. The dimensions of tank foundations, footings, reinforcements and tank clearance above ground level;

12. Storage container dimensions, whether new or used, and the name of the manufacturer;

13. All used containers of two thousand (2,000) gallons water capacity or more to be reinstalled shall have all valves removed and inspected. Relief valves shall be tested and if defective, replaced with new valves of proper design. A statement of all tests, inspections and valve replacements shall be submitted to the inspection authority; and

14. A statement that all materials and workmanship will be in conformity with the requirements of Missouri pertaining to LPG safety standards; and

(D) All electrical equipment in vaporizer houses, pump houses and cylinder filling rooms or other similar locations shall be of the type approved for use in Class 1, Group

D, Hazardous Locations, of the *National Electrical Code*.

(4) All installations for use of LPGs in containers of sixty to one hundred ten (60-110) pounds, LPG capacity, shall be provided with adequate and safe means of protection to assure that the cylinder is supported in its installed position and that there is reasonable protection from the elements.

(5) When two (2) or more LPG containers, having a water capacity of over one thousand (1,000) gallons each or a combined total water capacity of more than one thousand two hundred (1,200) gallons, are connected by a common liquid line that provides outlet or inlet that may be used as a common filling or withdrawing convenience—

(A) All tanks so connected shall be installed in a manner as to assure that the tops of all tanks are at the same elevation and have approximately the same working pressure rating;

(B) Each tank shall be provided with the proper size and type excess flow valve in the immediate point of opening in the tank where the common line enters each tank;

(C) The rated capacity of excess flow valves in the common header between the tanks and the common pipeline from the system shall not be greater than the maximum flow capacity of the piping, valves and fittings located downstream from the point of installation of the excess flow valve; and

(D) All pipelines and connections shall be provided with sufficient flexibility to withstand any and all settling of the tank foundation, expansion or contraction of the system.

(6) All commercial, industrial and institutional LPG storage systems shall be accessible for emergency fire fighting equipment.

(7) All LPG storage tanks shall be installed a minimum distance of twenty feet (20') from all other Class I, II and III liquids. In the event of a hazardous location, the LPG inspection authority may require a greater distance and location up to a maximum distance of one hundred feet (100').

(8) Industrial, commercial or institutional LPG storage tanks shall not be buried, mounded or partially mounded without specific approval by the LPG inspection authority. Approval shall not be granted until a complete assessment of the proposed system and location has been made and found to comply with all state and local safety requirements.



(9) All LPG dispensers shall have plans submitted as required by sections (1)–(3).

(10) All LPG dispensers shall be protected from tampering or vandalism by either a six foot (6') high industrial-type fence with one (1) lockable gate or a lockable storage cabinet to protect service valves, meters, hoses and accessory equipment.

(11) All LPG dispensers shall have recommended fill procedures posted in a conspicuous location and all cylinder fill dispensers shall be equipped with a state-approved scale to be utilized for the safe filling of LPG cylinders. LP gas cylinders of one hundred (100) pounds water capacity or less shall be filled by weight only utilizing a state-approved scale. Cylinders of one hundred (100) pounds capacity or less shall not be filled from any LP gas delivery vehicle. An exception may be made by the inspection authority for cylinders utilized in hot air balloon service if the cylinders are approved for such service, have an accurate approved method of gauging, are in good condition and are filled in a safe location away from any source of ignition.

(12) Each commercial and industrial LPG dispensing system, except those filled by weight only, shall incorporate into the dispensing system an approved pullaway device to stop the uncontrolled discharge of LPG. The pullaway device shall be adequately secured against displacement and shall be installed in accordance with the manufacturer's instructions.

(13) Polyethylene pipe or tubing may be used for LPG service if in compliance with the American Society of Testing and Materials (ASTM) D2513 Standards, National Fire Protection Association (NFPA) 58, 1995 Edition, installed only underground and approved by the LPG inspection authority. Plastic pipe or tubing shall not be used.

AUTHORITY: section 323.020, RSMo 2000. Original rule filed July 13, 1977, effective Nov. 11, 1977. Amended: Filed May 2, 1985, effective Sept. 27, 1985. Amended: Filed March 3, 1989, effective June 29, 1989. Amended: Filed Nov. 13, 1997, effective June 30, 1998. Amended: Filed Dec. 3, 2001, effective June 30, 2002.*

**Original authority: 323.020, RSMo 1947, amended 1994, 1998.*

Op. Atty. Gen. No. 86, Sturgis, 2-3-55. A private individual user of liquified petroleum gas may transport over the highways of Missouri empty liquified petroleum gas drums

or such drums containing such gas without violating Basic Rule B.15 of the regulations promulgated under section 323.020, RSMo 1969.

2 CSR 90-10.014 Storage

PURPOSE: This rule sets out minimum general standards for the storage of liquefied petroleum gas and promotes safety for life and property. These requirements do not apply to public utility facilities regulated by the Missouri Public Service Commission.

PUBLISHER'S NOTE: The forms referenced in this rule may be accessed through the Missouri Department of Agriculture's website at www.mda.state.mo.us or by request from the agency at (573) 751-4278.

(1) All liquefied petroleum gas (LPG) storage containers or storage systems where one (1) tank is used having a water capacity of one hundred (100) gallons or more, or where two (2) or more tanks are used having a total combined capacity of more than one hundred (100) gallons, and all related equipment located at or near containers which are installed on school grounds, public playgrounds, recreation park grounds or any other playground areas where children in age groups from preschool through grade twelve (12) have access shall be fenced with industrial type fence a minimum of six feet (6') high as to prevent tampering with the gas system.

(2) Where LPG storage of five hundred (500) gallons or less is in use or where a hazard exists in connection with any size of underground storage system, reasonable protective methods, other than fencing, which are deemed necessary may be required.

(3) Used containers for storage of LPG, other than containers approved by the Interstate Commerce Commission (ICC) or the United States Department of Transportation and connected for use on a motor vehicle, shall not be imported into Missouri, or installed or used if they are not in conformance with the requirements of these regulations and unless the inspection authority has been furnished with the information contained in the manufacturer's data report. Name plate data may be accepted in lieu of a manufacturer's data report on tanks of two thousand (2,000) gallons water capacity or less.

(4) A manufacturer's data report shall be furnished to the inspection authority on all new

LPG containers, other than containers approved by the ICC or United States Department of Transportation, having a water capacity greater than one thousand (1,000) gallons.

(5) Containers of any size shall not be used for storage other than manufacturer's design and specifications; i.e., railcars, converted railcars, bulk delivery truck tanks both transport and bobtail cannot be utilized for fixed storage.

(6) All LPG storage containers, including portable or semi-portable with attached supports or foundations to be used for temporary or permanent installations, shall be mounted on solid concrete piers or foundations with a maximum height of the outside bottom of the container shell no more than five feet (5') from the ground.

(7) All skid-mounted LPG storage tanks to be used for temporary or permanent installation shall be mounted on solid concrete footings with the outside bottom of the container not more than three feet (3') from the ground.

(8) All skid-mounted LPG storage container systems of four thousand (4,000)-gallon capacity (single or multiple containers) shall comply with the National Fire Protection Association Manual Number 58, 1995 Edition, Section 3-2.8.10.

(9) All LPG bulk storage containers, except those covered in section (1) of this rule, of two thousand (2,000) gallons or more capacity shall have its pumps, piping, vaporizers, hoses, bulkheads and related equipment protected from tampering by a metal industrial-type fence at least six feet (6') tall. All locations with one hundred (100) square feet or less fenced area shall have at least one (1) lockable access gate. All locations with more than one hundred (100) square feet fenced shall have at least two (2) lockable access gates.

(10) All aboveground LPG storage containers shall be kept properly painted with a light reflective paint such as white or aluminum.

(11) All aboveground LPG storage containers, except domestic installations of two thousand (2,000) gallons capacity or less, shall be marked with warning signs placed in a conspicuous location on both sides and both ends of the container incorporating the following or equivalent wording: FLAMMABLE—PROPANE: NO SMOKING OR OPEN

FLAMES. All wording shall be in block-style letters with a minimum height of two inches (2") and a minimum width of one-fourth inch (1/4") on a contrasting background.

(12) Each LPG storage plant or system of two thousand (2,000) gallons or more shall have a sign displayed in a conspicuous location stating the name, address and telephone number of the nearest representative, agent or owner of the system.

(13) After the effective date of this rule, where possible, all LPG bulk storage containers shall be installed parallel to surrounding buildings.

(14) Any LPG storage container and its related piping and equipment which may be exposed to vehicle damage shall be protected by guard rails or guard posts. All guard rails or guard posts shall be constructed of heavy gauge metal of sufficient strength to absorb vehicle impact without damage to the container or its related equipment.

(15) Any LPG storage container, including any container used for motor fuel, which has been damaged in any manner shall be repaired according to the requirements of the code it was manufactured under and shall be hydrostatically tested prior to placing in service.

(16) Repair of any LPG container shell, excluding valves, fittings, regulators and attachments, shall be in conformance with the code under which the container was manufactured and all repairs shall be performed only by a person certified under the code by which the container was manufactured.

(17) A copy of all container data information and repairs to the container shall be submitted to the inspection authority for review prior to installation of the container.

(18) LP gas storage containers supplying mobile home parks, schools, hospitals, commercial-industrial facilities, domestic systems, other public or institutional facilities shall not be utilized as a bulk storage plant for loading LP gas into any fuel delivery vessel or vehicle.

AUTHORITY: section 323.020, RSMo 1994. Original rule filed July 13, 1977, effective Nov. 11, 1977. Amended: Filed May 2, 1985, effective Sept. 27, 1985. Amended: Filed March 3, 1989, effective June 29, 1989.*

Amended: Filed Nov. 13, 1997, effective June 30, 1998.

**Original authority: 323.020, RSMo 1947, amended 1994.*

2 CSR 90-10.015 Container, System or Equipment Violations

PURPOSE: This rule sets out the procedure to govern the inspection authority's actions in eliminating hazardous conditions which could result in serious property damage and loss of life.

(1) Any container, system or equipment that has been determined through inspection by the inspection authority to violate these regulations so as to constitute a substantial hazard or violation which makes the container, system or equipment unsafe for continued operation shall be so identified by the inspection authority through a notice or tag affixed to the container. The container, system or equipment upon which the tag has been affixed shall not be used, nor shall liquefied petroleum gas be placed in the container, system or equipment.

(2) Any container, system or equipment that has been determined through inspection by the inspection authority to violate these rules and regulations but does not constitute an immediate hazard to life or property shall only be tagged if the defect or the violation is not corrected within five (5) days after written notification setting forth the violation or defect has been personally served upon or directed through the United States mail, certified mail, postage prepaid, returned receipt requested, to the owner, operator or supplier of the container, system or equipment. In the event the owner or supplier is not identified on the container, system or equipment, notice to the occupant of the premises where the container, system or equipment is located shall be deemed sufficient.

(3) The tag or notice attached to the container, system or equipment, shall be the property of Missouri and only shall be removed by the inspection authority upon notification and/or request by the owner, or supplier, or his/her agent when defect or violation has been corrected. The tag is to be removed promptly after receiving notice of correction and reinspection.

(4) Any underground container or system that is being maintained in violation of these rules so as to constitute a substantial hazard to public safety may be required to be removed for

inspection by the inspection authority upon reasonable demand and notice.

AUTHORITY: section 323.020, RSMo 1986. Original rule filed July 13, 1977, effective Nov. 11, 1977.*

**Original authority: 323.020, RSMo 1947.*

2 CSR 90-10.016 Meters for Measurement—Specifications and Proving

PURPOSE: This rule sets out minimum general standards governing the design of meters used for measuring liquefied petroleum gas.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. Therefore, the material which is so incorporated is on file with the agency who filed this rule, and with the Office of the Secretary of State. Any interested person may view this material at either agency's headquarters or the same will be made available at the Office of the Secretary of State at a cost not to exceed actual cost of copy reproduction. The entire text of the rule is printed here. This note refers only to the incorporated by reference material.

(1) All liquid meters used in the sale of liquefied petroleum gas (LPG) shall be equipped with an effective vapor eliminator.

(2) Each vehicle tank used in the retail sale of LPG shall be equipped with a meter for measurement of LPG in terms of gallons and shall not be equipped with a bypass around the meter. A vapor equalization line is not a bypass and is not prohibited by this provision.

(3) LPG sold or delivered to a retail customer by liquid measure shall be corrected for temperature to sixty degrees Fahrenheit (60°F) with an automatic correction device or the quantity delivered shall be corrected for temperature of sixty degrees Fahrenheit (60°F) in accordance with the Volume Correction Factor Table, nationally accepted as accurate within fair tolerances.

(4) When the delivery is made through a meter automatically corrected for temperature, the retail sales ticket shall show the metered adjusted gallons delivered.

(5) When the delivery is made through a meter not corrected automatically, the retail sales ticket shall show the metered gallons

delivered, the temperature at the time of delivery and the corrected gallonage.

(6) A person, firm or corporation owning or having in its possession an LPG measuring device which is installed for use to measure liquid gallons to a retail customer in this state shall permit the device to be tested after reasonable request is made by the inspection authority and give full assistance and cooperation during the testing procedure. Tickets and other records of deliveries shall be made available upon request to determine that proper compliance and procedure is in effect for making deliveries to retail customers.

(7) When liquid meters are determined to be accurate within the tolerance limits in the current edition of the National Institute of Standards and Technology Handbook 44, the inspection authority, immediately upon completion of the test, shall seal the meter in a manner so as to prevent tampering which would affect the accuracy of measurement. No person shall remove, break or tamper with the meter seal without the written consent of the inspection authority. These requirements shall not preclude the necessity to make needed repairs to the metering device or to transfer to another tank. If it is necessary to break or remove the seal to accomplish repairs or transfer, written notice shall be given to the inspection authority within forty-eight (48) hours from the date the repairs or transfer is made.

(8) When a liquid meter is found to be inaccurate beyond the tolerance allowed in the current edition of the National Institute of Standards and Technology Handbook 44, after a test is made, it shall be conspicuously marked INACCURATE by the inspection authority and shall not be used for measuring liquid gallons to retail customers until it has been corrected within tolerance limits.

(9) Any registrant delivering a lesser amount of LPG to a retail customer than is invoiced to the customer, if it is proven at a hearing conducted for this purpose that the shortage of delivery and overbilling of the amount delivered was made with intent to defraud, shall be subject to having his/her registration permit suspended.

*AUTHORITY: section 323.020, RSMo 1994. * Original rule filed July 13, 1977, effective Nov. 11, 1977. Amended: Filed May 2, 1985, effective Sept. 27, 1985. Amended: Filed March 3, 1989, effective June 29, 1989. Amended: Filed Nov. 13, 1997, effective June 30, 1998.*

**Original authority: 323.020, RSMo 1947, amended 1994.*

2 CSR 90-10.017 Mobile Homes

PURPOSE: This rule sets out minimum general standards governing the utilization of liquefied petroleum gas in mobile homes. These changes will help insure the safety of public and property.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. Therefore, the material which is so incorporated is on file with the agency who filed this rule, and with the Office of the Secretary of State. Any interested person may view this material at either agency's headquarters or the same will be made available at the Office of the Secretary of State at a cost not to exceed actual cost of copy reproduction. The entire text of the rule is printed here. This note refers only to the incorporated by reference material.

(1) All liquefied petroleum gas (LPG) gas supply and fuel burning equipment shall meet the requirements as contained in 2 CSR 90-10.020(2) and 2 CSR 90-10.040(2) and sections (2)-(38).

(2) Mobile units for human habitation and containing or utilizing equipment for LPG use or equipment readily convertible to LPG use shall not be used in this state or connected for use to any liquefied petroleum gas supply system or LPG container which contains LPG fuel unless that equipment and the gas supply system is installed, inspected or tested by a registrant or a person in the hire of a registrant, in compliance with National Fire Protection Association (NFPA) Standard Numbers 501A, 54 and 58 and Chapter 323, RSMo and all corresponding rules. This rule does not apply to recreational-type vehicles traveling the public roadways in the state and connected to LPG containers constructed under Interstate Commerce Commission specifications or United States Department of Transportation regulations as a supply for fuel serving the burning, heating or illuminating equipment in or on the occupied space of the vehicle.

(3) It shall be the duty of the manufacturer of the new mobile unit or authorized agents making the installation of the gas equipment to comply with the standards in effect at the time of manufacture.

(4) The inspection authority shall require certification from the manufacturer or authorized agents that each mobile unit containing the LPG equipment or equipment readily convertible to LPG use is, at the time of manufacture, in compliance with these standards. A copy of this certification shall be furnished with each manufactured mobile unit and be made available to the owner, the connecting gas supplier and the inspection authority.

(5) Any section of a movable or portable dwelling or portion designed for human occupancy, with or without a permanent foundation containing all or part of a system for use with LPG or readily convertible to LPG, shall provide a level of safety at least equal to that provided by nationally recognized standards of safety.

(A) If any section has parts concealed in such a manner that inspection is impractical after fabrication, the manufacturer shall certify to the inspection authority that the part or section does comply with nationally recognized standards of safety.

(B) When deemed necessary and a written request is made by the inspection authority, the manufacturer shall submit detailed plans of the prefabricated part or section for each model or series of the prefabricated part or section.

(C) Failure to comply with these requirements shall be just causes for tagging the system to prohibit its use with LPG in Missouri.

(6) It shall be a violation for any person, firm, corporation or association to install, modify or alter, the burning, heating or illuminating equipment for using LPG in or on any new or used mobile unit, prefabricated unit, movable or portable dwelling designed for human occupancy, with or without a permanent foundation, containing all or part of an installation or system for use with LPG or readily convertible to LPG in a manner that the installation of equipment, piping or venting would not be in compliance with applicable nationally recognized standards of safety, including NFPA Standards Numbers 54 and 58 and referenced codes contained. These standards are adopted as rules at 2 CSR 90-10.020 and 2 CSR 90-10.040.

(A) No such installation, modification or alteration shall be made in a manner not in conformity with the manufacturer's equipment listing with a nationally recognized testing agency or without the written approval of the inspection authority.

(B) The inspection authority shall require satisfactory evidence or proof to substantiate claims regarding the safety of any alternative to nationally recognized standards.

- (7) Only a holder of a registration permit issued by the inspection authority or a person in his/her employ shall connect any LPG container to the fuel system in or on a new or used mobile home or a prefabricated unit or a movable or portable dwelling designed for human occupancy.
- (8) Each LPG installation shall be tested for leaks to determine that all parts of the installation are in a safe operating condition before placing the unit in service as it is initially connected for the first time and, also as it is connected for use after having been moved from one (1) location to another, regardless of the distance.
- (A) It is the responsibility of the owner to secure this inspection and test.
- (B) These restrictions on container systems shall not apply to the routine exchange of cylinders.
- (C) The registered installer and owner of the unit tested shall maintain a record indicating the date and results of the pressure test.
- (D) These restrictions on connection of containers or testing shall not apply to recreational type vehicles except where there is evidence that these requirements are necessary for the benefit of public safety.
- (9) For the purpose of this rule, when the term equipment is used it shall be construed as including all burning, heating and illuminating appliances and their appurtenances.
- (10) All LPG systems installed in or on mobile homes shall be of the vapor withdrawal type with a normal operating pressure of eleven inches (11") of water column (wc), unless otherwise specified by the appliance manufacturer.
- (11) Flexible appliance connectors shall be listed and approved for LPG use.
- (12) Quick-disconnect connectors shall not be used in LPG systems.
- (13) LPG containers shall not be installed or stored inside any mobile home, except for listed, completely self-contained hand torches, lanterns or similar equipment with the containers having a maximum water capacity of not more than two and one-half pounds (2 1/2 lbs.) (approximately one pound (1 lb.) LPG capacity).
- (14) LPG piping systems shall comply with the NFPA Manual Number 54, 1996 edition and NFPA Manual Number 58, 1995 edition.
- (15) LPG storage containers shall comply with the 1989 edition of NFPA Manual Number 58.
- (16) LPG storage containers and piping systems shall be sized to insure adequate capacity for all appliances at maximum demand.
- (17) Piping, tubing or pipe or tubing joints shall not be installed within any wall, ceiling or floor space of the mobile home.
- (18) Each mobile home shall have its gas supply connection identified by a permanently affixed label or tag at or near the gas supply connection.
- (19) A shut-off valve shall be installed in the fuel piping at each appliance inside the mobile home upstream of the union or connector in addition to any valve on the appliance and so arranged to be accessible for servicing of the appliance and removal of its components. The shut-off valve shall be located within six feet (6') of a cooking appliance and within three feet (3') of any other appliance. A shut-off valve may serve more than one (1) appliance if located as required by this rule. Shut-off valves used in connection with gas piping shall be of a type designed and listed for use with LPG.
- (20) All openings in the LPG piping system not connected to appliances shall be closed, gas tight, with threaded pipe plugs or pipe caps.
- (21) Gas piping shall not be used for an electrical ground.
- (22) Pipe couplings and unions shall be used to join sections of threaded piping. Right and left nipples or couplings shall not be used.
- (23) All gas piping under mobile homes shall be adequately supported by galvanized or equivalently protected metal straps or hangers at intervals of not more than four feet (4'). Gas supply connections shall be rigidly anchored to a structural member within six inches (6") of the supply connection.
- (24) Before appliances are connected, piping systems shall stand a pressure of at least six inches (6") mercury or three (3) pounds per square inch gauge (psig) or at the pressure recommended by the appliance manufacturer for a period of not less than ten (10) minutes without showing a drop in pressure.
- (25) After appliances are connected, the piping system shall be pressurized to not less than ten inches (10") nor more than fourteen inches (14") water column and the appliance connections tested for leakage.
- (26) Defective heat exchangers on appliances shall be replaced. Repair of any appliance heat exchanger is strictly prohibited.
- (27) Heat-producing appliances and vents, roof jacks and chimneys necessary for their installation in mobile homes shall be listed or certified by a nationally recognized agency for use in mobile homes.
- (28) Fuel-burning appliances shall not be converted from one (1) fuel to another fuel unless converted in accordance with the terms of their listing and the appliance manufacturer instructions.
- (29) Each heating appliance shall be provided with a readily adjustable automatic control for regulation of living space temperature.
- (30) All gas clothes dryers shall be exhausted to the outside of the mobile home by a moisture-lint exhaust duct and termination fitting and the stubbed-in gas supply line shall be provided with a shut-off valve, the outlet of which shall be closed with a threaded cap or plug when not connected to a gas dryer.
- (31) Each LPG heat-producing appliance shall be listed and installed in conformance with its listing and manufacturer's instructions.
- (32) Heat-producing appliances shall be located so that no doors, drapes or other material can be placed or swing closer to the front of the appliance than the clearances specified by the manufacturer. Clearances surrounding heat-producing appliances shall not be less than specified by the appliance manufacturer and the appliance listing.
- (33) The area surrounding heat-producing appliances installed in areas with interior or exterior access shall be framed in or guarded with noncombustible material so that the distance from the appliance to the framing material is not greater than three inches (3"). When clearance required by the listing is greater than three inches (3"), the guard or frame shall not be closer to the appliance than the distance provided in the listing.
- (34) All fuel-burning appliances except ranges, ovens, illuminating appliances, clothes dryers, solid fuel burning fireplaces and solid fuel burning fireplace stoves shall

be installed to provide for the complete separation of the combustion system from the interior atmosphere of the mobile home. An exception to this requirements may be allowed by the inspection authority if the heating appliance was manufactured for mobile home use, is not utilized for or replacing the primary heat source and is equipped with an oxygen depletion safety device which will prevent the oxygen level from dropping to a hazardous level. Combustion air inlets and flue gas outlets shall be listed or certified as components of the appliance. The required separation may be obtained by—

(A) The installation of a direct vent system (sealed combustion system) appliances; or

(B) The installation of appliances within enclosures so as to separate the appliance combustion system and venting system from the interior atmosphere of the mobile home. There shall not be any door, removable access panel or other opening into the enclosure from the inside of the mobile home. Any opening for ducts, piping, wiring, etc. shall be sealed.

(35) A forced-air LPG appliance and its return air system shall be designed and installed so that negative pressure created by the air circulating fan cannot affect its or another appliance's combustion air supply or act to mix products of combustion with circulating air.

(36) Information on clearances, input rating, lighting and shutdown shall be attached to the appliances with the same permanence as the nameplate and located so that it is easily readable when the appliance is properly installed or shut down for transporting of the mobile home.

(37) Each fuel-burning appliance in each mobile home shall bear a permanent marking designating the type(s) of fuel for which it is listed.

(38) Every appliance shall be accessible for inspection, service, repair and replacement without removing permanent construction. Sufficient room shall be available to enable the operator to observe the burner, control and ignition means while starting the appliance.

AUTHORITY: section 323.020, RSMo 1994. Original rule filed July 13, 1977, effective Nov. 11, 1977. Amended: Filed March 3, 1989, effective June 29, 1989. Amended: Filed Nov. 13, 1997, effective June 30, 1998.*

**Original authority: 323.020, RSMo 1947, amended 1994.*

2 CSR 90-10.018 Accidents (Rescinded June 11, 1987)

AUTHORITY: section 323.020, RSMo 1986. Original rule filed July 13, 1977, effective Nov. 11, 1977. Rescinded and readopted: Filed Oct. 4, 1981, effective Jan. 14, 1982. Rescinded: Filed March 18, 1987, effective June 11, 1987.

2 CSR 90-10.020 NFPA Manual No. 54, National Fuel Gas Code

PURPOSE: This rule regulates the installation of liquefied petroleum gas appliances and liquefied petroleum gas piping.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. Therefore, the material which is so incorporated is on file with the agency who filed this rule, and with the Office of the Secretary of State. Any interested person may view this material at either agency's headquarters or the same will be made available at the Office of the Secretary of State at a cost not to exceed actual cost of copy reproduction. The entire text of the rule is printed here. This note refers only to the incorporated by reference material.

SUMMARY: The scope of National Fire Protection Association (NFPA) Manual No. 54, *National Fuel Gas Code*, 1999 edition, is to develop fire safety codes, standards, recommended practices and manuals, as may be considered desirable, covering the installation of piping and appliances using fuel gases such as natural gas, manufactured gas, liquefied petroleum gas and liquefied petroleum gas-air mixture.

(1) Standards contained in National Fire Protection Association (NFPA) Manual No. 54, *National Fuel Gas Code*, 1999 edition are incorporated herein by reference. The balance of this rule sets forth requirements for liquefied petroleum (LPG) applications not covered in the manual.

(2) All flexible appliance connectors shall be listed and approved for LPG use.

(3) All flexible appliance connectors which are listed and approved for LPG use shall have "Approved for LPG use" and pressure rating stamped or marked on connector.

(4) The repair or welding of LPG appliance heat exchangers is strictly prohibited.

(5) All appliances, except bunsen burners, ranges or cooktops, installed in public buildings, such as schools, nursing homes or hospitals, shall be equipped with one hundred percent (100%) shut-off safety valves.

(6) All science or laboratory rooms using LPG shall have an accessible and marked master shut-off valve located within the science or laboratory room.

(7) All home economic, science, kitchen or laboratory rooms shall have an accessible, properly charged fire extinguisher with a minimum rating of twenty (20) ABC (A class-combustible materials, B class-flammable liquids, C class-live electrical equipment) located in an accessible location within the room.

AUTHORITY: sections 261.023.6 and 323.020, RSMo 2000. Original rule filed Jan. 24, 1968, effective Feb. 3, 1968. Amended: Filed Sept. 8, 1969, effective Sept. 18, 1969. Amended: Filed May 13, 1977, effective Jan. 13, 1978. Amended: Filed May 2, 1985, effective Sept. 27, 1985. Amended: Filed March 3, 1989, effective June 29, 1989. Amended: Filed Nov. 13, 1997, effective June 30, 1998. Amended: Filed Dec. 3, 2001, effective June 30, 2002.*

**Original authority: 261.023.6, RSMo 1973 and 323.020, RSMo 1947, amended 1994, 1998.*

2 CSR 90-10.030 NFPA Manual No. 54A, Industrial Gas Piping and Equipment (Rescinded January 13, 1978)

AUTHORITY: section 323.020, RSMo 1969. Original rule filed Sept. 8, 1969, effective Sept. 18, 1969. Rescinded: Filed June 1, 1977, effective Jan. 13, 1978.

2 CSR 90-10.040 NFPA Manual No. 58, Storage and Handling of Liquefied Petroleum Gases

PURPOSE: This rule regulates the storage and handling of liquefied petroleum gases. The balance of the rule sets forth installation procedures required for liquefied petroleum gas carburetion which are not contained in National Fire Protection Association Manual No. 58.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the

entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. Therefore, the material which is so incorporated is on file with the agency who filed this rule, and with the Office of the Secretary of State. Any interested person may view this material at either agency's headquarters or the same will be made available at the Office of the Secretary of State at a cost not to exceed actual cost of copy reproduction. The entire text of the rule is printed here. This note refers only to the incorporated by reference material.

(1) This rule incorporated by reference National Fire Protection Association (NFPA) Manual No. 58, *Storage and Handling of Liquefied Petroleum Gases*, 2001 edition as the current Standard for the Storage and Handling of Liquefied Petroleum Gases.

(2) All equipment shall be installed and maintained in compliance with the safety standards and in conformity with the rules.

(3) It shall be unlawful for any person or corporation to put into operation in this state any motor vehicle using liquefied petroleum gas (LPG) as a fuel unless the fuel containers and supporting equipment of the vehicle have been placed in service by an installer certified and registered by the LPG Inspection Authority, state of Missouri.

(4) All this installed equipment shall be identified by a state decal issued by the Division of Weights and Measures, Department of Agriculture and applied by the registered installer. Upon transfer of equipment from one (1) vehicle to another vehicle, the installation shall be reinspected and a new decal applied to the container and proper forms filed with the Division of Weights and Measures.

(5) Registered applicants for retail sales of LPG shall not fill LPG storage containers installed on any vehicle where containers being used as a source for carburetion fuel, unless the container has displayed the official state decal installed per section (4). This shall not apply to transient vehicles.

(6) At all LPG dispensers, it shall be the dispenser owner's responsibility to provide initial training to specific persons on the operation of the dispenser. It shall be illegal for any person other than the trained person to operate the dispensing device. It shall be the responsibility of the owner or manager of each business, where a dispenser is located

and operated, to provide continuing training, as required by section 2 CSR 90-10.012(4), for each employee operating the dispenser.

(7) No person shall transport in a passenger type vehicle, or sell for transportation, LPG in containers of forty-five pounds (45 lbs.) capacity or over unless the container is connected for direct use in the passenger vehicle.

(8) The written Fire Safety Analysis, required by the 2001 edition of the National Fire Protection Association's Pamphlet 58, *Liquefied Petroleum Gas Code*, section 3.10.2.2 shall be prepared by a person approved by the Department of Agriculture's Division of Weights and Measures, who has relevant experience and is knowledgeable of the practices of the LP gas industry. Except for an engineered facility, the Fire Safety Analysis may be prepared by the owner of the facility in cooperation with the local fire department and/or Fire Marshall. The Fire Safety Analysis for an engineered facility, such as one that incorporates refrigerated storage, automated fuel standby (either industrial or utility) or pipeline terminals, shall be prepared, stamped and signed by a professional engineer who has relevant experience in LP gas or fire protection.

AUTHORITY: sections 261.023.6 and 323.020, RSMo 2000.* Original rule filed Jan. 24, 1968, effective Feb. 3, 1968. Amended: Filed Sept. 8, 1969, effective Sept. 18, 1969. Amended: Filed Nov. 1, 1972, effective Nov. 10, 1972. Amended: Filed May 13, 1977, effective Jan. 13, 1978. Emergency amendment filed March 27, 1981, effective April 7, 1981, expired July 10, 1981. Amended: Filed March 27, 1981, effective July 11, 1981. Amended: Filed May 2, 1985, effective Sept. 27, 1985. Amended: Filed March 3, 1989, effective June 29, 1989. Amended: Filed Nov. 13, 1997, effective June 30, 1998. Emergency amendment filed June 20, 2002, effective June 30, 2002, expired Dec. 30, 2002. Amended: Filed Dec. 3, 2001, effective June 30, 2002.

*Original authority: 261.023.6, RSMo 1973 and 323.020, RSMo 1947, amended 1994, 1998.

McConnell v. Pic-Walsh Freight Co., 432 SW2d 292 (Mo. 1968). Plaintiff, employee of an LPG company was not contributorily negligent as a matter of law when he overfilled an LPG tank on one (1) of defendant's trucks after being assured by defendant's employees that the tank was empty; plaintiff having no way of knowing the level of gas due to broken gauge. Defendant claimed plaintiff was negligent per se because he violated safety rules

concerning the filling of tanks inside a building, but court held that "all reasonable minds would not conclude that the infractions were the proximate cause of the injury in this case, and therefore . . . plaintiff is not as a matter of law barred from recovery."

2 CSR 90-10.050 NFPA Manual No. 30, Flammable and Combustible Liquids Code (Rescinded September 27, 1985)

AUTHORITY: section 323.020, RSMo 1978. Original rule filed July 20, 1967, effective July 30, 1967. Amended: Filed July 27, 1970, effective Aug. 6, 1970. Amended: Filed Nov. 1, 1972, effective Nov. 10, 1972. Amended: Filed May 13, 1977, effective Jan. 13, 1978. Amended: Filed Nov. 12, 1982, effective Feb. 11, 1983. Rescinded: Filed May 2, 1985, effective Sept. 27, 1985.

2 CSR 90-10.060 NFPA Manual No. 59, LP Gases at Utility Gas Plants

PURPOSE: This rule regulates the standard for the storage and handling of liquefied petroleum gases at utility gas plants.

The scope of National Fire Protection Association Manual No. 59, *LP Gases at Utility Gas Plants*, 1984 edition, is to outline methods for protection of persons and property by providing a standard of reference to serve as a guide to all persons concerned with the construction and operation of liquefied petroleum gas equipment at utility gas plants.

AUTHORITY: section 323.020, RSMo 1986.* Original rule filed May 13, 1977, effective Jan. 13, 1978. Amended: Filed May 2, 1985, effective Sept. 27, 1985.

*Original authority: 323.020, RSMo 1947.

2 CSR 90-10.070 NFPA Manual No. 501A, Manufactured Home Installations

PURPOSE: This rule regulates the mobile home park fuel supply systems.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. Therefore, the material which is so incorporated is on file with the agency who filed this rule, and with the Office of the Secretary of State. Any interested person may view this material at either agency's headquarters or

the same will be made available at the Office of the Secretary of State at a cost not to exceed actual cost of copy reproduction. The entire text of the rule is printed here. This note refers only to the incorporated by reference material.

The scope of National Fire Protection Association Manual No. 501A, *Manufactured Home Installations*, 1982 edition covers the installation of manufactured homes within a mobile home park.

AUTHORITY: section 323.020, RSMo 1986.* Original rule filed May 13, 1977, effective Jan. 13, 1978. Amended: Filed May 2, 1985, effective Sept. 27, 1985.

*Original authority: 323.020, RSMo 1947.

2 CSR 90-10.080 Federal Housing and Urban Development (HUD) Standards Part 3280, Manufactured Home Construction and Safety Standards
(Rescinded June 29, 1989)

AUTHORITY: section 323.020, RSMo 1986. Original rule filed May 13, 1977, effective Jan. 13, 1978. Amended: Filed May 2, 1985, effective Sept. 27, 1985. Rescinded: Filed March 3, 1989, effective June 29, 1989.

2 CSR 90-10.090 NFPA Manual No. 501C, Chapter 2, Standard for Recreational Vehicles

PURPOSE: This rule regulates the design, manufacturing, installation and inspection of recreational vehicle heating systems and related systems.

The scope of National Fire Protection Association Manual No. 501C, Chapter 2, *Recreational Vehicles*, 1987 edition covers the heat producing appliances and fuel systems within or on recreational vehicles. Whenever nationally recognized standards for heat producing appliances and fuel systems and this Chapter 2 differ, the requirements of the latter shall apply.

AUTHORITY: section 323.020, RSMo 1986.* Original rule filed May 13, 1977, effective Jan. 13, 1978. Amended: Filed May 2, 1985, effective Sept. 27, 1985. Amended: Filed March 3, 1989, effective June 29, 1989.

*Original authority: 323.020, RSMo 1947.

2 CSR 90-10.100 Inspection of School Buses Propelled by Liquefied Propane Gas

PURPOSE: This rule sets forth the inspection procedure to be followed by all authorized

inspectors of school buses which are equipped with liquefied propane gas carburetion. The annual inspection period, July through August, is established and the inspection is to be performed by an installer of liquefied propane gas registered with the Division of Weights and Measures, Department of Agriculture.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. Therefore, the material which is so incorporated is on file with the agency who filed this rule, and with the Office of the Secretary of State. Any interested person may view this material at either agency's headquarters or the same will be made available at the Office of the Secretary of State at a cost not to exceed actual cost of copy reproduction. The entire text of the rule is printed here. This note refers only to the incorporated by reference material.

(1) A school bus equipped with liquefied propane (LP) gas carburetion shall be inspected annually during the months of July or August by a person who is an official installer, registered with the Division of Weights and Measures, Department of Agriculture.

(2) The inspection must be performed following the detailed procedure for school buses set forth.

(A) Containers.

1. American Society of Mechanical Engineers' (ASME) containers shall be constructed for at least a two hundred fifty (250) pounds per square inch gauge (psig) design pressure and installed in accordance with paragraph (2)(A)4.

2. Installations made after February 11, 1983 shall include an automatic eighty percent (80%) stop fill device.

3. All container valves and fittings must be protected by means of a heavy gauge, metal guard, (minimum seven (7) gauge), as supplied by the tank manufacturer. This guard must be securely attached to the tank with a minimum of two (2) bolted connections, using three-eighths inch (3/8") grade five (5) bolts (or the guard may be welded directly to the tank at the tank manufacturer's option). These valves, fittings and gauges must also be protected from road debris by using mud flaps or metal shields installed in front of the container. A mud flap or metal shield shall be installed to the rear of fuel container if container is three feet (3') or less from rear wheels of bus.

4. LP-gas fuel containers used on passenger-carrying vehicles shall not exceed two hundred (200) gallons aggregate water capacity. (No single tank to exceed one hundred (100) gallon water capacity.) The tank(s) shall be mounted on either side of the bus, each on the outside frame rail and between the axles.

5. If the fuel container must be installed twelve inches (12") or closer to the engine or exhaust system, it shall be entirely shielded against the source of direct heat by means of a metal shield. (The main frame rail shall be considered to be a partial heat shield.)

6. After the effective date of this rule all LP gas tanks being installed or reinstalled on school buses shall incorporate strap-type brackets at the frame rail with no bolts passing through the frame rail. Brackets may either encircle the tank and frame rail or encircle only the frame rail and attach to the manufacturer's tank brackets when the tank is so equipped. If the brackets encircle the tank they must be steel bands of not less than three-eighths inch (3/8") thickness and not less than two inches (2") in width. No less than two (2) brackets should be used on tanks up to thirty-six inches (36") in length. Not less than three (3) brackets should be used on tanks longer than thirty-six inches (36").

7. The clamps that encircle the frame rail shall consist of straight bolts and backup plates (no U-bolts to be used). The backup plates used must be steel and have a minimum thickness of three-eighths inch (3/8") and a minimum width of two inches (2").

8. A minimum of two (2) bolts per bracket using five-eighths inch (5/8") grade eight (8) bolts must be used to attach the bracket to the main frame. A minimum one-half inch (1/2") grade five (5) bolt must be used to secure the strap to the tank.

9. After the February 11, 1983 all LP gas tanks being installed or reinstalled may be on the left or right side of the vehicle. However, if it is mounted on the right side, the container vessel shall not be less than three feet (3') from the passenger entrance door.

10. Containers shall be installed with as much road clearance as practicable but not less than seven inches (7") on vehicles having a wheelbase of one hundred twenty-seven inches (127") or less nor less than nine inches (9") on vehicles having a wheelbase of more than one hundred twenty-seven inches (127"). This clearance shall be measured when the vehicle is under full rated load and is standing on a flat surface. It shall be measured to the bottom of the container or to the lowest fitting, support or attachment on the container or container housing, whichever is

lower under full rated load of the bus. But in no case, shall the bottom of the tank be lower than the lowest point of the vehicle.

11. Where remote-fill connections are used, double back pressure check valves shall be installed both at the tank and at the remote-fill location, and a shutoff valve or fitting with a number fifty-four (#54) drill size hole shall be installed in the eighty percent (80%) tank outage connection, in addition to the (fixed liquid level) gauge at the remote location.

(B) Container Safety Relief Valve Pipe-away. After the effective date of this rule, the relief valve discharge shall be to a flush-mounted (recessed) fitting mounted in the skirt of the bus below the rub rail. Prior to the effective date of this rule flush-mounted (recessed) is considered to be not protruding past the rub rail. After the effective date of this rule flush-mounted (recessed) is considered to be not protruding past the bus body. This recessed fitting shall provide that the discharge of the relief valve be directed to not more than forty-five degrees (45°) of vertical. A means shall be provided (such as a loose fitting cap) to minimize the possibility of the entrance of water or dirt into the pipe. The protecting means shall remain in place except when the relief valve operates and be designed to close automatically. In this event, it shall permit the relief valve to operate at sufficient capacity. This fitting shall also be constructed so as to prevent tampering and entrance of road debris by use of wire mesh. Safety relief valve discharge lines shall be metallic and have a melting point over one thousand five hundred degrees Fahrenheit (1,500°F) (eight hundred sixteen degrees Celsius (816°C)). Relief valve adaptors installed directly in the relief valve to deflect the flow upward shall be metallic and have a melting point over seven hundred degrees Fahrenheit (700°F). Discharge lines and adaptors are not to be reduced in size from the inside diameter of the relief valve and are not to be less than one inch (1") inside diameter. Piping from the relief valve to the outside of the bus shall not be more than forty-eight inches (48") in length. The relief valve discharge line shall be able to withstand the pressure from the relief valve discharge and remain vapor tight when the relief valve is in full open position.

(C) Piping, Hose and Fittings.

1. Pipe shall be wrought iron or steel (black or galvanized), brass or copper and shall comply with the following:

A. Wrought iron pipe; ANSI B36.10-1979 *Welded and Seamless Wrought Steel Pipe*;

B. Steel pipe; ASTM A53-81a *Welded and Seamless Steel Pipe*;

C. Steel pipe; ASTM A106-80 *Seamless Carbon Steel Pipe for High Temperature Service*;

D. Steel pipe; ASTM A120-81 *Black and Hot Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses*;

E. Brass pipe; ASTM B43-80 *Seamless Red Brass Pipe*; and

F. Copper pipe; ASTM B42-82 *Seamless Copper Pipe*.

2. For LP gas vapor in excess of one hundred twenty-five (125) psig or for LP gas liquid, the pipe shall be Schedule 80 or heavier. For LP gas vapor at pressures of one hundred twenty-five (125) psig or less, the pipe shall be Schedule 40 or heavier.

3. Tubing shall be steel, brass or copper and shall comply with the following:

A. Steel tubing; ASTM A539-79 *Electric-Resistance Welded Coiled Steel Tubing for Gas and Oil Lines* with a minimum wall thickness of 0.049 inches;

B. Copper tubing; Type K or L, ASTM B88-81 *Seamless Copper Water Tube*;

C. Copper tubing; ASTM B280-80 *Seamless Copper Tube for Air Conditioning and Refrigeration Field Service*; and

D. Brass tubing; ASTM B135-82 *Seamless Brass Tube*.

4. Cast iron pipe fittings, such as ells, tees, crosses, couplings, unions, flanges or plugs, shall not be used. Fittings shall be steel, brass, copper, malleable iron or ductile iron and shall comply with the following:

A. Pipe joints in wrought iron, steel, brass or copper pipe may be screwed, welded or brazed. Tubing joints in steel, brass or copper tubing may be flared or brazed. Fittings may be flared, soldered or brazed.

(I) Fittings used with liquid LP gas or with vapor LP-gas at operating pressures over one hundred twenty-five (125) psig shall be suitable for a working pressure of two hundred fifty (250) psig.

(II) Fittings for use with vapor LP gas at pressures in excess of five (5) psig and not exceeding one hundred twenty-five (125) psig shall be suitable for a working pressure of one hundred twenty-five (125) psig; and

B. Brazing and soldering filler material shall have a melting point exceeding one thousand degrees Fahrenheit (1,000°F).

5. Hose, hose connections and flexible connectors used for conveying LP-gas liquid or vapor at pressures in excess of five (5) psig shall be fabricated of materials resistant to the action of LP-gas both as liquid and vapor and be of wire braid reinforced construction. The

wire braid shall be of stainless steel. The hose shall comply with the following:

A. Hose shall be designed for a minimum bursting pressure of one thousand seven hundred fifty (1,750) psig (three hundred fifty (350) psig working pressure) and shall be marked with "LP-gas" or "LPG" and with the working pressure in psig at not greater than ten foot (10') intervals; and

B. Hose assemblies after the application of connections, shall have a design capability of withstanding a pressure of not less than seven hundred (700) psig. If a test is made, the assemblies shall not be leak tested at pressures higher than the work pressure (three hundred fifty (350) psig minimum) of the hose.

6. Hose used for vapor service at five (5) psig or less shall be constructed of materials resistant to the action of LP gas.

7. Hose in excess of five (5) psig service pressure and quick connectors shall be approved.

(D) Pipe and Hose Installation.

1. The piping system shall be designed, installed, supported and secured in a manner as to minimize the possibility of damage due to expansion, contraction, vibration, strains or wear and to preclude any working loose while in transit. Supports should be installed as necessary to insure that segments of liquid hose do not extend without support beyond twenty-four inches (24").

2. Piping shall be installed in a protected location, under the vehicle and below any insulation or false bottom, fastenings and protection shall be so as to prevent abrasion or damage due to vibration. At points where piping passes through structural members, a rubber grommet or bulkhead shall be installed to prevent chafing.

3. Exposed parts of the piping system shall either be of corrosion-resistant material or adequately protected against exterior corrosion.

4. Piping systems, including hose, shall be tested and proven free of leaks at not less than normal operating pressure.

5. After the effective date of this rule, all hydrostatic relief valves being installed or reinstalled shall be installed in each section of piping (including hose) in which liquid LP gas can be isolated between shutoff valves so as to relieve to a safe atmosphere the pressure which could develop from the trapped liquid. This hydrostatic relief valve shall have a pressure setting not less than four hundred (400) psig or more than five hundred (500) psig.

(E) Equipment Installation.

1. Installation shall be made in accordance with the manufacturer's recommendations and, in the case of listed or approved



equipment, it shall be installed in accordance with the listing or approval.

2. Equipment installed on a vehicle as part of the LP gas system shall be considered a part of the vehicle and shall be installed so as not to interfere with, nor be damaged by the movement of other mechanical parts in the normal operation of the vehicle.

3. The gas regulator and the carburetor shall be installed as follows:

A. Approved automatic pressure reducing equipment, properly secured, shall be installed between the fuel supply container and the carburetor to regulate the pressure of the fuel delivered to the carburetor; and

B. An approved automatic shutoff valve shall be provided in the fuel system in compliance with paragraph (2)(E)8.

4. Vaporizers shall be securely fastened in position.

(F) Carburetion Equipment.

1. Carburetion equipment shall comply with this subsection or shall be designed, fabricated, tested and marked using criteria which incorporate and investigation to determine that they are safe and suitable for the proposed service, are recommended for that service by the manufacturer and are acceptable to the authority having jurisdiction.

2. Carburetion systems must remain intact as a total unit unless a component is removed for repair or replacement. If use of carburetion system is discontinued, system must be removed in total with no LP gas equipment remaining on vehicle. If a component is removed from the system for repair or replacement, gas supply shall be blocked off at the fuel container supply valve with an approved threaded cap or plug.

3. Vaporizers shall be fabricated of materials suitable for LP gas service and resistant to the action of LP gas under service conditions. These vaporizers shall be designed and approved for engine fuel service and shall comply with the following: The vaporizer proper, any part of it or any devices used with it which may be subjected to container pressure, shall have a design pressure of at least two hundred fifty (250) psig and shall be plainly and permanently marked at a readily visible point with a design pressure of the fuel containing portion in psig.

4. The vaporizer shall not be equipped with a fusible plug.

5. Each vaporizer shall have a valve, or suitable plug located at or near the lowest portion of the section occupied by the water or other heating liquid to permit substantially complete drainage. The engine cooling system drain or water hoses may serve this purpose, if effective.

6. Engine exhaust gases may be used as a direct source of heat to vaporize the fuel if the materials of construction of those parts of the vaporizer in contact with the exhaust gases are resistant to corrosion from these gases and if the vaporizer system is designed to prevent pressure in excess of two hundred (200) psig.

7. Devices which supply heat directly to the fuel container shall be equipped with an automatic device to cut off the supply of heat before the pressure in the container reaches two hundred (200) psig.

8. The regulator shall be approved and can either be part of the vaporizer unit or a separate unit.

9. An approved automatic shutoff valve shall be provided in the fuel system at some point ahead of the inlet of the gas regulator. The valve shall prevent flow of fuel to the carburetor when the engine is not running even if the ignition switch is in the "on" position. Atmospheric type regulators (zero governors) shall not be considered as automatic shutoff valves for this purpose.

10. Fuel filters, if used, shall be approved and can be either a separate unit or part of a combination unit.

11. Dual fuel systems (gasoline/propane) shall use approved gasoline lockoff valves. Each valve shall be installed with steel line from carburetor to a point below intake manifold and away from exhaust manifold. Electric fuel pumps are not considered an approved gasoline lockoff valve.

(3) It shall be the responsibility of the school to properly train all persons operating the LP gas dispenser.

(4) The registered installer making the inspection shall be required to complete the school bus inspection report in triplicate. One (1) copy is to be filed with the school district, one (1) is to be sent to the Division of Weights and Measures, P.O. Box 630, Jefferson City, MO 65102, and one (1) copy to remain with the installer for his/her files. The school bus inspection report will be furnished by the Division of Weights and Measures upon written request.

(5) A registered installer completing the required annual inspection or making the original installation of liquefied propane gas carburetion on a school bus must be in compliance with 2 CSR 90-10.040 and this rule.

(6) The Division of Weights and Measures, Department of Agriculture will forward

monthly during July, August and September, a report to the Department of Elementary and Secondary Education detailing conditions existing on inspected buses and recommendations made to the school district or bus owner for corrections if required.

AUTHORITY: section 323.020, RSMo 1986. Original rule filed Oct. 13, 1982, effective Feb. 11, 1983. Amended: Filed May 2, 1985, effective Sept. 27, 1985. Amended: Filed March 3, 1989, effective June 29, 1989.*

**Original authority: 323.020, RSMo 1947.*



MISSOURI DEPARTMENT OF AGRICULTURE
 DIVISION OF WEIGHTS AND MEASURES
 P.O. BOX 630, JEFFERSON CITY, MO 65102

OFFICIAL SCHOOL BUS INSPECTION - LPG CARBURETION SYSTEM

SCHOOL DISTRICT		DATE
ADDRESS		COUNTY
IF LEASED, FROM WHOM		
BUS NUMBER AND MAKE	YEAR	LICENSE NUMBER
TANK MANUFACTURER	CAPACITY	SAFETY DECAL NUMBER
IS TANK SECURE TO FRAME <input type="checkbox"/> YES <input type="checkbox"/> NO	NUMBER OF BRACKETS	
BRACKET BOLTS APPROVED <input type="checkbox"/> YES <input type="checkbox"/> NO	ARE TANK BRACKET WELDS INTACT	<input type="checkbox"/> YES <input type="checkbox"/> NO
MUD FLAPS/GUARDS <input type="checkbox"/> YES <input type="checkbox"/> NO	ADEQUATE ROAD CLEARANCE	<input type="checkbox"/> YES <input type="checkbox"/> NO
FILL VALVE CAP <input type="checkbox"/> YES <input type="checkbox"/> NO	HEAT SHIELD	<input type="checkbox"/> YES <input type="checkbox"/> NO
VALVE GUARD IN PLACE <input type="checkbox"/> YES <input type="checkbox"/> NO	80% STOP FILL	<input type="checkbox"/> YES <input type="checkbox"/> NO
PROPER OUTGAGE GAUGE <input type="checkbox"/> YES <input type="checkbox"/> NO	INTERNAL RELIEF VALVE	<input type="checkbox"/> YES <input type="checkbox"/> NO
IS THERE ADEQUATE FUEL LINE TO ALLOW FOR ENGINE TORQUE		<input type="checkbox"/> YES <input type="checkbox"/> NO
TYPE OF LIQUID LINE USED <input type="checkbox"/> WIRE BRAID <input type="checkbox"/> COPPER <input type="checkbox"/> OTHER		
IF REMOTE FILL, IS THERE A DOUBLE BACK CHECK <input type="checkbox"/> YES <input type="checkbox"/> NO	ARE LIQUID LINES SECURE AND PROTECTED	<input type="checkbox"/> YES <input type="checkbox"/> NO
IS CONTAINER RELIEF VALVE REMOTE AND WITHIN 45° OF VERTICAL		<input type="checkbox"/> YES <input type="checkbox"/> NO
TYPE OF REMOTE VENT MATERIAL <input type="checkbox"/> METAL <input type="checkbox"/> COVERED METAL <input type="checkbox"/> RUBBER		
LIQUID LINE HYDROSTAT <input type="checkbox"/> YES <input type="checkbox"/> NO	RAIN CAPS	<input type="checkbox"/> YES <input type="checkbox"/> NO
IS LIQUID LINE AND HYDROSTATIC AWAY FROM EXHAUST AND ENGINE		<input type="checkbox"/> YES <input type="checkbox"/> NO
VACUUM OR ELECTRIC LP LOCK <input type="checkbox"/> YES <input type="checkbox"/> NO	IS IT PROPERLY INSTALLED	<input type="checkbox"/> YES <input type="checkbox"/> NO
IS CONVERTER MOUNTED SAFE AND SECURE <input type="checkbox"/> YES <input type="checkbox"/> NO	IF STRAIGHT LP, IS FUEL PUMP REMOVED	<input type="checkbox"/> YES <input type="checkbox"/> NO
IS GASOLINE LOCK OFF SECURE & PROPERLY WIRED <input type="checkbox"/> YES <input type="checkbox"/> NO	IS LP LOCK OFF SECURE & PROPERLY WIRED	<input type="checkbox"/> YES <input type="checkbox"/> NO
ARE ALL FUEL LINES SECURED AND PROTECTED IN THE ENGINE COMPARTMENT		<input type="checkbox"/> YES <input type="checkbox"/> NO
IS PROPANE CARBURETOR SECURE <input type="checkbox"/> YES <input type="checkbox"/> NO	IS VAPOR HOSE INTACT	<input type="checkbox"/> YES <input type="checkbox"/> NO
IS UNDER DASH FUEL SELECTOR SECURE		<input type="checkbox"/> YES <input type="checkbox"/> NO
DOES THIS SYSTEM BY USUAL INSPECTION REVEAL ANY HAZARDOUS CONDITIONS NOT COVERED IN ABOVE QUESTIONS? IF YES, EXPLAIN FULLY.		<input type="checkbox"/> YES <input type="checkbox"/> NO
<input type="checkbox"/> SYSTEM APPROVED <input type="checkbox"/> SYSTEM DISAPPROVED		
SIGNATURE OF PERSON MAKING INSPECTION		REGISTRATION NUMBER
FIRM MAKING INSPECTION		

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