

(b) *Location.* Each fuel system must be located on the motor vehicle so that—

(1) No part of the system extends beyond the widest part of the vehicle;

(2) No part of a fuel tank is forward of the front axle of a power unit;

(3) Fuel spilled vertically from a fuel tank while it is being filled will not contact any part of the exhaust or electrical systems of the vehicle, except the fuel level indicator assembly;

(4) Fill pipe openings are located outside the vehicle's passenger compartment and its cargo compartment;

(5) A fuel line does not extend between a towed vehicle and the vehicle that is towing it while the combination of vehicles is in motion; and

(6) No part of the fuel system of a bus manufactured on or after January 1, 1973, is located within or above the passenger compartment.

(c) *Fuel tank installation.* Each fuel tank must be securely attached to the motor vehicle in a workmanlike manner.

(d) *Gravity or syphon feed prohibited.* A fuel system must not supply fuel by gravity or syphon feed directly to the carburetor or injector.

(e) *Selection control valve location.* If a fuel system includes a selection control valve which is operable by the driver to regulate the flow of fuel from two or more fuel tanks, the valve must be installed so that either—

(1) The driver may operate it while watching the roadway and without leaving his/her driving position; or

(2) The driver must stop the vehicle and leave his/her seat in order to operate the valve.

(f) *Fuel lines.* A fuel line which is not completely enclosed in a protective housing must not extend more than 2 inches below the fuel tank or its sump. Diesel fuel crossover, return, and withdrawal lines which extend below the bottom of the tank or sump must be protected against damage from impact. Every fuel line must be—

(1) Long enough and flexible enough to accommodate normal movements of the parts to which it is attached without incurring damage; and

(2) Secured against chafing, kinking, or other causes of mechanical damage.

(g) *Excess flow valve.* When pressure devices are used to force fuel from a fuel tank, a device which prevents the flow of fuel from the fuel tank if the fuel feed line is broken must be installed in the fuel system.

[36 FR 15445, Aug. 14, 1971, as amended at 37 FR 4341, Mar. 2, 1972; 37 FR 28752, Dec. 29, 1972]

§ 393.67 Liquid fuel tanks.

(a) *Application of the rules in this section.* The rules in this section apply to tanks containing or supplying fuel for the operation of commercial motor vehicles or for the operation of auxiliary equipment installed on, or used in connection with commercial motor vehicles.

(1) A liquid fuel tank manufactured on or after January 1, 1973, and a side-mounted gasoline tank must conform to all rules in this section.

(2) A diesel fuel tank manufactured before January 1, 1973, and mounted on a bus must conform to the rules in paragraphs (c)(7)(i) and (d)(2) of this section.

(3) A diesel fuel tank manufactured before January 1, 1973, and mounted on a vehicle other than a bus must conform to the rules in paragraph (c)(7)(ii) of this section.

(4) A gasoline tank, other than a side-mounted gasoline tank, manufactured before January 1, 1973, and mounted on a bus must conform to the rules in paragraphs (c) (1) through (10) and (d)(2) of this section.

(5) A gasoline tank, other than a side-mounted gasoline tank, manufactured before January 1, 1973, and mounted on a vehicle other than a bus must conform to the rules in paragraphs (c) (1) through (10), inclusive, of this section.

(6) Private motor carrier of passengers. Motor carriers engaged in the private transportation of passengers may continue to operate a commercial motor vehicle which was not subject to this section or 49 CFR 571.301 at the time of its manufacture, provided the fuel tank of such vehicle is maintained to the original manufacturer's standards.

(7) Motor vehicles that meet the fuel system integrity requirements of 49

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CFR 571.301 are exempt from the requirements of this subpart, as they apply to the vehicle's fueling system.

(b) *Definitions.* As used in this section—

(1) The term *liquid fuel tank* means a fuel tank designed to contain a fuel that is liquid at normal atmospheric pressures and temperatures.

(2) A *side-mounted* fuel tank is a liquid fuel tank which—

(i) If mounted on a truck tractor, extends outboard of the vehicle frame and outside of the plan view outline of the cab; or

(ii) If mounted on a truck, extends outboard of a line parallel to the longitudinal centerline of the truck and tangent to the outboard side of a front tire in a straight ahead position. In determining whether a fuel tank on a truck or truck tractor is side-mounted, the fill pipe is not considered a part of the tank.

(c) *Construction of liquid fuel tanks—*

(1) *Joints.* Joints of a fuel tank body must be closed by arc-, gas-, seam-, or spot-welding, by brazing, by silver soldering, or by techniques which provide heat resistance and mechanical securement at least equal to those specifically named. Joints must not be closed solely by crimping or by soldering with a lead-based or other soft solder.

(2) *Fittings.* The fuel tank body must have flanges or spuds suitable for the installation of all fittings.

(3) *Threads.* The threads of all fittings must be Dryseal American Standard Taper Pipe Thread or Dryseal SAE Short Taper Pipe Thread, specified in Society of Automotive Engineers Standard J476, as contained in the 1971 edition of the "SAE Handbook," except that straight (nontapered) threads may be used on fittings having integral flanges and using gaskets for sealing. At least four full threads must be in engagement in each fitting.

(4) *Drains and bottom fittings.* (i) Drains or other bottom fittings must not extend more than three-fourths of an inch below the lowest part of the fuel tank or sump.

(ii) Drains or other bottom fittings must be protected against damage from impact.

(iii) If a fuel tank has drains the drain fittings must permit substantially complete drainage of the tank.

(iv) Drains or other bottom fittings must be installed in a flange or spud designed to accommodate it.

(5) *Fuel withdrawal fittings.* Except for diesel fuel tanks, the fittings through which fuel is withdrawn from a fuel tank must be located above the normal level of fuel in the tank when the tank is full.

(6) [Reserved]

(7) *Fill pipe.* (i) Each fill pipe must be designed and constructed to minimize the risk of fuel spillage during fueling operations and when the vehicle is involved in a crash.

(ii) For diesel-fueled vehicles, the fill pipe and vents of a fuel tank having a capacity of more than 94.75 L (25 gallons) of fuel must permit filling the tank with fuel at a rate of at least 75.8 L/m (20 gallons per minute) without fuel spillage.

(iii) For gasoline- and methanol-fueled vehicles with a GVWR of 3,744 kg (8,500 pounds) or less, the vehicle must permit filling the tank with fuel dispensed at the applicable fill rate required by the regulations of the Environmental Protection Agency under 40 CFR 80.22.

(iv) For gasoline- and methanol-fueled vehicles with a GVWR of 14,000 pounds (6,400 kg) or less, the vehicle must comply with the applicable fuel-spitback prevention and onboard refueling vapor recovery regulations of the Environmental Protection Agency under 40 CFR part 86.

(v) Each fill pipe must be fitted with a cap that can be fastened securely over the opening in the fill pipe. Screw threads or a bayonet-type point are methods of conforming to the requirements of paragraph (c) of this section.

(8) *Safety venting system.* A liquid fuel tank with a capacity of more than 25 gallons of fuel must have a venting system which, in the event the tank is subjected to fire, will prevent internal tank pressure from rupturing the tank's body, seams, or bottom opening (if any).

(9) *Pressure resistance.* The body and fittings of a liquid fuel tank with a capacity of more than 25 gallons of fuel

must be capable of withstanding an internal hydrostatic pressure equal to 150 percent of the maximum internal pressure reached in the tank during the safety venting system test specified in paragraph (d)(1) of this section.

(10) *Air vent.* Each fuel tank must be equipped with a nonspill air vent (such as a ball check). The air vent may be combined with the fill-pipe cap or safety vent, or it may be a separate unit installed on the fuel tank.

(11) *Markings.* If the body of a fuel tank is readily visible when the tank is installed on the vehicle, the tank must be plainly marked with its liquid capacity. The tank must also be plainly marked with a warning against filling it to more than 95 percent of its liquid capacity.

(12) *Overfill restriction.* A liquid fuel tank manufactured on or after January 1, 1973, must be designed and constructed so that—

(i) The tank cannot be filled, in a normal filling operation, with a quantity of fuel that exceeds 95 percent of the tank's liquid capacity; and

(ii) When the tank is filled, normal expansion of the fuel will not cause fuel spillage.

(d) *Liquid fuel tank tests.* Each liquid fuel tank must be capable of passing the tests specified in paragraphs (d)(1) and (2) of this section. The specified tests are a measure of performance only. Alternative procedures which assure that equipment meets the required performance standards may be used.

(1) *Safety venting system test—(i) Procedure.* Fill the tank three-fourths full with fuel, seal the fuel feed outlet, and invert the tank. When the fuel temperature is between 50 °F. and 80 °F., apply an enveloping flame to the tank so that the temperature of the fuel rises at a rate of not less than 6 °F. and not more than 8 °F. per minute.

(ii) *Required performance.* The safety venting system required by paragraph (c)(8) of this section must activate before the internal pressure in the tank exceeds 50 pounds per square inch, gauge, and the internal pressure must not thereafter exceed the pressure at which the system activated by more than five pounds per square inch de-

spite any further increase in the temperature of the fuel.

(2) *Leakage test—(i) Procedure.* Fill the tank to capacity with fuel having a temperature between 50 °F. and 80 °F. With the fill-pipe cap installed, turn the tank through an angle of 150° in any direction about any axis from its normal position.

(ii) *Required performance.* Neither the tank nor any fitting may leak more than a total of one ounce by weight of fuel per minute in any position the tank assumes during the test.

(e) *Side-mounted liquid fuel tank tests.* Each side-mounted liquid fuel tank must be capable of passing the tests specified in paragraphs (e)(1) and (2) of this section and the test specified in paragraphs (d)(1) and (2) of this section. The specified tests are a measure of performance only. Alternative procedures which assure that equipment meets the required performance criteria may be used.

(1) *Drop test—(i) Procedure.* Fill the tank with a quantity of water having a weight equal to the weight of the maximum fuel load of the tank and drop the tank 30 feet onto an unyielding surface so that it lands squarely on one corner.

(ii) *Required performance.* Neither the tank nor any fitting may leak more than a total of 1 ounce by weight of water per minute.

(2) *Fill-pipe test—(i) Procedure.* Fill the tank with a quantity of water having a weight equal to the weight of the maximum fuel load of the tank and drop the tank 10 feet onto an unyielding surface so that it lands squarely on its fill-pipe.

(ii) *Required performance.* Neither the tank nor any fitting may leak more than a total of 1 ounce by weight of water per minute.

(f) *Certification and markings.* Each liquid fuel tank shall be legibly and permanently marked by the manufacturer with the following minimum information:

(1) The month and year of manufacture,

(2) The manufacturer's name on tanks manufactured on and after July 1, 1989, and means of identifying the facility at which the tank was manufactured, and

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(3) A certificate that it conforms to the rules in this section applicable to the tank. The certificate must be in the form set forth in either of the following:

(i) If a tank conforms to all rules in this section pertaining to side-mounted fuel tanks: "Meets all FMCSA side-mounted tank requirements."

(ii) If a tank conforms to all rules in this section pertaining to tanks which are not side-mounted fuel tanks: "Meets all FMCSA requirements for non-side-mounted fuel tanks."

(iii) The form of certificate specified in paragraph (f)(3) (i) or (ii) of this section may be used on a liquid fuel tank manufactured before July 11, 1973, but it is not mandatory for liquid fuel tanks manufactured before March 7, 1989. The form of certification manufactured on or before March 7, 1989, must meet the requirements in effect at the time of manufacture.

(4) *Exception.* The following previously exempted vehicles are *not* required to carry the certification and marking specified in paragraphs (f)(1) through (3) of this section:

(i) Ford vehicles with GVWR over 10,000 pounds identified as follows: The vehicle identification numbers (VINs) contain A, K, L, M, N, W, or X in the fourth position.

(ii) GM G-Vans (Chevrolet Express and GMC Savanna) and full-sized C/K trucks (Chevrolet Silverado and GMC Sierra) with GVWR over 10,000 pounds identified as follows: The VINs contain either a "J" or a "K" in the fourth position. In addition, the seventh position of the VINs on the G-Van will contain a "1."

[36 FR 15445, Aug. 14, 1971, as amended at 37 FR 4341, Mar. 2, 1972; 37 FR 28753, Dec. 29, 1972; 45 FR 46424, July 10, 1980; 53 FR 49400, Dec. 7, 1988; 59 FR 8753, Feb. 23, 1994; 69 FR 31305, June 3, 2004; 70 FR 48053, Aug. 15, 2005; 78 FR 58484, Sept. 24, 2013]

§ 393.68 Compressed natural gas fuel containers.

(a) *Applicability.* The rules in this section apply to compressed natural gas (CNG) fuel containers used for supplying fuel for the operation of commercial motor vehicles or for the operation of auxiliary equipment installed

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on, or used in connection with commercial motor vehicles.

(b) *CNG containers manufactured on or after March 26, 1995.* Any motor vehicle manufactured on or after March 26, 1995, and equipped with a CNG fuel tank must meet the CNG container requirements of FMVSS No. 304 (49 CFR 571.304) in effect at the time of manufacture of the vehicle.

(c) *Labeling.* Each CNG fuel container shall be permanently labeled in accordance with the requirements of FMVSS No. 304, S7.4.

[70 FR 48053, Aug. 15, 2005]

§ 393.69 Liquefied petroleum gas systems.

(a) A fuel system that uses liquefied petroleum gas as a fuel for the operation of a motor vehicle or for the operation of auxiliary equipment installed on, or used in connection with, a motor vehicle must conform to the "Standards for the Storage and Handling of Liquefied Petroleum Gases" of the National Fire Protection Association, Battery March Park, Quincy, MA 02269, as follows:

(1) A fuel system installed before December 31, 1962, must conform to the 1951 edition of the Standards.

(2) A fuel system installed on or after December 31, 1962, and before January 1, 1973, must conform to Division IV of the June 1959 edition of the Standards.

(3) A fuel system installed on or after January 1, 1973, and providing fuel for propulsion of the motor vehicle must conform to Division IV of the 1969 edition of the Standards.

(4) A fuel system installed on or after January 1, 1973, and providing fuel for the operation of auxiliary equipment must conform to Division VII of the 1969 edition of the Standards.

(b) When the rules in this section require a fuel system to conform to a specific edition of the Standards, the fuel system may conform to the applicable provisions in a later edition of the Standards specified in this section.

(c) The tank of a fuel system must be marked to indicate that the system conforms to the Standards.

[36 FR 15445, Aug. 14, 1971, as amended at 37 FR 4342, Mar. 2, 1972; 41 FR 53031, Dec. 3, 1976; 53 FR 49400, Dec. 7, 1988]