

WAC 296-24-47517 Liquefied petroleum gas service stations. (1)

Application. This section applies to storage containers, and dispensing devices, and pertinent equipment in service stations where LP-gas is stored and is dispensed into fuel tanks of motor vehicles. See WAC 296-24-47511 for requirements covering use of LP-gas as a motor fuel. All requirements of WAC 296-24-47505 apply to this section unless otherwise noted.

(2) **Design pressure and classification of storage containers.** You must design and classify containers in accordance with Table H-34.

(3) **Container valves and accessories.**

(a) You must fit a filling connection on the container with one of the following:

- (i) A combination back-pressure check and excess flow valve.
- (ii) One double or two single back-pressure valves.
- (iii) A positive shutoff valve, in conjunction with either:
 - (A) An internal back-pressure valve, or
 - (B) An internal excess flow valve.

In lieu of an excess flow valve, filling connections may be fitted with a quick-closing internal valve, which must remain closed except during operating periods. The mechanism for such valves may be provided with a secondary control which will cause it to close automatically in case of fire. When a fusible plug is used its melting point must not exceed 220°F.

TABLE H-34

Container type	For gases with vapor press. not to exceed lb. per sq. in. gage at 100°F. (37.8°C.)	Minimum design pressure of container, lb. per sq. in gage	
		1949 and earlier editions of ASME Code (Par. U-68, U-69)	1949 edition of ASME Code (Par. U-200, U-201); 1950, 1952 1956, 1959, 1962, 1965, and 1968 (Division I) editions of ASME Code; All editions of API-ASME Code ²
200 ¹	215	200	250

¹ Container type may be increased by increments of 25. The minimum design pressure of containers must be 100% of the container type designation when constructed under 1949 or earlier editions of ASME Code (Par. U-68 and U-69). The minimum design pressure of containers must be 125% of the container type designation when constructed under: (1) The 1949 ASME Code (Par. U-200 and U-201), (2) 1950, 1952, 1956, 1959, 1962, 1965, and 1968 (Division I) editions of the ASME Code, and (3) all editions of the API-ASME Code.

² Construction of containers under the API-ASME Code is not authorized after July 1, 1961.

(b) You must fit a filling pipe inlet terminal not on the container with a positive shutoff valve in conjunction with either:

- (i) A back pressure check valve, or
- (ii) An excess flow check valve.

(c) You must equip all openings in the container except those listed below with approved excess flow check valves:

- (i) Filling connections as provided in (3)(a) of this section.
- (ii) Safety relief connections as provided in WAC 296-24-47505

(7)(b).

(iii) Liquid-level gaging devices as provided in WAC 296-24-47505 (7)(d) and (19)(d).

(iv) Pressure gage connections as provided in WAC 296-24-47505 (7)(e).

(d) You must label all container inlets and outlets except those listed below to designate whether they connect with vapor or liquid (labels may be on valves):

- (i) Safety relief valves.
- (ii) Liquid-level gaging devices.
- (iii) Pressure gages.

(e) You must provide each storage container with a suitable pressure gage.

(4) **Safety-relief valves.**

(a) You must install all safety-relief devices as follows:

(i) On the container and directly connected with the vapor space.

(ii) You must protect safety-relief valves and discharge piping against physical damage. You must provide the outlet with loose-fitting rain caps. There must be no return bends or restrictions in the discharge piping.

(iii) The discharge from two or more safety relief valves having the same pressure settings may be run into a common discharge header. The cross-sectional area of such header must be at least equal to the sum of the individual discharges.

(iv) Discharge from any safety relief device must not terminate in any building nor beneath any building.

(b) You must provide aboveground containers with safety relief valves as follows:

(i) The rate of discharge, which may be provided by one or more valves, must be not less than that specified in WAC 296-24-47505 (10)(b).

(ii) You must vent the discharge from safety relief valves to the open air unobstructed and vertically upwards in such a manner as to prevent any impingement of escaping gas upon the container; you must use loose-fitting rain caps. On a container having a water capacity greater than 2,000 gallons, you must vent the discharge from the safety relief valves away from the container vertically upwards to a point at least 7 feet above the container. You must make suitable provisions so that any liquid or condensate that may accumulate inside of the relief valve or its discharge pipe will not render the valve inoperative. If a drain is used, you must provide a means to protect the container, adjacent containers, piping, or equipment against impingement of flame resulting from ignition of the product escaping from the drain.

(c) You must provide underground containers with safety relief valves as follows:

(i) The discharge from safety-relief valves must be piped vertically upward to a point at least 10 feet above the ground. The discharge lines or pipes must be adequately supported and protected against physical damage.

(ii) Where there is a probability of the manhole or housing becoming flooded, the discharge from regulator vent lines should be above the highest probable water level.

(iii) If no liquid is put into a container until after it is buried and covered, the rate of discharge of the relief valves may be reduced to not less than 30% of the rate shown in WAC 296-24-47505 (10)(b). If liquid fuel is present during installation of containers, the rate of discharge must be the same as for aboveground containers. You must not uncover such containers until emptied of liquid fuel.

(5) **Capacity of liquid containers.** Individual storage containers must not exceed 30,000 gallons water capacity.

(6) **Installation of storage containers.**

(a) Each storage container used exclusively in service station operation must comply with the following table which specifies minimum distances to a building, groups of buildings, and adjoining property lines which may be built upon.

Water capacity per container (gallons)	Minimum distances	
	Aboveground and underground (feet)	Between aboveground containers (feet)
Up to 2,000	25	3
Over 2,000	50	5

Note: The above distances may be reduced to not less than 10 feet for service station buildings of other than wood frame construction.

(i) You must remove readily ignitable material including weeds and long dry grass, within 10 feet of containers.

(ii) The minimum separation between LP-gas containers and flammable liquid tanks must be 20 feet and the minimum separation between a container and the centerline of the dike shall be 10 feet.

(iii) You must protect LP-gas containers located near flammable liquid containers against the flow or accumulation of flammable liquids by diking, diversion curbs, or grading.

(iv) You must not locate LP-gas containers within diked areas for flammable liquid containers.

(v) Field welding is permitted only on saddle plates or brackets which were applied by the container manufacturer.

(vi) When permanently installed containers are interconnected, you must make provisions to compensate for expansion, contraction, vibration, and settling of containers and interconnecting piping. Where flexible connections are used, they must be of an approved type and must be designed for a bursting pressure of not less than five times the vapor pressure of the product at 100°F. The use of nonmetallic hose is prohibited for interconnecting such containers.

(vii) Where high water table or flood conditions may be encountered you must provide protection against container flotation.

(b) You must install aboveground containers in accordance with this section.

(i) Containers may be installed horizontally or vertically.

(ii) You must protect containers by crash rails or guards to prevent physical damage unless they are so protected by virtue of their location. You must not service vehicles within 10 feet of containers.

(iii) Container foundations must be of substantial masonry or other noncombustible material. You must mount containers on saddles that permit expansion and contraction, and provide against the excessive concentration of stresses. You must provide corrosion protection for tank-mounting areas. You must protect structural metal container supports against fire. This protection is not required on prefabricated storage and pump assemblies, mounted on a common base, with container bottom not more than 24 inches above ground and whose water capacity is 2,000 gallons or less if the piping connected to the storage and pump assembly is sufficiently flexible to minimize the possibility of breakage or leakage in the event of failure of the container supports.

(c) You must install underground containers in accordance with this section.

(i) You must give containers a protective coating before being placed under ground. This coating must be equivalent to hot-dip galvanizing or to two coatings of red lead followed by a heavy coating of coal tar or asphalt. In lowering the container into place, you must exercise care to minimize abrasion or other damage to the coating. You must repair damage to the coating before back-filling.

(ii) You must set containers on a firm foundation (firm earth may be used) and surrounded with earth or sand firmly tamped in place. Backfill should be free of rocks or other abrasive materials.

(iii) You must provide a minimum of 2 feet of earth cover. Where ground conditions make compliance with this requirement impractical, you must provide equivalent protection against physical damage. The portion of the container to which manhole and other connections are attached need not be covered. If the location is subjected to vehicular traffic, you must protect containers by a concrete slab or other cover adequate to prevent the weight of a loaded vehicle imposing concentrated direct loads on the container shell.

(7) **Protection of container fittings.** You must protect valves, regulators, gages, and other container fittings against tampering and physical damage.

(8) **Transport truck unloading point.**

(a) During unloading, you must not park the transport truck on public thoroughfares and shall be at least 5 feet from storage containers and it must be positioned so that shutoff valves are readily accessible.

(b) You must not locate the filling pipe inlet terminal within a building nor within 10 feet of any building or driveway. You must protect it against physical damage.

(9) **Piping, valves, and fittings.**

(a) Piping may be underground, above ground, or a combination of both. It must be well supported and protected against physical damage and corrosion.

(b) You must install piping laid beneath driveways to prevent physical damage by vehicles.

(c) Piping must be wrought iron or steel (black or galvanized), brass or copper pipe; or seamless copper, brass, or steel tubing and must be suitable for a minimum pressure of 250 p.s.i.g. Pipe joints may be screwed, flanged, brazed, or welded. The use of aluminum alloy piping or tubing is prohibited.

(d) All shutoff valves (liquid or gas) must be suitable for liquefied petroleum gas service and designed for not less than the maximum pressure to which they may be subjected. Valves which may be subjected to container pressure must have a rated working pressure of at least 250 p.s.i.g.

(e) All materials used for valve seats, packing, gaskets, diaphragms, etc., must be resistant to the action of LP-gas.

(f) Fittings must be steel, malleable iron, or brass having a minimum working pressure of 250 p.s.i.g. You must not use cast iron pipe fittings, such as ells, tees and unions.

(g) You must test all piping after assembly and prove it to be free from leaks at not less than normal operating pressures.

(h) You must make provisions for expansion, contraction, jarring, and vibration, and for settling. This may be accomplished by flexible connections.

(10) **Pumps and accessories.** All pumps and accessory equipment must be suitable for LP-gas service, and designed for not less than the maximum pressure to which they may be subjected. Accessories must

have a minimum rated working pressure of 250 p.s.i.g. You must equip positive displacement pumps with suitable pressure actuated bypass valves permitting flow from pump discharge to storage container or pump suction.

(11) **Dispensing devices.**

(a) Meters, vapor separators, valves, and fittings in the dispenser must be suitable for LP-gas service and must be designed for a minimum working pressure of 250 p.s.i.g.

(b) You must make provisions for venting LP-gas contained in a dispensing device to a safe location.

(c) You must equip pumps used to transfer LP-gas to allow control of the flow and to prevent leakage or accidental discharge. You must provide means outside the dispensing device to readily shut off the power in the event of fire or accident.

(d) You must install a manual shutoff valve and an excess flow check valve downstream of the pump and ahead of the dispenser inlet.

(i) Dispensing hose must be resistant to the action of LP-gas in the liquid phase and designed for a minimum bursting pressure of 1,250 p.s.i.g.

(ii) You must install an excess flow check valve or automatic shutoff valve at the terminus of the liquid line at the point of attachment of the dispensing hose.

(e) You must locate LP-gas dispensing devices not less than 10 feet from aboveground storage containers greater than 2,000 gallons water capacity. The dispensing devices must not be less than 20 feet from any building (not including canopies), basement, cellar, pit, or line of adjoining property which may be built upon and not less than 10 feet from sidewalks, streets, or thoroughfares. You must not direct any drains or blowoff lines into or in proximity to the sewer systems used for other purposes.

(i) You must install LP-gas dispensing devices on a concrete foundation or as part of a complete storage and dispensing assembly mounted on a common base, and you must adequately protect them from physical damage.

(ii) You must not install LP-gas dispensing devices within a building except that they may be located under a weather shelter or canopy provided this area is not enclosed on more than two sides. If the enclosing sides are adjacent to each other, you must properly vent the area.

(f) The dispensing of LP-gas into the fuel container of a vehicle must be performed by a competent attendant who must remain at the LP-gas dispenser during the entire transfer operation.

(12) **Additional standards.** you must not smoke on the driveway of service stations in the dispensing areas or transport truck unloading areas. You must post conspicuous signs prohibiting smoking within sight of the customer being served. Letters on such signs must not be less than 4 inches high. You must shut off the motors of all vehicles being fueled during the fueling operations.

(13) **Electrical.** Electrical equipment and installations must conform to WAC 296-24-47505 (17) and (18).

(14) **Fire protection.** You must provide each service station with at least one approved portable fire extinguisher having at least an 8-B, C, rating.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 15-24-100, § 296-24-47517, filed 12/1/15, effective 1/5/16. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. WSR 01-17-033, § 296-24-47517, filed 8/8/01, effective 9/1/01; Order 73-5, § 296-24-47517, filed 5/9/73 and Order 73-4, § 296-24-47517, filed 5/7/73.]