

IMPORTANT INFORMATION: Product must be installed and used in strict conformance with NFPA Pamphlet 58 and/or NFPA pamphlet 54 and all other codes, regulations and manufacturer recommendations.

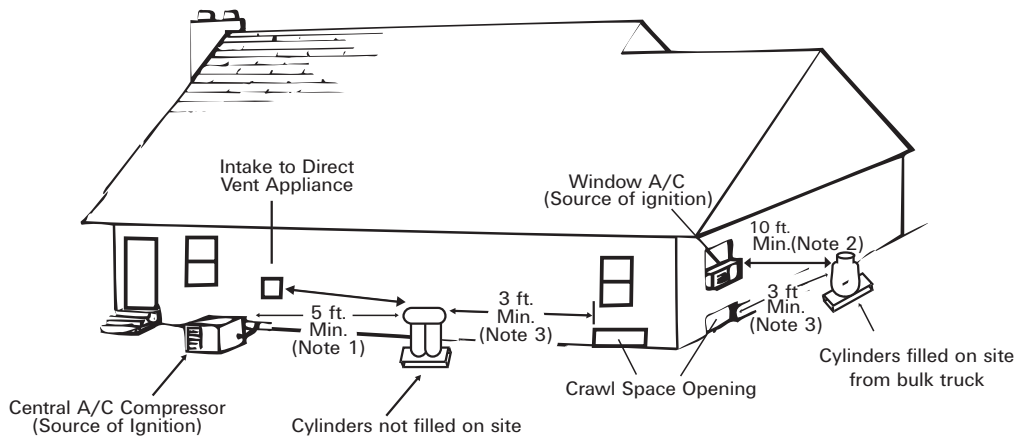
Failure to follow these codes, regulations and recommendations could result in hazardous installation, bodily injury and/or death.

PRODUCT TRAINING SCHOOLS AVAILABLE. Contact a GEC customer service representative for more information.

WARNING: LP Gas is extremely flammable and explosive. Devices used for handling LP Gas and Anhydrous Ammonia must be installed and used in strict conformance with NFPA pamphlet 58 and 54 and all other codes, regulations and manufacturer recommendations.

From NFPA 58, 1998 Edition, Appendix I*

Federal, state, or local ordinances & regulations should be observed at all times.

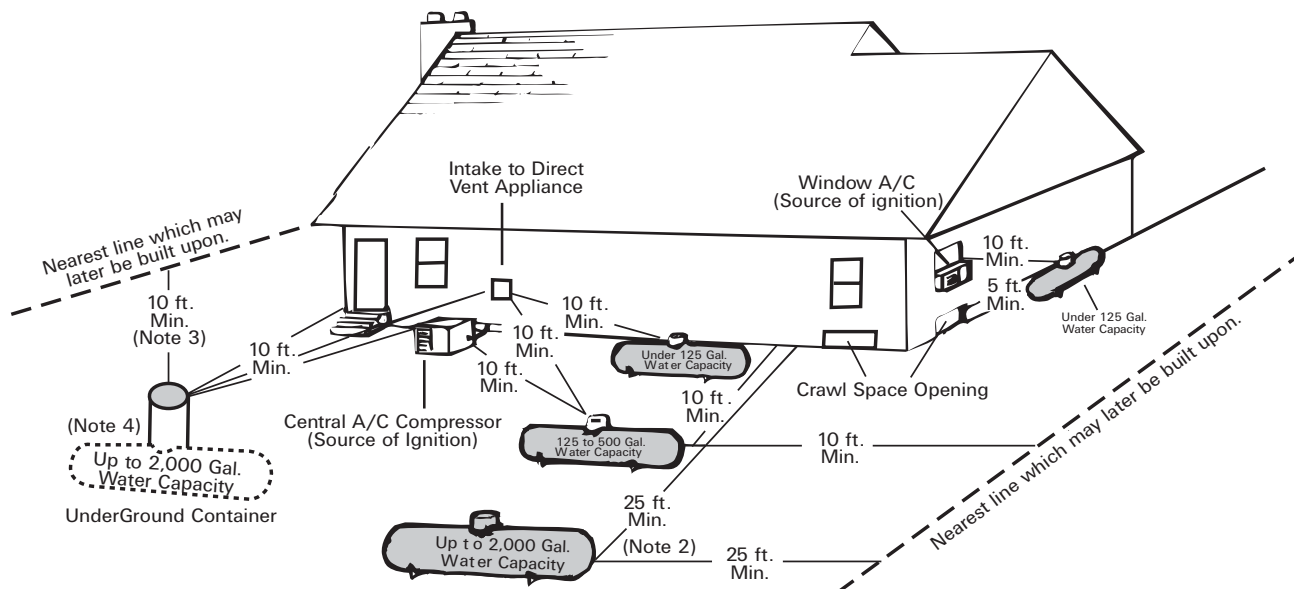


NOTES:

1. 5-ft. minimum from relief valve in any direction away from any exterior source of ignition, openings into direct-vent appliances, or mechanical ventilation air intakes.
2. If the cylinder is filled on site from a bulk truck, the filling connection and vent valve must be at least 10 ft. from any exterior source of ignition, openings into direct-vent appliances, or mechanical ventilation air intakes.

3. Cylinders installed alongside of buildings shall be located so that the discharge from the cylinder pressure relief device is at least 3-ft. horizontally away from any building opening that is below the level of such discharge.

* Refer to NFPA 58, Appendix I for more detailed information.



NOTES:

1. Regardless of its size, any ASME tank filled on-site must be located so that the filling connection & fixed liquid level gauge are at least 10 feet from external source of ignition (i.e. open flame, window A/C, compressor, etc.), intake to direct vented gas appliance or intake to a mechanical ventilation system.
2. May be reduced to 10 feet minimum for a single container of 1200 gallons of water capacity or less if it is located at least 25 feet from any other LP Gas container of more than 125 gallons water capacity.

3. Minimum distances from underground containers shall be measured from the relief valve & filling or level gauge vent connection at the container, except that no part of an underground container shall be less than 10 feet from a building or line of adjoining property which may be built upon.

4. Where the container may be subject to abrasive action or physical damage due to vehicular traffic or other causes it must be either, (a) placed not less than 2 feet below grade; (b) otherwise protected against such physical damage.

* Refer to NFPA 58, Appendix I for more detailed information.

General Information About LP Gases

	Propane	Butane
Formula	C ₃ H ₈	C ₄ H ₁₀
Boiling Point, °F	-44.0	32.0
Specific Gravity of Gas (Air = 1.00)	1.53	2.00
Specific Gravity of Liquid (Water = 1.00)	0.51	0.58
Lbs. per Gallon of Liquid at 60°F	4.24	4.81
BTU per Gallon of Gas at 60°F	91,690	102,032
BTU per Lb. of Gas	21,591	21,221
BTU per Cu. Ft. of Gas at 60°F	2,516	3,280
Cu. Ft. of Vapor at 60°F/Gal. of Liquid at 60°F	36.39	31.26
Cu. Ft. of Vapor at 60°F/Lb. of Liquid at 60°F	8.547	6.506
Latent Heat of Vaporization at Boiling Point BTU/Gal.	785.0	808.0
Combustion Data:		
Cu. Ft. Air Required to Burn 1 Cu. Ft. Gas	28.8	31.02
Flash Point, °F	-156°	—
Ignition Temperature in Air, °F	920 - 1020	900 - 1,000
Maximum Flame Temperature in Air, °F	3,595	3,615
Limits of Inflammability, Percentage of Gas in Air Mixture;		
At Lower Limit — %	2.4	1.9
At Upper Limit — %	9.6	8.6
Octane Number (ISO-Octane = 100)	Over 100	92

Vapor Pressures Of LP Gases

Temperature (°F)	Approximate Pressure (PSIG)	
	Propane	Butane
-40	1.3	—
-30	5.5	—
-20	10.7	—
-10	16.7	—
0	23.5	—
10	31.3	—
20	40.8	—
30	51.6	—
40	63.3	3.0
50	77.1	6.9
60	92.5	11.5
70	109.3	16.5
80	128.1	22.0
90	149.3	29.0
100	172.3	37.0
110	197.3	46.0

Various Sized Containers At 0°F With Varying Amounts Of Fuel In Tanks

250 Gallon Above Ground Tank				
% of container filled	Propane vaporization capacity at 0°F (in BTU's/hr.)	Equivalent in gallons	Equivalent propane ft. ³	Equivalent natural gas ft. ³
60	331,200	3.7	134	331
50	298,080	3.2	116	298
40	264,960	2.9	105	265
30	231,840	2.5	90	232
20	198,720	2.2	79	199
10	149,040	1.6	58	149

500 Gallon Above Ground Tank				
% of container filled	Propane vaporization capacity at 0°F (in BTU's/hr.)	Equivalent in gallons	Equivalent propane ft. ³	Equivalent natural gas ft. ³
60	426,900	4.6	166	426
50	383,376	4.2	152	383
40	341,120	3.7	134	341
30	298,480	3.3	119	298
20	255,840	2.8	103	256
10	191,880	2.1	76	192

1,000 Gallon Above Ground Tank				
% of container filled	Propane vaporization capacity at 0°F (in BTU's/hr.)	Equivalent in gallons	Equivalent propane ft. ³	Equivalent natural gas ft. ³
60	799,500	8.7	313	780
50	720,000	7.8	282	720
40	640,000	7.0	254	640
30	560,000	6.1	225	560
20	480,000	5.2	188	480
10	360,000	3.9	141	360

6,000 Gallon Above Ground Tank				
% of container filled	Propane vaporization capacity at 0°F (in BTU's/hr.)	Equivalent in gallons	Equivalent propane ft. ³	Equivalent natural gas ft. ³
60	2,664,000	29.0	1050	2664
50	2,397,600	26.0	940	2398
40	2,131,200	23.0	830	2131
30	1,864,800	20.0	725	1865
20	1,598,400	17.5	632	1598
10	1,198,000	13.0	470	1199

8,000 Gallon Above Ground Tank				
% of container filled	Propane vaporization capacity at 0°F (in BTU's/hr.)	Equivalent in gallons	Equivalent propane ft. ³	Equivalent natural gas ft. ³
60	3,159,800	34.3	1240	3159
50	2,850,000	31.0	1120	2850
40	2,530,000	27.5	995	2530
30	2,220,000	24.2	875	2220
20	1,900,000	20.6	745	1900
10	1,420,000	15.5	560	1420

10,000 Gallon Above Ground Tank				
% of container filled	Propane vaporization capacity at 0°F (in BTU's/hr.)	Equivalent in gallons	Equivalent propane ft. ³	Equivalent natural gas ft. ³
60	3,894,000	42.4	1540	3894
50	3,504,600	38.2	1385	3504
40	3,115,200	33.9	1230	3115
30	2,725,800	29.6	1070	2725
20	2,336,400	25.3	915	2336
10	1,752,300	19.0	705	1752

12,000 Gallon Above Ground Tank				
% of container filled	Propane vaporization capacity at 0°F (in BTU's/hr.)	Equivalent in gallons	Equivalent propane ft. ³	Equivalent natural gas ft. ³
60	4,628,300	50.2	1820	4628
50	4,160,000	45.3	1640	4160
40	3,700,000	40.3	1460	3700
30	3,240,000	35.2	1274	3240
20	2,700,000	29.3	1060	2700
10	2,080,000	22.6	816	2080

15,000 Gallon Above Ground Tank				
% of container filled	Propane vaporization capacity at 0°F (in BTU's/hr.)	Equivalent in gallons	Equivalent propane ft. ³	Equivalent natural gas ft. ³
60	5,040,000	54.7	1980	5040
50	4,550,000	49.5	1790	4550
40	4,040,000	44.0	1590	4040
30	3,530,000	38.4	1390	3530
20	3,030,000	33.0	1190	3030
10	2,227,000	25.0	905	2227

18,000 Gallon Above Ground Tank				
% of container filled	Propane vaporization capacity at 0°F (in BTU's/hr.)	Equivalent in gallons	Equivalent propane ft. ³	Equivalent natural gas ft. ³
60	5,209,750	56.7	2050	5209
50	4,760,000	51.8	1870	4760
40	4,250,000	46.2	1670	4250
30	3,700,000	40.2	1460	3700
20	3,180,000	34.6	1250	3180
10	2,380,000	25.9	936	2380

20,000 Gallon Above Ground Tank				
% of container filled	Propane vaporization capacity at 0°F (in BTU's/hr.)	Equivalent in gallons	Equivalent propane ft. ³	Equivalent natural gas ft. ³
60	5,931,000	64.5	2340	5931
50	5,350,000	58.1	2102	5350
40	4,750,000	51.5	1860	4750
30	4,150,000	45.0	1630	4150
20	3,560,000	38.7	1390	3560
10	2,680,000	29.0	1050	2680

30,000 Gallon Above Ground Tank				
% of container filled	Propane vaporization capacity at 0°F (in BTU's/hr.)	Equivalent in gallons	Equivalent propane ft. ³	Equivalent natural gas ft. ³
60	7,471,200	81.2	2940	7471
50	6,700,000	73.0	2640	6700
40	5,990,000	65.0	2360	5990
30	5,220,000	56.7	2050	5220
20	4,470,000	48.6	1770	4470
10	3,360,000	36.7	1320	3360

Vaporization Capacities For Other Air Temperatures	
Prevailing air temperatures	Multiplier
-15°	0.25
-10°	0.50
-05°	0.75
0°	1.00
+05°	1.25
+10°	1.50
+15°	1.75
+20°	2.00

HOSE – SAFETY AND TECHNICAL INFORMATION

WARNING – SAFETY NOTE

Failure to follow recommended application information and recommended procedures for selection, installation, care, maintenance and storage of hose, couplings or hose assemblies may result in failure to perform properly and may result in damage to property and serious bodily injury. Make sure that hose selected for any application is recommended for that service. Application information is given with each hose or coupling listing in the Dayco catalog. Refer to the Safety and Technical Data section of this catalog for information regarding safety, care, maintenance and storage. Contact your local Distributor for assistance.

In any application, there may be inherent risk of bodily injury or property damage and the user is responsible for implementation of adequate safety precautions.

LP Gas Hose: This discussion again emphasizes the importance of hose selection. LP Gas has volatile characteristics that require special hose construction. The rubber compounds must be designed to handle LP Gas, and the cover must be perforated to prevent gas build-up among the various layers of the hose. Use of the wrong hose may lead to early and sudden failure. In particular, anhydrous ammonia hose is not recommended for LP Gas service. This is important to emphasize because both types of hose are often used in the same area and care must be taken they do not become accidentally switched. **DO NOT USE LP GAS HOSE FOR ANHYDROUS AMMONIA.** Couplings are also a concern in this service; permanent crimp steel couplings are recommended, as well as high-pressure steel inserts attached with interlocking, bolt-on clamps.

Couplings with male swivel end styles are not recommended. **DO NOT USE WITH SCREW-TOGETHER REATTACHABLE COUPLINGS.** (Refer to RMA Publication IP-10 "Liquid Petroleum Gas, Specifications for").

WARNING: For LP Gas use ONLY. Do not use for anhydrous ammonia. Do not use with any fluid or vapor other than the intended use for which the hose was designed. Do not use with male swivel couplings. Do not use with screw-together reattachable couplings.

SAFETY

General: Safety in the application and use of industrial hose is a major concern because of the many potentially dangerous products conveyed, and because so many people are involved. Handling these products can be accomplished safely if a few simple precautions are strictly observed. Some of the most important of these are:

- All operators must be thoroughly trained.
- The correct hose must be selected to handle the application.
- The couplings must be correct for the application and also must be securely attached.
- Both hose and couplings should be well maintained and inspected regularly.

Safety, Care, Maintenance and Storage (REPRINTED FROM RMA HOSE HANDBOOK IP-2 SIXTH EDITION 1996)

Hose has a limited life and the user must be alert to signs of impending failure, particularly when the conditions of service include high working pressures and/or the conveyance or containment of hazardous materials.

SAFETY WARNING: Failure to properly follow the manufacturer's recommended procedures for the care, maintenance and storage of a particular hose might result in its failure to perform in the manner intended and might result in damage to property and serious bodily injury.

Please refer to RMA (Rubber Manufacturer's Association) HOSE HANDBOOK IP-2 SIXTH EDITION 1996, or later for the proper use, care and maintenance of hose.

General Test and Inspection Procedures for Hose

***REFERENCE NPGA TECHNICAL BULLETIN T145 AND T114**

T145 "Hoses and Flexible Connectors used in Plants and Cargo Vehicles"

T114 "Guide to Hose Inspection"

An inspection and hydrostatic test should be made at periodic intervals to determine if a hose is suitable for continued service.

A visual inspection of the hose should be made for loose covers, kinks, bulges or soft spots which might indicate broken or displaced reinforcement. The couplings or fittings should be closely examined and, if there is any sign of movement of the hose from the couplings, the hose should be removed from service.

The periodic inspection should include a hydrostatic test for one minute at 150% of the recommended working pressure of the hose. During the hydrostatic test, the hose should be straight, not coiled or in a kinked position. Water is the usual test medium and, following the test, the hose may be flushed with alcohol to remove traces of moisture. A regular schedule for testing should be followed and inspection records maintained.

SAFETY WARNING – Before conducting any pressure tests on hose, provisions must be made to ensure the safety of the personnel performing the tests and to prevent any possible damage to property. Only trained personnel using proper tools and procedures should conduct any pressure tests.

PLEASE REFER TO NPGA TECHNICAL BULLETIN T145 ON "HOSES AND FLEXIBLE CONNECTORS USED IN PLANTS AND CARGO VEHICLES" and T114 "GUIDE TO HOSE INSPECTION".