

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.

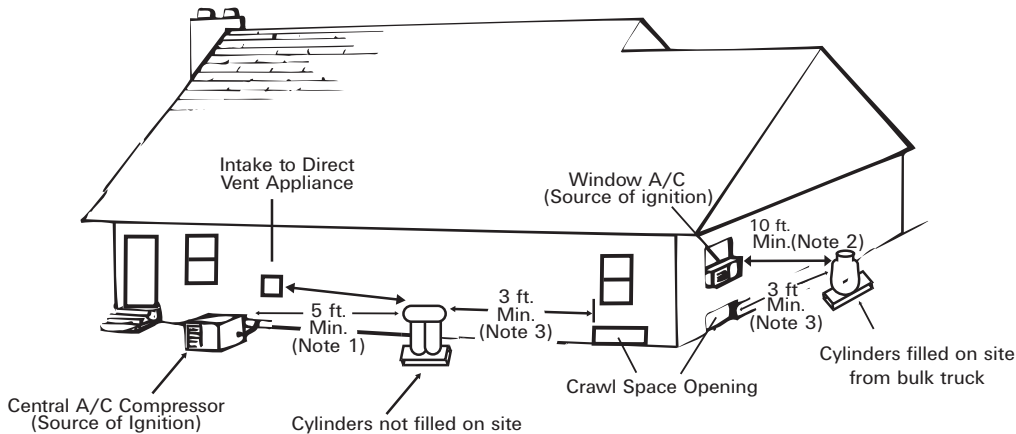
Failure to follow these codes, regulations and recommendations could result in hazardous installation, bodily injury and/or death.

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.

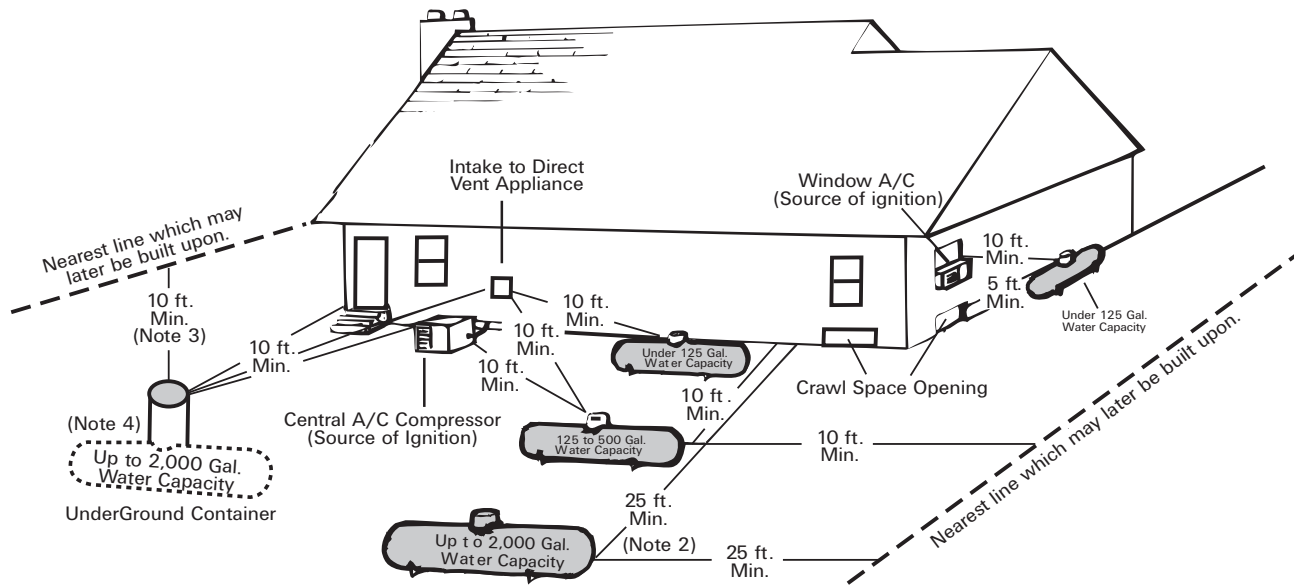


NOTES:

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

Information	Propane	Butane
Formula	C3H8	C4H10
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	26.8	31.02
Flash Point, °F	-156°	–
Ignition Temperature in Air, °F	920 - 1,020	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

Resistance of Valves & Fittings in Equivalent Feet of Pipe

Valves & Fittings	Pipe Size						
	1	1 1/4	1 1/2	2	2 1/2	3	4
Elbow 90°	4	4.5	5	6	8	9	11
Elbow 45°	1	2	2	2.5	3	4	5
Tee thru side	6	8	9	12	14	17	22
Y Strainer same size as pipe	25	25	25	42	42	42	60
Y Strainer next size larger	16	16	16	16	14	20	N/A
Globe Valve	28	35	45	60	65	85	120
Angle Valve	15	19	22	28	35	42	57
Ball Valve	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Quick-closing Gate	3	3	3	3	3	3	3

Above values are approximate and will vary from one manufacturer to another.

Pneumatic Operating Pressures

Part Number	Min. psi.	Max. psi.	Inlet connection
A3209PA	60#	250#	1/4"
A3209PAF	50#	125#	1/4"
A3212PA	35#	100#	1/4"
A3212RA	25#	125#	1/4"
A3213PA	35#	100#	1/4"
A3213RA	25#	125#	1/4"
6016-60C	20#	250#	1/4"
6016-60D	40#	80#	1/4"
125V-3-10-20	N/A	125#	1/8"
RSA-M3820602	N/A	150#	1/4"
RSA-PTSAE	N/A	150#	N/A

Approximate Vaporization Capacities

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

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

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	109	256
10	191,880	2.1	76	192

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

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

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

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

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

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

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

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

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

Technical Information

Vaporization Rate in BTU/Hr. (Continuous Draw)

Tank Size:	500 G.W.C	1,000 G.W.C	1,800 G.W.C	2,350 G.W.C	3,360 G.W.C
Temperature	BTU/Hr.	BTU/Hr.	BTU/Hr.	BTU/Hr.	BTU/Hr.
-20	60,000	127,000	180,000	240,000	300,000
-10	130,000	250,000	430,000	550,000	750,000
0	240,000	400,000	650,000	850,000	1,300,000
+10	300,000	550,000	925,000	1,400,000	1,600,000
+20	380,000	700,000	1,350,000	1,500,000	2,000,000
+30	465,000	850,000	1,450,000	1,800,000	2,400,000
+40	550,000	1,000,000	1,700,000	2,200,000	2,700,000
+50	630,000	1,300,000	1,850,000	2,500,000	3,300,000
+60	700,000	1,400,000	2,200,000	2,700,000	3,700,000

Tank Size:	12,000 G.W.C	18,000 G.W.C	30,000 G.W.C*	30,000 G.W.C**
Temperature	BTU/Hr.	BTU/Hr.	BTU/Hr.	BTU/Hr.
-20	650,000	750,000	1,100,000	1,200,000
-10	1,500,000	1,700,000	2,500,000	2,800,000
0	2,800,000	2,660,000	3,800,000	4,500,000
+10	3,200,000	3,700,000	5,200,000	6,000,000
+20	4,000,000	4,600,000	6,500,000	7,800,000
+30	4,800,000	5,800,000	8,000,000	9,300,000
+40	5,800,000	6,800,000	9,500,000	11,000,000
+50	6,800,000	7,800,000	11,000,000	13,000,000
+60	7,200,000	9,000,000	13,000,000	14,500,000

*30,000 G.W.C Short: 36 ft., 3 in. Seam-to-Seam 10 ft., 9-5/6 in I.D.

**30,000 G.W.C Long: 57 ft., 0 in. Seam-to-Seam 9 ft., 0 in I.D.

Tank Volume Factors

25% x 1.00	30% x 1.072	35% x 1.15	40% x 1.22	45% x 1.20	50% x 1.35
55% x 1.42	60% x 1.49	65% x 1.57	70% x 1.64	75% x 1.71	80% x 1.79

Number of gallons of propane remaining in vapor form in a drained tank of 30,000 gallons water capacity at various gauge pressures.

225	1793	192	1546	159	1299	126	1052	93	805	60	558	27	312
224	1786	191	1539	158	1292	125	1045	92	798	59	551	26	304
223	1778	190	1531	157	1284	124	1037	91	790	58	544	25	297
222	1771	189	1524	156	1277	123	1030	90	783	57	536	24	289
221	1763	188	1516	155	1269	122	1022	89	775	56	529	23	282
220	1756	187	1509	154	1262	121	1015	88	768	55	521	22	274
219	1748	186	1501	153	1254	120	1007	87	761	54	514	21	267
218	1741	185	1494	152	1247	119	1000	86	753	53	506	20	259
217	1733	184	1486	151	1239	118	992	85	746	52	499	19	252
216	1726	183	1479	150	1232	117	985	84	738	51	491	18	244
215	1718	182	1471	149	1224	116	978	83	731	50	484	17	237
214	1711	181	1464	148	1217	115	970	82	723	49	476	16	229
213	1703	180	1456	147	1210	114	963	81	716	48	469	15	222
212	1696	179	1449	146	1202	113	955	80	708	47	461	14	214
211	1688	178	1441	145	1195	112	948	79	701	46	454	13	207
210	1681	177	1434	144	1187	111	940	78	693	45	446	12	199
209	1673	176	1426	143	1180	110	933	77	686	44	439	11	192
208	1666	175	1419	142	1172	109	925	76	678	43	431	10	184
207	1658	174	1412	141	1165	108	918	75	671	42	424	9	177
206	1651	173	1404	140	1157	107	910	74	663	41	416	8	169
205	1644	172	1397	139	1150	106	903	73	656	40	409	7	162
204	1636	171	1389	138	1142	105	895	72	648	39	401	6	154
203	1629	170	1382	137	1135	104	888	71	641	38	394	5	147
202	1621	169	1374	136	1127	103	880	70	633	37	386	4	139
201	1614	168	1367	135	1120	102	873	69	626	36	379	3	132
200	1606	167	1359	134	1112	101	865	68	618	35	371	2	124
199	1599	166	1352	133	1105	100	858	67	611	34	364	1	117
198	1591	165	1344	132	1097	99	850	66	603	33	356	0	110
197	1584	164	1337	131	1090	98	843	65	596	32	349		
196	1576	163	1329	130	1082	97	835	64	588	31	341		
195	1569	162	1322	129	1075	96	828	63	581	30	334		
194	1561	161	1314	128	1067	95	820	62	573	29	326		
193	1554	160	1307	127	1060	94	813	61	566	28	319		

Number of gallons of propane remaining in vapor form in a drained tank of 18,000 gallons water capacity at various gauge pressures.

Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.
225	1076	192	928	159	779	126	631	93	483	60	335	27	187				
224	1071	191	923	158	775	125	627	92	479	59	330	26	182				
223	1067	190	919	157	770	124	622	91	474	58	326	25	178				
222	1062	189	914	156	766	123	618	90	470	57	321	24	173				
221	1058	188	910	155	761	122	613	89	465	56	317	23	169				
220	1053	187	905	154	757	121	609	88	461	55	312	22	164				
219	1049	186	901	153	752	120	604	87	456	54	308	21	160				
218	1044	185	896	152	748	119	600	86	452	53	303	20	155				
217	1040	184	892	151	743	118	595	85	447	52	299	19	151				
216	1035	183	887	150	739	117	591	84	443	51	294	18	146				
215	1031	182	883	149	734	116	586	83	438	50	290	17	142				
214	1026	181	878	148	730	115	582	82	434	49	285	16	137				
213	1022	180	874	147	726	114	577	81	429	48	281	15	133				
212	1017	179	869	146	721	113	573	80	425	47	277	14	128				
211	1013	178	865	145	717	112	568	79	420	46	272	13	124				
210	1008	177	860	144	712	111	564	78	416	45	268	12	119				
209	1004	176	856	143	708	110	559	77	411	44	263	11	115				
208	999	175	851	142	703	109	555	76	407	43	259	10	110				
207	995	174	847	141	699	108	550	75	402	42	254	9	106				
206	990	173	842	140	694	107	546	74	398	41	250	8	101				
205	986	172	838	139	690	106	541	73	393	40	245	7	97				
204	981	171	833	138	685	105	537	72	389	39	241	6	93				
203	977	170	829	137	681	104	532	71	384	38	236	5	88				
202	972	169	824	136	676	103	528	70	380	37	232	4	84				
201	968	168	820	135	672	102	523	69	375	36	227	3	80				
200	964	167	815	134	667	101	519	68	371	35	223	2	75				
199	959	166	811	133	663	100	514	67	366	34	218	1	70				
198	954	165	806	132	658	99	510	66	362	33	214	0	66				
197	950	164	802	131	654	98	505	65	357	32	209						
196	945	163	797	130	649	97	501	64	353	31	205						
195	941	162	793	129	645	96	497	63	348	30	200						
194	937	161	788	128	640	95	492	62	344	29	196						
193	932	160	784	127	636	94	488	61	339	28	191						

Number of gallons of propane remaining in vapor form in a drained tank of 12,000 gallons water capacity at various gauge pressures.

Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.
225	718	192	619	159	520	126	421	93	322	60	223	27	125				
224	715	191	616	158	517	125	418	92	319	59	220	26	122				
223	712	190	613	157	514	124	415	91	316	58	217	25	119				
222	709	189	610	156	511	123	412	90	313	57	215	24	116				
221	706	188	607	155	508	122	409	89	310	56	212	23	113				
220	703	187	604	154	505	121	406	88	307	55	209	22	110				
219	700	186	601	153	502	120	403	87	304	54	206	21	107				
218	697	185	598	152	499	119	400	86	301	53	203	20	104				
217	694	184	595	151	496	118	397	85	298	52	200	19	101				
216	691	183	592	150	493	117	394	84	295	51	197	18	98				
215	688	182	589	149	490	116	391	83	292	50	194	17	95				
214	685	181	586	148	487	115	388	82	289	49	191	16	92				
213	682	180	583	147	484	114	385	81	286	48	188	15	89				
212	679	179	580	146	481	113	382	80	283	47	185	14	86				
211	676	178	577	145	478	112	379	79	280	46	182	13	83				
210	673	177	574	144	475	111	376	78	277	45	179	12	80				
209	670	176	571	143	472	110	373	77	274	44	176	11	77				
208	667	175	568	142	469	109	370	76	271	43	173	10	74				
207	664	174	565	141	466	108	367	75	268	42	170	9	71				
206	661	173	562	140	463	107	364	74	265	41	167	8	68				
205	658	172	559	139	460	106	361	73	262	40	164	7	65				
204	655	171	556	138	457	105	358	72	259	39	161	6	62				
203	652	170	553	137	454	104	355	71	256	38	158	5	59				
202	649	169	550	136	451	103	352	70	253	37	155	4	56				
201	646	168	547	135	448	102	349	69	250	36	152	3	53				
200	643	167	544	134	445	101	346	68	247	35	149	2	50				
199	640	166	541	133	442	100	343	67	244	34	146	1	47				
198	637	165	538	132	439	99	340	66	241	33	143	0	44				
197	634	164	535	131	436	98	337	65	238	32	140						
196	631	163	532	130	433	97	334	64	235	31	137						
195	628	162	529	129	430	96	331	63	232	30	134						
194	625	161	526	128	427	95	328	62	229	29	131						
193	622	160	523	127	424	94	325	61	226	28	128						

Number of gallons of propane remaining in vapor form in a drained tank of 1,000 gallons water capacity at various gauge pressures.

Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.	Gauge PSI	Gals.
225	60	192	51.74	159	43.48	126	35.22	93	26.96	60	18.7	27	10.43						
224	59.75	191	51.49	158	43.23	125	34.97	92	26.71	59	18.45	26	10.18						
223	59.5	190	51.24	157	42.98	124	34.72	91	26.46	58	18.19	25	9.93						
222	59.25	189	50.99	156	42.73	123	34.47	90	26.21	57	17.94	24	9.67						
221	59	188	50.74	155	42.48	122	34.22	89	25.96	56	17.69	23	9.43						
220	58.75	187	50.49	154	42.23	121	33.97	88	25.7	55	17.44	22	9.18						
219	58.5	186	50.24	153	41.98	120	33.72	87	25.45	54	17.19	21	8.93						
218	58.25	185	49.99	152	41.73	119	33.47	86	25.2	53	16.94	20	8.67						
217	58	184	49.74	151	41.48	118	33.22	85	24.95	52	16.69	19	8.43						
216	57.75	183	49.49	150	41.23	117	32.96	84	24.7	51	16.44	18	8.18						
215	57.5	182	49.24	149	40.98	116	32.71	83	24.45	50	16.19	17	7.93						
214	57.25	181	48.99	148	40.73	115	32.46	82	24.2	49	15.94	16	7.68						
213	57	180	48.74	147	40.48	114	32.21	81	23.95	48	15.69	15	7.43						
212	56.75	179	48.49	146	40.22	113	31.96	80	23.7	47	15.44	14	7.18						
211	56.5	178	48.24	145	39.97	112	31.71	79	23.45	46	15.19	13	3.93						
210	56.25	177	47.99	144	39.72	111	31.46	78	23.2	45	14.94	12	6.68						
209	56	176	47.73	143	39.47	110	31.21	77	22.95	44	14.69	11	6.43						
208	55.75	175	47.48	142	39.22	109	30.96	76	22.7	43	14.44	10	6.18						
207	55.5	174	47.23	141	38.97	108	30.71	75	22.45	42	14.19	9	5.93						
206	55.25	173	46.98	140	38.72	107	30.46	74	22.2	41	13.94	8	5.68						
205	54.99	172	46.73	139	38.47	106	30.21	73	21.95	40	13.69	7	5.43						
204	54.74	171	46.48	138	38.22	105	29.96	72	21.7	39	13.44	6	5.18						
203	54.49	170	46.23	137	37.97	104	29.71	71	21.45	38	13.19	5	4.93						
202	54.24	169	45.98	136	37.72	103	29.46	70	21.2	37	12.94	4	4.68						
201	53.99	168	45.73	135	37.47	102	29.21	69	20.95	36	12.69	3	4.43						
200	53.74	167	45.48	134	37.22	101	28.96	68	20.7	35	12.44	2	4.18						
199	53.49	166	45.23	133	36.97	100	28.71	67	20.45	34	12.19	1	3.93						
198	53.24	165	44.98	132	36.72	99	28.46	66	20.2	33	11.94	0	3.68						
197	52.99	164	44.73	131	36.47	98	28.21	65	19.95	32	11.69								
196	52.74	163	44.48	130	36.22	97	27.96	64	19.7	31	11.44								
195	52.49	162	44.23	129	35.97	96	27.71	63	19.45	30	11.19								
194	52.24	161	43.98	128	35.72	95	27.46	62	19.2	29	10.93								
193	51.99	160	43.73	127	35.47	94	27.21	61	18.95	28	10.68								