February 2022

RegO ® Field Topics

Sizing Propane Piping Systems

Field Topics are intended to provide useful information to the network of authorized LP-Gas and Anhydrous Ammonia distributors regarding the proper use of RegO® products. **Warning Bulletins** covering many of the hazards involved are available from RegO for more detailed information. These bulletins can be found in our **L-500, L-102 and NH3-102** catalogs. Neither the Field Topic or the Warning Bulletins are intended to conflict with federal, state, or local ordinances and/or regulations, which should be observed at all times. This information also is not intended to be a substitute for or to supplement any training in the safe handling and use of propane and related equipment, as required by any applicable law. By providing this material, ECI assumes no responsibility for providing any such training. Only individuals properly trained in the safe handling and use of propane and related equipment should be permitted to do so, and by providing this information, ECI does not assume responsibility for providing such training.

For more information on LP Gas system requirements, refer to Liquefied Petroleum Gas Code (NFPA 58), National Fuel Gas Code (NFPA 54), National Propane Gas Association Safety Handbook, the RegO LP-Gas Serviceman's Manual L-545, RegO catalogs L-500/L-102/NH3-102, ANSI K61.1 Safety Requirements for Storage and Handling of Anhydrous Ammonia, as well as any applicable local codes and ordinances.

Sizing Propane Piping Systems

Pipe & Tubing selection is a vital process to the propane delivery system and requires a complete understanding. Improper selection can result in improper delivery pressure, improper combustion, poor equipment performance and much more.

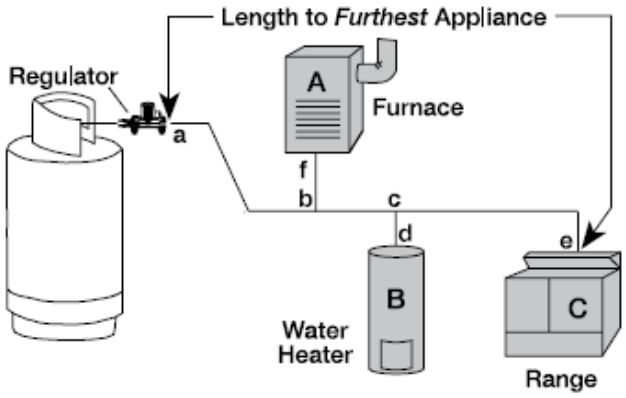
Pipe sizing charts can be found in numerous code and standard publications including NFPA 54, NFPA 58, International Fuel Gas Code (IFGC), and International Residential Code (IRC). Please follow the latest edition for update sizing charts. The RegO app, L-545 serviceman’s manual, L-500 & L-550 selection slide chart are referenced from the latest updated versions of NFPA 58 & NFPA 54.

The two most common method of pipe sizing are done thru either the longest length method or the branch length method. When sizing to the longest length method, the pipe size of each section should be determined by using the longest length of piping from the point of delivery, the gas meter or regulator, to the most remote outlet and the load of the section. When sizing to the branch length method, the pipe size of each section of the longest pipe run, from the point of delivery to the most remote outlet, should be determined by the longest run of piping and the load of the section.

The Branch Length Method Instructions can be found in the RegO L-545's Serviceman's manual. This method is found to be the most used method for determining pipe sizing.

Instructions to Branch Length Method from RegO L-545 Serviceman's Manual:

1. Determine the total gas demand for the system by adding up the BTU/hr input from the appliance nameplates and adding demand as appropriate for future appliances.
2. For second stage or integral twin stage piping:
   - **a.** Measure length of piping required from outlet of regulator to the appliance furthest away. No other length is necessary to do the sizing.
   - **b.** Make a simple sketch of the piping, as shown.
   - **c.** Determine the capacity to be handled by each Section of piping. For example, the capacity of the line between a and b must handle the total demand of appliances A, B, and C; the capacity of the line from c to d must handle only appliance B, etc.
   - **d.** Using Table 3 select proper size of tubing or pipe for each section of piping, using values in BTU/hr for the length determined from step #2-A. If exact length is not on chart, use next longer length. Do not use any other length for this purpose! Simply select the size that shows at least as much capacity as needed for each piping section.
3. For piping between first and second stage regulators
   - **a.** For a simple system with only one second stage regulator, merely measure length of piping required between outlet of first stage regulator and inlet of second stage regulator. Select piping or tubing required from Table 1.
   - **b.** For systems with multiple second stage regulators, measure length of piping required to reach the second stage regulator that is furthest away. Make a simple sketch, and size each leg of piping using Table 1, 2, or 3 using values shown in column corresponding to the length as measured above, same as when handling second stage piping.



Please refer to your L-545 serviceman's manual for examples

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Table 1 - First Stage Copper Tubing or Pipe Sizing

10 PSIG Inlet with a 1 PSIG Pressure Drop (Between First and Second Stage Regulators)
Maximum capacity of pipe or tubing in thousands of BTU/hr of undiluted LP-Gases (Propane)
(Based on 1.50 Specific Gravity Gas)

Size of Pipe or Copper Tubing in Inches		Length of Pipe or Tubing in Feet*												
		10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**	**125**	**150**	**175**
Copper Tubing (O.D.)**	⅜	513	352	283	242	215	194	179	166	156	147	131	118	109
	½	1,060	727	584	500	443	401	369	343	322	304	270	244	225
	⅝	2,150	1,480	1,190	1,020	901	816	751	699	655	619	549	497	457
	¾	3,760	2,580	2,080	1,780	1,570	1,430	1,310	1,220	1,150	1,080	959	869	799
Pipe Size***	½	3,320	2,280	1,830	1,570	1,390	1,260	1,160	1,080	1,010	956	848	768	706
	¾	6,950	4,780	3,840	3,280	2,910	2,640	2,430	2,260	2,120	2,000	1,770	1,610	1,480
	1	13,100	9,000	7,220	6,180	5,480	4,970	4,570	4,250	3,990	3,770	3,340	3,020	2,780
	1 ¼	26,900	18,500	14,800	12,700	11,300	10,200	9,380	8,730	8,190	7,730	6,850	6,210	5,710
	1 ½	40,300	27,700	22,200	19,000	16,900	15,300	14,100	13,100	12,300	11,600	10,300	9,300	8,560
	2	77,600	53,300	42,800	36,600	32,500	29,400	27,100	25,200	23,600	22,300	19,800	17,900	16,500
	2 ½	124,000	85,000	68,200	58,400	51,700	46,900	43,100	40,100	37,700	35,600	31,500	28,600	26,300
	3	219,000	150,000	121,000	103,000	91,500	82,900	76,300	70,900	66,600	62,900	55,700	50,500	46,500
	4	446,000	306,000	246,000	211,000	187,000	169,000	156,000	145,000	136,000	128,000	114,000	103,000	94,700
		200	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**700**	**750**	**800**	**850**
Copper Tubing (O.D.)**	⅜	101	90	81	75	70	65	62	59	56	51	50	48	46
	½	209	185	168	155	144	135	127	121	115	106	102	99	96
	⅝	426	377	342	314	292	274	259	246	235	216	208	201	195
	¾	744	659	597	549	511	480	453	430	410	378	364	351	340
Pipe Size***	½	657	582	528	486	452	424	400	380	363	334	321	310	300
	¾	1,370	1,220	1,100	1,020	945	886	837	795	759	698	672	649	628
	1	2,590	2,290	2,080	1,910	1,780	1,670	1,580	1,500	1,430	1,310	1,270	1,220	1,180
	1 ¼	5,320	4,710	4,270	3,930	3,650	3,430	3,240	3,070	2,930	2,700	2,600	2,510	2,430
	1 ½	7,960	7,060	6,400	5,880	5,470	5,140	4,850	4,610	4,400	4,040	3,900	3,760	3,640
	2	15,300	13,600	12,300	11,300	10,500	9,890	9,340	8,870	8,460	7,790	7,500	7,240	7,010
	2 ½	24,400	21,700	19,600	18,100	16,800	15,800	14,900	14,100	13,500	12,400	12,000	11,500	11,200
	3	43,200	38,300	34,700	31,900	29,700	27,900	26,300	25,000	23,900	21,900	21,100	20,400	19,800
	4	88,100	78,100	70,800	65,100	60,600	56,800	53,700	51,000	48,600	44,800	43,100	41,600	40,300
		900	**950**	**1,000**	**1,100**	**1,200**	**1,300**	**1,400**	**1,500**	**1,600**	**1,700**	**1,800**	**1,900**	**2,000**
Copper Tubing (O.D.)**	⅜	45	44	42	40	38	37	35	34	33	32	31	30	29
	½	93	90	88	83	79	76	73	70	68	66	64	62	60
	⅝	189	183	178	169	161	155	148	143	138	134	130	126	122
	¾	330	320	311	296	282	270	260	250	241	234	227	220	214
Pipe Size***	½	291	283	275	261	249	239	229	221	213	206	200	194	189
	¾	609	592	575	546	521	499	480	462	446	432	419	407	395
	1	1,150	1,110	1,080	1,030	982	940	903	870	840	813	789	766	745
	1 ¼	2,360	2,290	2,230	2,110	2,020	1,930	1,850	1,790	1,730	1,670	1,620	1,570	1,530
	1 ½	3,530	3,430	3,330	3,170	3,020	2,890	2,780	2,680	2,590	2,500	2,430	2,360	2,290
	2	6,800	6,600	6,420	6,100	5,820	5,570	5,350	5,160	4,980	4,820	4,670	4,540	4,410
	2 ½	10,800	10,500	10,200	9,720	9,270	8,880	8,530	8,220	7,940	7,680	7,450	7,230	7,030
	3	19,200	18,600	18,100	17,200	16,400	15,700	15,100	14,500	14,000	13,600	13,200	12,800	12,400
	4	39,100	37,900	36,900	35,000	33,400	32,000	30,800	29,600	28,600	27,700	26,900	26,100	25,400

*Total length of piping from outlet of first stage regulator to inlet of second stage regulator (or to inlet of second stage regulator furthest away)
**Data referenced from NFPA 58 2020 table 16.1(f)
***Data referenced from NFPA 58 2020 Table 16.1(a)

Notes:

1. To allow for 2 PSIG pressure drop, multiply total gas demand by 0.707 and use capacities from table.
2. For different first stage pressures, multiply total gas demand by the following factor and use capacities from table below

First Stage Pressure PSIG	Multiple By
20	0.844
15	0.912
5	1.120

Table 2 - First Stage Polyethylene Plastic Tubing or Pipe Sizing

10 PSIG Inlet with a 1 PSIG Pressure Drop (Between First and Second Stage Regulators)
Maximum capacity of polyethylene pipe or tubing in thousands of BTU/hr of undiluted LP-Gases (Propane)
(Based on 1.50 Specific Gravity Gas)

Size of Plastic Tubing in Inches		Length of Pipe or Tubing in Feet*										
NPS	**SDR**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**	**125**
½ T**	**7**	N/A	N/A	762	653	578	524	482	448	421	397	352
½***	**9.33**	N/A	N/A	2,140	1,840	1,630	1,470	1,360	1,260	1,180	1,120	990
¾***	**11**	N/A	N/A	4290	3670	3260	2950	2710	2530	2370	2240	1980
1 T**	**11**	N/A	N/A	5,230	4,470	3,960	3,590	3,300	3,070	2,880	2,720	2,410
1***	**11**	N/A	N/A	7,740	6,630	5,870	5,320	4,900	4,560	4,270	4,040	3,580
1 ¼***	**11**	N/A	N/A	13,420	11,480	10,180	9,220	8,480	7,890	7,400	6,990	6,200
1 ½***	**11**	N/A	N/A	20,300	17,300	15,400	13,900	12,800	11,900	11,200	10,600	9,360
2***	**11**	N/A	N/A	36,400	31,200	27,600	25,000	23,000	21,400	20,100	19,000	16,800
		150	**175**	**200**	**225**	**250**	**275**	**300**	**350**	**400**	**450**	**500**
½ T**	**7**	319	294	273	256	242	230	219	202	188	176	166
½***	**9.33**	897	826	778	721	681	646	617	567	528	495	468
¾***	**11**	1800	1650	1540	1440	1360	1290	1240	1140	1060	992	937
1 T**	**11**	2,190	2,010	1,870	1,760	1,660	1,580	1,500	1,380	1,290	1,210	1,140
1***	**11**	3,240	2,980	2,780	2,600	2,460	2,340	2,230	2,050	1,910	1,790	1,690
1 ¼***	**11**	5,620	5,170	4,810	4,510	4,260	4,050	3,860	3,550	3,300	3,100	2,930
1 ½***	**11**	8,480	7,800	7,260	6,810	6,430	6,110	5,830	5,360	4,990	4,680	4,420
2***	**11**	15,200	14,000	13,000	12,200	11,600	11,000	10,470	9,640	8,970	8,410	7,950
		600	**700**	**800**	**900**	**1000**	**1500**	**2000**				
½ T**	**7**	151	139	129	273	114	92	79	N/A			
½***	**9.33**	424	390	363	778	322	258	221				
¾***	**11**	849	781	726	1540	644	517	443				
1 T**	**11**	1,030	951	884	1,870	784	629	539				
1***	**11**	1,530	1,410	1,310	2,780	1,160	933	798				
1 ¼***	**11**	2,650	2,440	2,270	4,810	2,010	1,620	1,380				
1 ½***	**11**	4,010	3,690	3,430	7,260	3,040	2,440	2,090				
2***	**11**	7,200	6,620	6,160	13,000	5,460	4,390	3,750				

*Total length of piping from outlet of first stage regulator to inlet of second stage regulator (or to inlet of second stage regulator furthest away)
**Data referenced from NFPA 58 2020 Table 16.1(o)
***Data referenced from NFPA 58 2020 TIA 20-4

Notes:

1. T = Tube Size
2. To allow for 2 PSIG pressure drop, multiply total gas demand by 0.707 and use capacities from table.
3. For different first stage pressures, multiply total gas demand by the following factor and use capacities from table below

First Stage Pressure PSIG	Multiple By
20	0.844
15	0.912
5	1.120

Table 3 - Second Stage or Integral Twin Stage Tubing or Pipe Sizing

11-In. Water Column Inlet with a 0.05-In. Water Column Drop

Maximum capacity of pipe or tubing in thousands of BTU/hr of undiluted LP-Gases (Propane)

(Based on 1.50 Specific Gravity Gas)

Size of Pipe or Copper Tubing in Inches		Length of Pipe or Tubing in Feet*												
		10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**	**125**	**150**	**175**
Copper Tubing (O.D.)**	**⅜**	45	31	25	21	19	17	16	15	14	13	11	10	NA
	½	93	64	51	44	39	35	32	30	28	27	24	21	20
	⅝	188	129	104	89	79	71	66	61	57	54	48	44	40
	¾	329	226	182	155	138	125	115	107	100	95	84	76	70
Pipe Size***	**½**	291	200	160	137	122	110	101	94	89	84	74	67	62
	¾	608	418	336	287	255	231	212	197	185	175	155	140	129
	1	1,150	787	632	541	480	434	400	372	349	330	292	265	243
	1 ¼	2,350	1,620	1,300	1,110	985	892	821	763	716	677	600	543	500
	1 ½	3,520	2,420	1,940	1,660	1,480	1,340	1,230	1,140	1,070	1,010	899	814	749
	2	6,790	4,660	3,750	3,210	2,840	2,570	2,370	2,200	2,070	1,950	1,730	1,570	1,440
	2 ½	10,800	7,430	5,970	5,110	4,530	4,100	3,770	3,510	3,290	3,110	2,760	2,500	2,300
	3	19,100	13,100	10,600	9,030	8,000	7,250	6,670	6,210	5,820	5,500	4,420	4,420	4,060
	4	39,000	26,800	21,500	18,400	16,300	14,800	13,600	12,700	11,900	11,200	9,019	9,010	8,290
		200	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**700**	**750**	**800**	**850**
Copper Tubing (O.D.)**	**⅜**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	½	18	16	15	14	13	12	11	11	10	NA	NA	NA	NA
	⅝	37	33	30	28	26	24	23	22	21	20	19	18	18
	¾	65	58	52	48	45	42	40	38	36	34	33	32	31
Pipe Size***	**½**	58	51	46	42	40	37	35	33	32	30	29	28	27
	¾	120	107	97	89	83	78	73	70	66	64	61	59	57
	1	227	201	182	167	156	146	138	131	125	120	115	111	107
	1 ¼	465	412	373	344	320	300	283	269	257	246	236	227	220
	1 ½	697	618	560	515	479	449	424	403	385	368	354	341	329
	2	1,340	1,190	1,080	991	922	865	817	776	741	709	681	656	634
	2 ½	2,140	1,900	1,720	1,580	1,470	1,380	1,300	1,240	1,180	1,130	1,090	1,050	1,010
	3	3,780	3,350	3,040	2,790	2,600	2,440	2,300	2,190	2,090	2,000	1,920	1,850	1,790
	4	7,710	6,840	6,190	5,700	5,300	4,970	4,700	4,460	4,260	4,080	3,920	3,770	3,640
		900	**950**	**1,000**	**1,100**	**1,200**	**1,300**	**1,400**	**1,500**	**1,600**	**1,700**	**1,800**	**1,900**	**2,000**
Copper Tubing (O.D.)**	**⅜**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	½	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	⅝	17	16	16	15	14	14	13	13	12	12	11	11	11
	¾	29	28	28	26	25	24	23	22	21	20	20	19	19
Pipe Size***	**½**	25	25	24	23	22	21	20	19	19	18	18	17	17
	¾	53	52	50	48	46	44	42	40	39	38	37	36	35
	1	100	97	95	90	86	82	79	76	74	71	69	67	65
	1 ¼	206	200	195	185	176	169	162	156	151	146	142	138	134
	1 ½	309	300	292	277	264	253	243	234	226	219	212	206	200
	2	595	578	562	534	509	487	468	451	436	422	409	397	386
	2 ½	948	921	895	850	811	777	746	719	694	672	652	633	615
	3	1,680	1,630	1,580	1,500	1,430	1,370	1,320	1,270	1,230	1,190	1,150	1,120	1,090
	4	3,420	3,320	3,230	3,070	2,930	2,800	2,690	2,590	2,500	2,420	2,350	2,280	2,220

*Total length of piping from outlet of regulator to appliance furthest away.

**Data referenced from NFPA 58 2020 Table 16.1(g)

***Data referenced from NFPA 58 2020 TIA 20-2

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Table 4 - Maximum Capacity of CSST

2 PSIG and a Pressure Drop of 1 PSIG (Between 2 psig Service and Line Pressure Regulator)
In Thousands of BTU/hr of undiluted LP-Gases (Propane)
(Based on 1.50 Specific Gravity Gas)

Size of CSST Tubing in Inches**		Length of Pipe or Tubing in Feet*													
Size	**EHD Flow Designation *****	**10**	**25**	**30**	**40**	**50**	**75**	**80**	**100**	**150**	**200**	**250**	**300**	**400**	**500**
⅜	**13**	426	262	238	203	181	147	140	124	101	86	77	69	60	53
	15	558	347	316	271	243	196	189	169	137	118	105	96	82	72
½	**18**	927	591	540	469	420	344	333	298	245	213	191	173	151	135
	19	1,110	701	640	554	496	406	393	350	287	248	222	203	175	158
¾	**23**	1,740	1,120	1,030	896	806	663	643	578	477	415	373	343	298	268
	25	2,170	1,380	1,270	1,100	986	809	768	703	575	501	448	411	355	319
1	**30**	4,100	2,560	2,330	2,010	1,790	1,460	1,410	1,260	1,020	880	785	716	616	550
	31	4,720	2,950	2,690	2,320	2,070	1,690	1,630	1,450	1,180	1,020	910	829	716	638
1 ¼	**37**	7,130	4,560	4,180	3,630	3,260	2,680	2,590	2,330	1,910	1,660	1,490	1,360	1,160	1,030
	39	7,958	5,147	4,719	4,116	3,702	3,053	2,961	2,662	2,195	1,915	1,722	1,578	1,376	1,237
1 ½	**46**	15,200	9,550	8,710	7,530	6,730	5,480	5,300	4,740	3,860	3,340	2,980	2,720	2,350	2,100
	48	16,800	10,700	9,790	8,500	7,610	6,230	6,040	5,410	4,430	3,840	3,440	3,150	2,730	2,450
2	**60**	29,400	18,800	17,200	14,900	13,400	11,000	10,600	9,530	7,810	6,780	6,080	5,560	4,830	4,330
	62	34,200	21,700	19,800	17,200	15,400	12,600	12,200	10,900	8,890	7,710	6,900	6,300	5,460	4,880

*Total length of piping from outlet of regulator to inlet of 2 psig Service/Line Pressure Regulator (or to inlet of regulator furthest away)
**Data referenced from NFPA 58 2020 Table 16.1(j)
***EHD - Equivalent Hydraulic Diameter - A measure of the relative hydraulic efficiency between different tubing sizes. The greater the value of EHD, the greater the gas capacity of the tubing.

Notes:

1. Table does not include effect of pressure drop across the line regulator. If regulator loss exceeds ½ psi (based on 13-in. water column outlet pressure). **DO NOT USE THIS TABLE**. Consult with regulator manufacturer for pressure drops and capacity factors. Pressure drops across a regulator may vary with flow rate.
2. **CAUTION**: Capacities shown in table can exceed maximum capacity for a selected regulator. Consult with regulator or tubing manufacturer for guidance.
3. Table includes losses for four 90-degree bends and two end fittings. Tubing runs with a larger number of bends and/ or fittings shall be increased by an equivalent length of tubing according to the following equation; L-1.3n where L is additional length (ft) of tubing and n is the number of additional fittings and/or bends.
4. All entries are rounded to 3 significant digits

Table 5 - Maximum Capacity of CSST

11-in. Water Column and a Pressure Drop of 0.05-in. Water Column (Between Second Stage (Low Pressure) Regulator and Appliance Shutoff Valve)

In Thousands of BTU/hr of undiluted LP-Gases (Propane)

(Based on 1.50 Specific Gravity Gas)

Size of CSST Tubing in Inches**		Length of Pipe or Tubing in Feet*										
Size	EHD Flow Designation ***	5	10	15	20	25	30	40	50	60	70	80
⅜	13	426	262	238	203	181	147	140	124	101	86	77
	15	558	347	316	271	243	196	189	169	137	118	105
½	18	927	591	540	469	420	344	333	298	245	213	191
	19	1,110	701	640	554	496	406	393	350	287	248	222
¾	23	1,740	1,120	1,030	896	806	663	643	578	477	415	373
	25	2,170	1,380	1,270	1,100	986	809	768	703	575	501	448
1	30	4,100	2,560	2,330	2,010	1,790	1,460	1,410	1,260	1,020	880	785
	31	4,720	2,950	2,690	2,320	2,070	1,690	1,630	1,450	1,180	1,020	910
1 ¼	37	7,130	4,560	4,180	3,630	3,260	2,680	2,590	2,330	1,910	1,660	1,490
	39	7,958	5,147	4,719	4,116	3,702	3,053	2,961	2,662	2,195	1,915	1,722
1 ½	46	15,200	9,550	8,710	7,530	6,730	5,480	5,300	4,740	3,860	3,340	2,980
	48	16,800	10,700	9,790	8,500	7,610	6,230	6,040	5,410	4,430	3,840	3,440
2	60	29,400	18,800	17,200	14,900	13,400	11,000	10,600	9,530	7,810	6,780	6,080
	62	34,200	21,700	19,800	17,200	15,400	12,600	12,200	10,900	8,890	7,710	6,900
		90	100	150	200	250	300					
⅜	13	15	14	11	9	8	8	N/A				
	15	22	20	15	14	12	11					
½	18	44	41	31	28	25	23					
	19	50	47	36	33	30	26					
¾	23	90	85	66	60	53	50					
	25	102	98	75	69	61	57					
1	30	169	159	123	112	99	90					
	31	197	186	143	129	117	107					
1 ¼	37	286	270	217	183	163	147					
	39	414	393	324	283	254	234					
1 ½	46	656	621	506	438	390	357					
	48	787	746	611	531	476	434					
2	60	1,400	1,330	1,090	948	850	777					
	62	1,550	1,480	1,210	1,050	934	854					

*Total length of piping from outlet of regulator to appliance furthest away.

**Data referenced from NFPA 58 2020 Table 16.1(k)

***EHD - Equivalent Hydraulic Diameter - A measure of the relative hydraulic efficiency between different tubing sizes. The greater the value of EHD, the greater the gas capacity of the tubing.

Notes:

1. Table includes losses for four 90-degree bends and two end fittings. Tubing runs with a larger number of bends and/ or fittings shall be increased by an equivalent length of tubing according to the following equation; L-1.3n where L is additional length (ft) of tubing and n is the number of additional fittings and/or bends.
2. All entries are rounded to 3 significant digits

Table 6 - Copper Tubing or Schedule 40 Pipe Sizing

2 PSIG Inlet with a 1 PSIG Pressure Drop (Between 2 PSIG Service and Line Pressure Regulator)
In Thousands of BTU/hr of undiluted LP-Gases (Propane)
(Based on 1.50 Specific Gravity Gas)

Size of Pipe or Copper Tubing in Inches		Length of Pipe or Tubing in Feet*												
		10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**	**125**	**150**	**175**
Copper Tubing (O.D.)**	**⅜**	413	284	228	195	173	157	144	134	126	119	105	95	88
	½	852	585	470	402	356	323	297	276	259	245	217	197	181
	⅝	1,730	1,190	956	818	725	657	605	562	528	498	442	400	368
	¾	3,030	2,080	1,670	1,430	1,270	1,150	1,060	983	922	871	772	700	644
Pipe Size***	**½**	2,680	1,840	1,480	1,260	1,120	1,010	934	869	815	770	682	618	569
	¾	5,590	3,850	3,090	2,640	2,340	2,120	1,950	1,820	1,700	1,610	1,430	1,290	1,190
	1	10,500	7,240	5,820	4,980	4,410	4,000	3,680	3,420	3,210	3,030	2,690	2,440	2,240
	1 ¼	21,600	14,900	11,900	10,200	9,060	8,210	7,550	7,020	6,590	6,230	5,520	5,000	4,600
	1 ½	32,400	22,300	17,900	15,300	13,600	12,300	11,300	10,500	9,880	9,330	8,270	7,490	6,890
	2	62,400	42,900	34,500	29,500	26,100	23,700	21,800	20,300	19,000	18,000	15,900	14,400	13,300
	2 ½	99,500	68,400	54,900	47,000	41,700	37,700	34,700	32,300	30,300	28,600	25,400	23,000	21,200
	3	176,000	121,000	97,100	83,100	73,700	66,700	61,400	57,100	53,600	50,600	44,900	40,700	37,400
	4	359,000	247,000	198,000	170,000	150,000	136,000	125,000	116,000	109,000	103,000	91,500	82,900	76,300
		200	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**700**	**750**	**800**	**850**
Copper Tubing (O.D.)**	**⅜**	82	72	66	60	56	53	50	47	45	43	41	40	39
	½	168	149	135	124	116	109	103	97	93	89	86	82	80
	⅝	343	304	275	253	235	221	209	198	189	181	174	168	162
	¾	599	531	481	442	411	386	365	346	330	316	304	293	283
Pipe Size***	**½**	529	469	425	391	364	341	322	306	292	280	269	259	250
	¾	1,110	981	889	817	760	714	674	640	611	585	562	541	523
	1	2,080	1,850	1,670	1,540	1,430	1,340	1,270	1,210	1,150	1,100	1,060	1,020	985
	1 ¼	4,600	3,790	3,440	3,160	2,940	2,760	2,610	2,480	2,360	2,260	2,170	2,090	2,020
	1 ½	6,890	5,680	5,150	4,740	4,410	4,130	3,910	3,710	3,540	3,390	3,260	3,140	3,030
	2	13,300	10,900	9,920	9,120	8,490	7,960	7,520	7,140	6,820	6,530	6,270	6,040	5,830
	2 ½	21,200	17,400	15,800	14,500	13,500	12,700	12,000	11,400	10,900	10,400	9,900	9,630	9,300
	3	37,400	30,800	27,900	25,700	23,900	22,400	21,200	20,100	19,200	18,400	17,700	17,000	16,400
	4	76,300	62,900	57,000	52,400	48,800	45,800	43,200	41,100	39,200	37,500	36,000	34,700	33,500
		900	**950**	**1,000**	**1,100**	**1,200**	**1,300**	**1,400**	**1,500**	**1,600**	**1,700**	**1,800**	**1,900**	**2,000**
Copper Tubing (O.D.)**	**⅜**	36	35	34	32	31	30	28	27	26	26	25	24	23
	½	75	72	71	67	64	61	59	57	55	53	51	50	48
	⅝	152	147	143	136	130	124	120	115	111	108	104	101	99
	¾	265	258	251	238	227	217	209	201	194	188	182	177	172
Pipe Size***	**½**	235	228	222	210	201	192	185	178	172	166	161	157	152
	¾	490	476	463	440	420	402	386	372	359	348	337	327	318
	1	924	807	873	829	791	757	727	701	677	655	635	617	600
	1 ¼	1,900	1,840	1,790	1,700	1,620	1,550	1,490	1,440	1,390	1,340	1,300	1,270	1,230
	1 ½	2,840	2,760	2,680	2,550	2,430	2,330	2,240	2,160	2,080	2,010	1,950	1,900	1,840
	2	5,470	5,310	5,170	4,910	4,680	4,490	4,310	4,150	4,010	3,880	3,760	3,650	3,550
	2 ½	8,720	8,470	8,240	7,830	7,470	7,150	6,870	6,620	6,390	6,180	6,000	5,820	5,660
	3	15,400	15,000	14,600	13,800	13,200	12,600	12,100	11,700	11,300	10,900	10,600	10,300	10,000
	4	31,500	30,500	29,700	28,200	26,900	25,800	24,800	23,900	23,000	22,300	21,600	21,000	20,400

*Total length of piping from outlet of regulator to inlet of 2 psig Service/Line Pressure Regulator (or to inlet of regulator furthest away)
**Data referenced from NFPA 58 2020 Table 16.1(h)
***Data referenced from NFPA 58 2020 Table 16.1(b)

Table 7: Second stage or Integral Twin Stage Polyethylene Tubing or Pipe Sizing
11 in Water Column Inlet w/ a 0.5 -in Water Column Drop
Tubing in thousand of BTU/hr of undiluted LP-Gases (Propane)
(Based on 1.50 Specify Gravity Gas)

Size of Plastic Tubing in Inches		Length of Pipe or Tubing in Feet*									
NPS	**SDR**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
½ T**	**7**	121	83	67	57	51	46	42	39	37	35
½***	**9.33**	340	233	187	160	142	129	119	110	103	98
¾***	**11**	680	486	375	321	285	258	237	221	207	196
1 T**	**11**	828	569	457	391	347	314	289	269	252	238
1***	**11**	1,230	844	677	580	514	466	428	398	374	353
1 ¼***	**11**	2,130	1,460	1,170	1,000	890	807	742	690	648	612
1 ½***	**11**	3,210	2,210	1,770	1,520	1,340	1,220	1,120	1,040	978	924
2***	**11**	5,770	3,970	3,180	2,730	2,420	2,190	2,010	1,870	1,760	1,660
3***	**11**	16,000	11,000	8,810	7,540	6,680	6,050	5,570	5,180	4,860	4,590
4***	**11**	30,900	21,200	17,000	14,600	12,900	11,700	10,800	10,000	9,400	8,900
		125	**150**	**175**	**200**	**250**	**300**	**350**	**400**	**450**	**500**
½ T**	**7**	31	28	26	24	21	19	18	16	15	15
½***	**9.33**	87	78	72	67	60	54	50	46	43	41
¾***	**11**	173	157	145	135	119	108	99	92	87	82
1 T**	**11**	211	191	176	164	145	132	121	113	106	100
1***	**11**	313	284	261	243	215	195	179	167	157	148
1 ¼***	**11**	542	491	452	420	373	338	311	289	271	256
1 ½***	**11**	819	742	683	635	563	510	469	436	409	387
2***	**11**	1,470	1,330	1,230	1,140	1,010	916	843	784	736	695
3***	**11**	4,070	3,690	3,390	3,160	2,800	2,530	2,330	2,170	2,040	1,920
4***	**11**	7,900	7,130	6,560	6,100	5,410	4,900	4,510	4,190	3,930	3,720

*Total length of piping from outlet of regulator to appliance furthest away.
**Data referenced from NFPA 58 2020 Table 16.1(p)
**Data referenced from NFPA 54 2018 Table 6.3.1 (k)

Notes:

1. T = Tube Size
2. All entries are rounded to 3 significant digits

Table 8: Polyethylene Tubing or Pipe Sizing

2 PSIG Inlet with a 1 PSIG Pressure Drop (Between 2 PSIG Service and Line Pressure Regulator)
Tubing in thousands of BTU/hr of undiluted LP-Gases (Propane)
(Based on 1.50 Specify Gravity Gas)

Size of Plastic Tubing in Inches**		*Total length of piping from outlet of regulator to appliance furthest away.										
NPS	**SDR**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**	**125**
½	**9.33**	3,130	2,150	1,730	1,480	1,310	1,190	1,090	1,010	952	899	797
¾	**11**	6,260	4,300	3,450	2,960	2,620	2,370	2,180	2,030	1,910	1,800	1,600
1	**11**	11,300	7,760	6,230	5,330	4,730	4,280	3,940	3,670	3,440	3,250	2,880
1 ¼	**11**	19,600	13,400	10,800	9,240	8,190	7,420	6,830	6,350	5,960	5,630	4,990
1 ½	**11**	29,500	20,300	16,300	14,000	12,400	11,200	10,300	9,590	9,000	8,500	7,530
2	**11**	53,100	36,500	29,300	25,100	22,200	20,100	18,500	17,200	16,200	15,300	13,500
3	**11**	147,000	101,000	81,100	69,400	61,500	55,700	51,300	47,700	44,700	42,300	37,500
4	**11**	284,000	195,000	157,000	134,100	119,000	108,000	99,100	92,200	86,500	81,700	72,400
		150	**175**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
½	**9.33**	722	664	618	548	496	457	425	399	377	358	341
¾	**11**	1,450	1,330	1,240	1,100	994	914	851	798	754	716	683
1	**11**	2,610	2,400	2,230	1,980	1,790	1,650	1,530	1,440	1,360	1,290	1,230
1 ¼	**11**	4,520	4,160	3,870	3,430	3,110	2,860	2,660	2,500	2,360	2,240	2,140
1 ½	**11**	6,830	6,280	5,840	5,180	4,690	4,320	4,020	3,770	3,560	3,380	3,220
2	**11**	12,300	11,300	10,500	9,300	8,430	7,760	7,220	6,770	6,390	6,070	5,790
3	**11**	33,900	31,200	29,000	25,700	23,300	21,500	12,000	18,700	17,700	16,800	16,000
4	**11**	65,600	60,300	56,100	49,800	45,100	41,500	38,600	36,200	34,200	32,500	31,000
		650	**700**	**750**	**800**	**850**	**900**	**950**	**1,000**	**1,100**	**1,200**	**1,300**
½	**9.33**	327	314	302	292	283	274	266	259	246	234	225
¾	**11**	654	628	605	585	566	549	533	518	492	470	450
1	**11**	1,180	1,130	1,090	1,050	1,020	990	961	935	888	847	811
1 ¼	**11**	2,040	1,960	1,890	1,830	1,770	1,710	1,670	1,620	1,540	1,470	1,410
1 ½	**11**	3,090	2,970	2,860	2,760	2,670	2,590	2,520	2,450	2,320	2,220	2,120
2	**11**	5,550	5,330	5,140	4,960	4,800	4,650	4,520	4,400	4,170	3,980	3,810
3	**11**	15,400	14,700	14,200	13,700	13,300	12,900	12,500	12,200	11,500	11,000	10,600
4	**11**	29,700	28,500	27,500	26,500	25,700	24,900	24,200	23,500	22,300	21,300	20,400
		1,400	**1,500**	**1,600**	**1,700**	**1,800**	**1,900**	**2,000**				
½	**9.33**	216	208	201	194	188	183	178	N/A			
¾	**11**	432	416	402	389	377	366	356				
1	**11**	779	751	725	702	680	661	643				
1 ¼	**11**	1,350	1,300	1,260	1,220	1,180	1,140	1,110				
1 ½	**11**	2,040	1,960	1,900	1,840	1,780	1,730	1,680				
2	**11**	3,660	3,530	3,410	3,300	3,200	3,110	3,020				
3	**11**	10,100	9,760	9,430	9,130	8,850	8,590	8,360				
4	**11**	19,600	18,900	18,200	17,600	17,100	16,600	16,200				

*Total length of piping from outlet of regulator to inlet of 2 psig Service/Line Pressure Regulator (or to inlet of regulator furthest away)
**Data referenced from NFPA 54 2018 Table 6.3.1 (l)

Should you have any questions or concern, please contact me.

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