

PIPING PRESSURE LOSSES FOR LOW PRESSURE NATURAL GAS

Inches w.c. per 100 ft. of Schedule 40 pipe

Scfh Nat. Gas	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
25	0.3	—	—	—	—	—	—
50	1.1	0.3	—	—	—	—	—
75	2.5	0.7	—	—	—	—	—
100	4.4	1.2	0.3	—	—	—	—
125	6.9	1.9	0.4	—	—	—	—
150	9.9	2.8	0.6	—	—	—	—
175	13.5	3.8	0.9	—	—	—	—
200	17.6	5.0	1.1	0.3	—	—	—
300	—	11.2	2.5	0.7	—	—	—
400	—	19.8	4.5	1.2	0.3	—	—
500	—	—	7.0	1.9	0.5	—	—
600	—	—	10.1	2.8	0.7	0.3	—
700	—	—	13.8	3.8	0.9	0.4	—
800	—	—	18.0	4.9	1.2	0.5	—
900	—	—	—	6.3	1.5	0.7	—
1,000	—	—	—	7.7	1.9	0.8	—
1,500	—	—	—	17.4	4.2	1.9	0.5
2,000	—	—	—	—	7.5	3.3	0.9
2,500	—	—	—	—	11.8	5.2	1.3
3,000	—	—	—	—	16.9	7.5	1.9
4,000	—	—	—	—	—	13.2	3.4
5,000	—	—	—	—	—	20.7	5.4
6,000	—	—	—	—	—	—	7.7
7,000	—	—	—	—	—	—	10.5
8,000	—	—	—	—	—	—	13.8
9,000	—	—	—	—	—	—	17.4

PIPING PRESSURE LOSSES FOR LOW PRESSURE NATURAL GAS

Inches w.c. per 100 ft. of Schedule 40 pipe

Scfh Nat. Gas	2-1/2"	3"	4"	6"	8"
2,000	0.3	—	—	—	—
2,500	0.5	—	—	—	—
3,000	0.8	0.3	—	—	—
4,000	1.3	0.4	—	—	—
5,000	2.1	0.7	—	—	—
6,000	3.0	1.0	—	—	—
7,000	4.1	1.4	0.3	—	—
8,000	5.4	1.8	0.4	—	—
9,000	6.8	2.3	0.6	—	—
10,000	8.4	2.8	0.7	—	—
12,000	12.1	4.0	1.0	—	—
14,000	16.4	5.5	1.4	—	—
16,000	—	7.2	1.8	—	—
18,000	—	9.1	2.2	0.3	—
20,000	—	11.2	2.8	0.3	—
22,000	—	13.6	3.3	0.4	—
24,000	—	16.1	4.0	0.4	—
26,000	—	18.9	4.7	0.5	—
28,000	—	—	5.4	0.6	—
30,000	—	—	6.2	0.7	—
35,000	—	—	8.5	1.0	—
40,000	—	—	11.0	1.2	0.3
45,000	—	—	14.0	1.6	0.3
50,000	—	—	17.3	2.0	0.4
55,000	—	—	20.9	2.4	0.5
60,000	—	—	—	2.8	0.6
70,000	—	—	—	3.8	0.8

Scfh Nat. Gas	Inches w.c. per 100 ft of Schedule 40 pipe	
	6"	8"
80,000	5.0	1.1
90,000	6.3	1.4
100,000	7.8	1.7
110,000	9.4	2.1
120,000	11.2	2.4
130,000	13.2	2.9
140,000	15.3	3.3
150,000	17.6	3.8
200,000	—	6.8
250,000	—	10.6
300,000	—	15.3

HIGH PRESSURE (COMPRESSIBLE) FLOW OF NATURAL GAS IN PIPES

Flows in table are scfh of 0.6 sp. gr. natural gas

Pipe Size, Inches	Inlet Pressure, PSIG	Pressure Drop Per 100 Equivalent Feet of Pipe as a Percentage of Inlet Pressure				
		2%	4%	6%	8%	10%
1	2	340	480	590	680	760
	5	590	840	1030	1180	1320
	10	930	1320	1610	1850	2070
	20	1570	2210	2700	3110	3470
	50	3380	4770	5820	6690	7450
1-1/4	2	710	1010	1230	1420	1590
	5	1230	1740	2130	2450	2740
	10	1950	2760	3370	3880	4330
	20	3260	4600	5620	6470	7210
	50	7040	9910	12,090	13,910	15,490
1-1/2	2	1080	1530	1870	2160	2410
	5	1860	2630	3220	3710	4140
	10	2940	4160	5080	5850	6530
	20	4930	6960	8490	9780	10,900
	50	10,640	15,000	18,290	21,040	23,430
2	2	2100	2980	3640	4200	4700
	5	3630	5120	6270	7230	8070
	10	5740	8090	9890	11,400	12,720
	20	9610	13,550	16,540	19,050	21,230
	50	20,720	29,190	35,610	40,960	45,610
2-1/2	2	3390	4810	5880	6780	7580
	5	5850	8260	10,100	11,650	13,010
	10	9240	13,040	15,940	18,370	20,500
	20	15,480	21,840	26,660	30,700	34,220
	50	33,400	47,050	57,400	66,010	73,510
3	2	6060	8590	10,500	12,120	13,540
	5	10,450	14,760	18,050	20,820	23,240
	10	16,510	23,290	28,480	32,810	36,610
	20	27,650	38,990	47,620	54,820	61,110
	50	59,640	84,010	102,500	117,880	131,270
4	2	12,480	17,690	21,620	24,960	27,890
	5	21,520	30,400	37,180	42,890	47,880
	10	34,000	47,980	58,650	67,580	75,410
	20	56,960	80,320	98,090	112,930	125,880
	50	122,850	173,070	211,140	242,840	270,420
6	2	37,250	52,800	64,560	74,510	83,270
	5	64,240	90,760	111,010	128,040	142,950
	10	101,520	143,260	175,120	201,780	225,150
	20	170,060	239,810	292,840	337,150	375,820
	50	366,770	516,680	630,360	724,970	807,320

EQUIVALENT LENGTHS OF STANDARD PIPE FITTINGS & VALVES

VALVES FULLY OPEN

Pipe Size	I.D. Inches	Gate	Globe	Angle	Swing Check	90° Elbow	45° Elbow	90° Tee, Flow Through Run	90° Tee, Flow Through Branch
1/2"	0.622	0.35	18.6	9.3	4.3	1.6	0.78	1.0	3.1
3/4"	0.824	0.44	23.1	11.5	5.3	2.1	0.97	1.4	4.1
1"	1.049	0.56	29.4	14.7	6.8	2.6	1.23	1.8	5.3
1-1/4"	1.380	0.74	38.6	19.3	8.9	3.5	1.6	2.3	6.9
1-1/2"	1.610	0.86	45.2	22.6	10.4	4.0	1.9	2.7	8.0
2"	2.067	1.10	58	29	13.4	5.2	2.4	3.5	10.4
2-1/2"	2.469	1.32	69	35	15.9	6.2	2.9	4.1	12.4
3"	3.068	1.60	86	43	19.8	7.7	3.6	5.1	15.3
4"	4.026	2.1	112	56	26.8	10.1	5.4	6.7	20.1
6"	6.065	2.6	140	70	40.4	15.2	8.1	10.1	30.3

Equivalent lengths are for standard screwed fittings and for screwed, flanged, or welded valves relative to schedule 40 steel pipe.