

Equivalent Number Of Feet Straight Pipe For Different Fittings

Size of fittings, Inches	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"
90° Ell	1.5	2.0	2.7	3.5	4.3	5.5	6.5	8.0	10.0	14.0	15	20	25
45° Ell	0.8	1.0	1.3	1.7	2.0	2.5	3.0	3.8	5.0	6.3	7.1	9.4	12
Long Sweep Ell	1.0	1.4	1.7	2.3	2.7	3.5	4.2	5.2	7.0	9.0	11.0	14.0	
Close Return Bend	3.6	5.0	6.0	8.3	10.0	13.0	15.0	18.0	24.0	31.0	37.0	39.0	
Tee-Straight Run	1	2	2	3	3	4	5						
Tee-Side Inlet or Outlet or Pitless Adapter	3.3	4.5	5.7	7.6	9.0	12.0	14.0	17.0	22.0	27.0	31.0	40.0	
Ball or Globe Valve Open	17.0	22.0	27.0	36.0	43.0	55.0	67.0	82.0	110.0	140.0	160.0	220.0	
Angle Valve Open	8.4	12.0	15.0	18.0	22.0	28.0	33.0	42.0	58.0	70.0	83.0	110.0	
Gate Valve-Fully Open	0.4	0.5	0.6	0.8	1.0	1.2	1.4	1.7	2.3	2.9	3.5	4.5	
Check Valve (Swing)	4	5	7	9	11	13	16	20	26	33	39	52	65
In Line Check Valve (Spring) or Foot Valve	4	6	8	12	14	19	23	32	43	58			

Theoretical Discharge Of Nozzles In GPM

Head psi	Velocity of disch. ft/sec	Diamters of Nozzle in Inches												
		1/16	1/8	3/16	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8
10	38.6	0.37	1.48	3.32	5.91	13.3	23.6	36.9	53.1	72.4	94.5	120	148	179
15	47.25	0.45	1.81	4.06	7.24	16.3	28.9	45.2	65.0	88.5	116	147	181	219
20	54.55	0.52	2.09	4.69	8.35	18.8	33.4	52.2	75.1	102	134	169	209	253
25	61.0	0.58	2.34	5.25	9.34	21.0	37.3	58.3	84.0	114	149	189	234	283
30	66.85	0.64	2.56	5.75	10.2	23.0	40.9	63.9	92.0	125	164	207	256	309
35	72.2	0.69	2.77	6.21	11.1	24.8	44.2	69.0	99.5	135	177	224	277	334
40	77.2	0.74	2.96	6.64	11.8	26.6	47.3	73.8	106	145	188	239	296	357
45	81.8	0.78	3.13	7.03	12.5	28.2	50.1	78.2	113	153	200	253	313	379
50	86.25	0.83	3.30	7.41	13.2	29.7	52.8	82.5	119	162	211	267	330	399
55	90.5	0.87	3.46	7.77	13.8	31.1	55.3	86.4	125	169	221	280	346	418
60	94.5	0.90	3.62	8.12	14.5	32.5	57.8	90.4	130	177	231	293	362	438
65	98.3	0.94	3.77	8.45	15.1	33.8	60.2	94.0	136	184	241	305	376	455
70	102.1	0.98	3.91	8.78	15.7	35.2	62.5	97.7	141	191	250	317	391	473
75	105.7	1.01	4.05	9.08	16.2	36.4	64.7	101	146	198	259	327	404	489
80	109.1	1.05	4.18	9.39	16.7	37.6	66.8	104	150	205	267	338	418	505
85	112.5	1.08	4.31	9.67	17.3	38.8	68.9	108	155	211	276	349	431	521
90	115.8	1.11	4.43	9.95	17.7	39.9	70.8	111	160	217	284	359	443	536
95	119.0	1.14	4.56	10.2	18.2	41.0	72.8	114	164	223	292	369	456	551
100	122.0	1.17	4.67	10.5	18.2	41.1	74.7	117	168	229	299	378	467	565
105	125.0	1.20	4.79	10.8	19.2	43.1	76.5	120	172	234	306	388	479	579
110	128.0	1.23	4.90	11.0	19.6	44.1	78.4	122	176	240	314	397	490	593
115	130.9	1.25	5.01	11.2	20.0	45.1	80.1	125	180	245	320	406	501	606
120	133.7	1.28	5.12	11.5	20.5	46.0	81.8	128	184	251	327	414	512	619
130	139.1	1.33	5.33	12.0	21.3	48.0	85.2	133	192	261	341	432	533	645
140	144.3	1.38	5.53	12.4	22.1	49.8	88.4	138	199	271	354	448	553	668
150	149.5	1.43	5.72	12.9	22.9	51.6	91.5	143	206	280	366	463	572	692
175	161.4	1.55	6.18	13.9	24.7	55.6	98.8	154	222	302	395	500	618	747
200	172.6	1.65	6.61	14.8	26.4	59.5	106	165	238	323	423	535	660	799
250	193.0	1.85	7.39	16.6	29.6	66.5	118	185	266	362	473	598	739	894
300	211.2	2.02	8.08	18.2	32.4	72.8	129	202	291	396	517	655	808	977