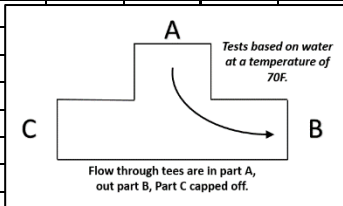




**Friction Loss in Sanitary OD Tubing and Fittings**

Loss of Head in feet per foot of SS tube and in feet for fittings

	O.D. Tube Size																	
	1"			1 1/2"			2"			2 1/2"			3"			4"		
	I.D. = 0.870"			I.D. = 1.370"			I.D. = 1.870"			I.D. = 2.370"			I.D. = 2.870"			I.D. = 3.834"		
CIP Flow	9.3 gpm			23 gpm			43 gpm			68 gpm			100 gpm			180 gpm		
Volume	0.033 gal/ft			0.081 gal/ft			0.142 gal/ft			0.221 gal/ft			0.336 gal/ft			0.601 gal/ft		
Capacity (gpm)	Tubing	Elbow	Tee	Tubing	Elbow	Tee	Tubing	Elbow	Tee	Tubing	Elbow	Tee	Tubing	Elbow	Tee	Tubing	Elbow	Tee
2	0.01	0.01	0.1															
4	0.025	0.02	0.2															
5	0.035	0.025	.25															
10	0.12	0.06	0.4	0.02	0.01	0.15	0.005	0.015	0.1									
15	0.25	0.1	0.8	0.04	0.02	0.25	0.013	0.02	0.15									
20	0.43	0.22	1.5	0.06	0.03	0.3	0.02	0.025	0.2	0.005	0.02	0.1	0.003	0.02	0.06			
25	0.66	0.4	2.3	0.08	0.04	0.4	0.025	0.03	0.25	0.006	0.03	0.15	0.004	0.03	0.08			
30	0.93	0.7	3.3	0.105	0.06	0.55	0.035	0.05	0.3	0.008	0.05	0.2	0.005	0.04	0.1			
35	1.22	1.25	5.2	0.135	0.09	0.8	0.04	0.06	0.4	0.011	0.06	0.25	0.006	0.05	0.13			
40				0.17	0.11	1.0	0.05	0.08	0.5	0.015	0.07	0.3	0.007	0.06	0.15			
45				0.21	0.16	1.3	0.063	0.1	0.6	0.02	0.09	0.35	0.008	0.065	0.18			
50				0.25	0.2	1.6	0.073	0.12	0.7	0.022	0.1	0.4	0.01	0.07	0.2			
60				0.34	0.35	2.2	0.1	0.18	0.9	0.03	0.12	0.45	0.015	0.08	0.25			
80				0.57	0.76	3.7	0.16	0.3	1.5	0.05	0.15	0.55	0.02	0.1	0.4			
100				0.85	1.35	5.8	0.23	0.44	2.3	0.075	0.18	0.6	0.03	0.11	0.5	0.008	0.01	0.1
120				1.18	2.05	9.1	0.32	0.64	3.3	0.105	0.21	1.0	0.04	0.13	0.6	0.01	0.05	0.15
140							0.42	0.85	4.5	0.14	0.23	1.25	0.05	0.16	0.8	0.013	0.06	0.2
160							0.54	1.13	5.8	0.17	0.28	1.6	0.07	0.2	1.1	0.015	0.07	0.25
180							0.67	1.46	7.4	0.205	0.31	2.0	0.08	0.21	1.3	0.02	0.08	0.3
200							0.81	1.82	9.0	0.245	0.35	2.5	0.1	0.25	1.6	0.025	0.09	0.4
220							0.95	2.22	11.0	0.29	0.41	3.0	0.12	0.3	1.9	0.028	0.1	0.5
240							1.10	2.63	13.5	0.34	0.48	3.7	0.14	0.33	2.2	0.035	0.11	0.55
260										0.39	0.53	4.5	0.165	0.39	2.5	0.01	0.115	0.6
280										0.45	0.63	5.3	0.19	0.42	2.8	0.045	0.12	0.65
300										0.515	0.7	6.2	0.22	0.5	3.1	0.05	0.13	0.7
350										0.68	1.05	8.5	0.28	0.67	4.1	0.07	0.15	0.9
400										0.86	1.55	11.0	0.36	0.88	5.2	0.085	0.18	1.2
450										1.05	2.25	13.5	0.44	1.1	6.6	0.105	0.2	1.5
500													0.54	1.4	8.0	0.13	0.23	1.75
550													0.64	1.7	9.5	0.15	0.27	2.1
600													0.75	2.05	10.2	0.175	0.3	2.5
650													0.87	2.41	13.0	0.2	0.34	2.8
700													1.0	2.8	15.0	0.23	0.4	3.4
750																0.26	0.43	3.8
800																0.3	0.5	4.4
850																0.33	0.56	5.0
900																0.37	0.62	5.7
950																0.41	0.7	6.3
1000																0.45	0.8	7.0
1100																0.53	1.06	8.6



Source: National Association of Food and Dairy Equipment Manufacturers

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