

Column Friction Loss Open and Enclosed Line-Shaft 14"-24"

COL.SIZE	14"					16"				
TUBE SIZE	2 1/2	3	3 1/2	4	5	2 1/2	3	3 1/2	4	5
SHAFT SIZE	1 1/2 1 11/16	1 15/16 2 3/16	2 7/16	2 11/16	2 15/16 3 11/16	1 1/2 1 11/16	1 15/16 2 3/16	2 7/16 2 15/16	2 11/16 3 11/16	2 15/16
GPM	COLUMN FRICTION LOSS (IN FEET) PER 100 FEET OF COLUMN									
2000			1.05							
2200	.95	1.07	1.24							
2400	1.13	1.26	1.46							
2600	1.30	1.46	1.68							
2800	1.50	1.67	1.93	2.01	2.52					1.00
3000	1.68	1.90	2.20	2.30	2.87			.99	1.03	1.10
3200	1.90	2.13	2.45	2.55	3.20		1.00	1.12	1.17	1.30
3400	2.14	2.38	2.72	2.85	3.60	1.03	1.12	1.25	1.30	1.40
3600	2.38	2.65	3.04	3.17	4.00	1.14	1.24	1.38	1.44	1.60
3800	2.62	2.90	3.35	3.50	4.40	1.25	1.37	1.53	1.60	1.80
4000	2.90	3.20	3.67	3.85	4.85	1.37	1.50	1.66	1.75	1.90
4200	3.15	3.50	4.00	4.20	5.25	1.49	1.64	1.83	1.90	2.10
4400	3.45	3.80	4.35	4.55	5.70	1.63	1.79	2.00	2.08	2.30
4600	3.70	4.10	4.72	4.95	6.20	1.77	1.93	2.16	2.25	2.50
4800	4.00	4.45	5.15	5.40	6.75	1.90	2.10	2.32	2.42	2.70
5000	4.35	4.80	5.53	5.80	7.20	2.06	2.25	2.52	2.63	2.90
5500	5.15	5.70	6.50	6.80	8.60	2.45	2.70	2.98	3.10	3.50
6000	6.10	6.70	7.65	8.00	9.99	2.87	3.13	3.48	3.60	4.10
6500	7.10	7.70	8.85	9.30	11.70	3.30	3.60	4.03	4.20	4.70
7000	8.10	8.90	10.30	10.80	13.60	3.80	4.15	4.62	4.80	5.40
7500	9.20	10.20	11.18	12.40	15.60	4.30	4.70	5.27	5.50	6.10
8000	10.50	11.60	13.40	14.10		4.80	5.25	5.87	6.10	6.85
8500	11.80	13.10	13.10	15.90		5.40	5.90	6.55	6.80	7.60
9000	13.20	14.70				6.00	6.50	7.30	7.60	8.30
9500	14.80	16.40				6.60	7.20	8.05	8.40	9.00
10000	16.40					7.25	7.90	8.85	9.20	9.80
10500						7.99	8.71	9.76	10.10	10.80
11000						8.77	9.56	10.70	11.10	11.90
11500						9.59	10.40	11.70	12.20	13.00
12000						10.40	11.40	12.70	13.20	14.10
12500						11.30	12.30	13.80	14.30	15.30
13000						12.30	13.40	15.00	15.50	
13500						13.20	14.40			
14000						14.20	15.20			
14500						15.20				

COL. SIZE	18"				20"				24"			
TUBE SIZE	3	3 1/2	4	5	3	3 1/2	4	5	3	3 1/2	4	5
SHAFT SIZE	1 15/16 2 3/16	2 7/16	2 11/16	2 15/16 3 11/16	1 15/16 2 3/16	2 7/16	2 11/16	2 15/16 3 11/16	1 15/16 2 3/16	2 7/16	2 11/16	2 15/16 3 11/16
GPM	COLUMN FRICTION LOSS (IN FEET) PER 100 FEET OF COLUMN											
8500	3.70	4.20	4.55	6.20	1.90	2.20	2.55	3.40				1.04
9000	4.20	4.60	5.10	6.90	2.10	2.50	2.85	3.75				1.15
9500	4.60	5.15	5.60	7.60	2.35	2.75	3.07	4.15				1.32
10000	5.00	5.60	6.20	8.35	2.55	3.00	3.45	4.55			1.08	1.40
10500	5.50	6.10	6.70	9.20	2.80	3.30	3.80	5.00		1.05	1.20	1.54
11000	6.00	6.60	7.30	10.00	3.05	3.55	4.10	5.40		1.12	1.30	1.65
11500	6.40	7.20	8.00	13.20	3.30	3.85	4.50	5.85		1.20	1.40	1.80
12000	7.00	7.80	8.60	14.00	3.55	4.20	4.85	6.30		1.32	1.50	1.94
12500	7.50	8.20	9.20	15.60	3.85	4.50	5.20	6.80	1.25	1.42	1.60	2.07
13000	8.10	9.00	10.00		4.10	4.85	5.60	7.30	1.35	1.52	1.75	2.25
13500	8.70	9.80	10.80		4.40	5.25	6.00	7.80	1.45	1.65	1.87	2.40
14000	9.30	10.50	11.50		4.75	5.60	6.40	8.40	1.55	1.75	2.00	2.57
14500	10.00	11.30	12.40		5.05	6.00	6.90	9.00	1.65	1.85	2.15	2.75
15000	10.70	12.10	13.30		5.40	6.30	7.30	9.60	1.77	2.00	2.25	2.90
15500	11.40	12.90	14.20		5.70	6.80	7.80	10.30	1.87	2.10	2.42	3.10

Notes: For open line-shaft use shaft size, for enclosed line-shaft use tube size.