

Column Friction Loss 200.B.04 *(Effective June 1, 2006)*

Loss in Feet per 100 ft. of Column 0 - 2,700 GPM

Column Size	3"			4"			5"			6"				8"			10"				12"				Column Size		
Shaft Size	¾	1	1 ³ / ₁₆	¾	1	1 ³ / ₁₆	¾	1	1 ³ / ₁₆	1	1 ³ / ₁₆	1½	1 ¹⁵ / ₁₆	1 ³ / ₁₆	1½	1 ¹⁵ / ₁₆	1 ³ / ₁₆	1½	1 ¹⁵ / ₁₆	2 ³ / ₁₆	1 ³ / ₁₆	1½	1 ¹⁵ / ₁₆	2 ³ / ₁₆	Shaft Size		
GPM												1 ¹¹ / ₁₆		1 ¹¹ / ₁₆				1 ¹¹ / ₁₆		2 ⁷ / ₁₆		1 ¹¹ / ₁₆		2 ⁷ / ₁₆	GPM		
30	1.9	2.6	5.2			0.7																				30	
40	3.1	4.2	8.4			1.1																					40
50	4.4	6.1	12.1			1.6																					50
60	6.0	8.3	16.2		1.2	2.2																					60
70	7.8	11.0	20.8	1.2	1.6	2.9																					70
80	9.8	14.2	25.9	1.5	1.9	3.6																					80
90	11.5	17.0	31.6	1.8	2.4	4.4																					90
100	20.0	20.1	37.5	2.2	2.9	5.3																					100
125	28.0	29.0	54.2	3.3	4.3	7.6		1.0	1.4				0.9														125
150				4.4	5.7	10.4	1.1	1.3	1.9				1.3														150
175				5.9	7.6	13.5	1.5	1.8	2.5			1.2	1.7														175
200				7.3	9.5	16.8	1.9	2.2	3.2		1.0	1.4	2.2														200
225				9.0	11.8	20.2	2.3	2.7	3.8		1.2	1.7	2.7														225
250				10.7	13.9	24.3	2.7	3.3	4.7	1.1	1.4	2.0	3.3														250
275				12.8	16.3	29.0	3.2	3.9	5.5	1.3	1.7	2.4	3.9														275
300				14.8	18.8	32.5	3.8	4.5	6.4	1.5	2.0	2.8	4.5														300
325				17.3	21.4	37.0	4.3	5.2	7.4	1.7	2.2	3.1	5.2														325
350				19.5	24.1	42.0	4.9	5.9	8.4	2	2.6	3.7	6.0														350
375				21.8	27.7	47.2	5.5	6.6	9.3	2.2	3.0	4.2	6.7														375
400				24.0	30.4	52.5	6.2	7.5	10.6	2.5	3.3	4.6	7.5														400
425							7.0	8.4	13.0	2.8	3.7	5.2	8.3			1.0											425
450							7.7	9.3	13.0	3.1	4.1	5.8	9.2			1.3											450
475							8.5	10.2	14.3	3.4	4.5	6.3	10.3		1.0	1.4											475
500							9.3	11.1	15.6	3.8	5.0	6.9	11.3		1.1	1.5											500
550							11.0	13.3	18.4	4.5	5.9	8.2	13.0	1.1	1.3	1.8											550
600							12.8	15.5	21.1	5.2	6.9	9.5	15.0	1.3	1.5	2.1											600
650										6.0	8	11.0	17.6	1.4	1.8	2.4											650
700										6.9	9.1	12.5	20.3	1.7	2.1	2.8											700
750										7.8	10.0	14.0	22.8	1.9	2.3	3.2											750
800										8.7	11.3	15.5	25.0	2.2	2.6	3.6									0.9		800
850										9.8	12.5	17.6	28.0	2.3	2.8	4									1.1		850
900										10.6	14.0	19.1	31.0	2.7	3.2	4.5								1	1.2		900
950										11.8	15.7	21.3	34.0	2.8	3.4	4.8							1.1	1.3			950
1000										12.8	17.1	22.9	37.4	3.3	3.9	5.4						1	1.2	1.4			1000
1100										15.2	20.5	27.4		4.0	4.8	5.8	1	1.2	1.4	1.7							1100
1200										18.0	24.0	32.0		4.5	5.4	7.5	1.2	1.4	1.6	2							1200
1300														5.3	6.3	8.7	1.3	1.6	1.9	2.3							1300
1400														6.0	7.2	10.1	1.6	1.8	2.2	2.6						1	1400
1500														6.8	8.1	11.3	1.8	2.0	2.4	3.0						1.1	1500
1600														7.6	9.1	12.7	2	2.3	2.8	3.4						1.2	1600
1700														8.4	10.0	14.3	2.2	2.5	3.1	3.8		1.0	1.1	1.4			1700
1800														9.4	11.2	15.9	2.5	2.9	3.5	4.2	1.0	1.1	1.3	1.5			1800
1900														10.2	12.4	17.5	2.8	3.1	3.7	4.6	1.1	1.2	1.4	1.6			1900
2000														11.3	13.6	19.1	3.1	3.5	4.2	5.1	1.2	1.4	1.6	1.8			2000
2100																	3.3	3.8	4.6	5.6	1.3	1.5	1.7	2			2100
2200																	3.6	4.2	5.0	6.0	1.5	1.7	1.9	2.2			2200
2300																	3.8	4.5	5.4	6.6	1.8	1.8	2.0	2.4			2300
2400																	4.3	4.9	5.8	7.1	1.7	1.9	2.2	2.5			2400
2500																	4.7	5.2	6.2	7.7	1.9	2.1	2.4	2.8			2500
2600																	4.9	5.6	6.8	8.3	2.0	2.2	2.7	3.0			2600
2700																	5.2	6	7.2	9.0	2.1	2.4	2.8	3.2			2700
2800																					2.3	2.5	3	3.4			2800
2900																					2.4	2.7	3.2	3.6			2900
3000																					2.6	2.9	3.4	3.9			3000

Tabulated values are for open and enclosed lineshaft.

Column Friction Loss 200.B.04A (Effective June 1, 2006)

Loss in Feet per 100 ft. of Column 2,000 - 30,000 GPM

Column Size	12"				14"				16"				18"				20"				24"				Column Size				
Shaft Size	1 ³ / ₁₆	1 ¹ / ₂	1 ¹⁵ / ₁₆	2 ³ / ₁₆	1 ¹ / ₂	1 ¹⁵ / ₁₆	2 ³ / ₁₆	1 ¹ / ₂	1 ¹⁵ / ₁₆	2 ³ / ₁₆	2 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	2 ³ / ₁₆	2 ¹¹ / ₁₆	2 ¹⁵ / ₁₆	1 ¹⁵ / ₁₆	2 ³ / ₁₆	2 ¹¹ / ₁₆	2 ¹⁵ / ₁₆	2 ³ / ₁₆	2 ¹¹ / ₁₆	2 ¹⁵ / ₁₆	2 ³ / ₁₆	2 ¹¹ / ₁₆	2 ¹⁵ / ₁₆	Shaft Size			
GPM	1 ¹¹ / ₁₆				2 ⁷ / ₁₆				1 ¹¹ / ₁₆				2 ⁷ / ₁₆				3 ³ / ₁₆				2 ⁷ / ₁₆				3 ³ / ₁₆				GPM
2000	1.2	1.4	1.6	1.8																							2000		
2100	1.3	1.5	1.7	2			1																				2100		
2200	1.5	1.7	1.9	2.2		1	1.1																				2200		
2300	1.8	1.8	2.0	2.4		1.1	1.2																				2300		
2400	1.7	1.9	2.2	2.5	1	1.1	1.3																				2400		
2500	1.9	2.1	2.4	2.8	1.1	1.2	1.4																				2500		
2600	2.0	2.2	2.7	3.0	1.2	1.3	1.5																				2600		
2700	2.1	2.4	2.8	3.2	1.3	1.4	1.7																				2700		
2800	2.3	2.5	3	3.4	1.4	1.5	1.7																				2800		
2900	2.4	2.7	3.2	3.6	1.5	1.6	1.8																				2900		
3000	2.6	2.9	3.4	3.9	1.5	1.7	1.9				1.0																3000		
3200	2.9	3.0	3.6	4.1	1.7	1.9	2.2			1.0	1.1																3200		
3400	3.3	3.7	4.2	4.8	1.9	2.1	2.4		1.0	1.1	1.2																3400		
3600	3.6	3.8	4.4	5	2.1	2.4	2.6	1	1.1	1.2	1.4																3600		
3800	4.0	4.5	5.1	5.9	2.3	2.6	2.9	1.1	1.2	1.4	1.5																3800		
4000	4.4	4.9	5.7	6.5	2.6	2.9	3.2	1.2	1.4	1.5	1.6																4000		
4200	4.9	5.4	6.2	7.1	2.8	3.1	3.5	1.3	1.5	1.6	1.8							1.0									4200		
4400	5.3	5.8	6.7	7.7	3.1	3.4	3.8	1.4	1.6	1.8	1.9			1.0	1.1												4400		
4600	5.8	6.3	7.3	8.3	3.3	3.7	4.1	1.6	1.8	2	2.1		1.0	1.1	1.2												4600		
4800	6.2	6.8	7.9	9	3.6	4	4.5	1.7	1.9	2.1	2.3	1.0	1.1	1.2	1.3												4800		
5000	6.8	7.4	8.5	9.7	3.9	4.3	4.8	1.8	2.1	2.3	2.5	1.1	1.2	1.3	1.4												5000		
5500	8.1	8.9	10.2	11.6	4.7	5.2	5.8	2.2	2.5	2.7	3.0	1.3	1.4	1.5	1.7							1.0					5500		
6000	9.5	10.3	11.9	13.6	5.4	6	6.7	2.6	2.9	3.2	3.5	1.4	1.5	1.8	2							1.0	1.2				6000		
6500	11.0	11.7	13.7	15.7	6.3	7	7.3	3	3.4	3.8	4.1	1.5	1.6	2.1	2.3			1.1	1.3	1.4	1.6						6500		
7000		13.6	15.5	17.9	7.2	8	8.9	3.5	3.9	4.3	4.7	1.7	1.8	2.4	2.6	1.1	1.3	1.4	1.6								7000		
7500					8.2	9.2	10.2	4	4.5	5	5.4	1.8	1.9	2.8	2.9	1.3	1.4	1.6	1.8								7500		
8000					9.3	10.5		4.5	5.1	5.6	6.1	2.0	2.1	3.1	3.3	1.5	1.6	1.8	2.0								8000		
8500					10.6			5.1	5.6	6.3	6.8	2.1	2.3	3.4	3.7	1.7	1.8	2	2.3								8500		
9000								5.7	6.4	7	7.6	2.3	2.5	3.9	4.1	1.9	2.0	2.2	2.5								9000		
9500								6.3	7.0	7.8	8.5	2.7	3.0	4.2	4.5	2.1	2.2	2.5	2.8						1		9500		
10000								7	7.8	8.6	9.4	3.2	3.4	4.7	5	2.3	2.5	2.7	3.1					1	1.1		10000		
10500								7.6	8.5	9.4	10	3.7	4.0	5.1	5.5	2.5	2.7	3	3.4	1	1.1	1.2					10500		
11000								8.3	9.3	10.2		4.2	4.6	5.5	6	2.7	3.0	3.3	3.7	1.1	1.2	1.4					11000		
11500								9.1	10.1			4.9	5.3	6	6.5	3.0	3.2	3.6	4.0	1.2	1.3	1.5					11500		
12000								10				5.6	6.0	6.6	7	3.2	3.5	3.8	4.3	1.3	1.4	1.6					12000		
12500												6.3	6.7	7.1	7.5	3.5	3.8	4.2	4.7	1.4	1.5	1.7					12500		
13000												7.0	7.4	7.6	8.2	3.7	4.1	4.5	5.1	1.5	1.6	1.8					13000		
13500												7.7	8.1	8.2	8.8	4.0	4.4	4.8	5.5	1.6	1.7	2.0					13500		
14000												8.4	8.9	8.8	9.5	4.3	4.7	5.2	5.8	1.8	1.9	2.1					14000		
15000												9.1	9.8			4.9	5.4	5.9	6.6	2.0	2.2	2.4					15000		
16000												9.9	10.7			5.5	6.0	6.6	7.5	2.3	2.4	2.7					16000		
18000												10.7	11.7			6.9	7.6	8.3	9.4	2.8	3.0	3.4					18000		
20000												11.6	12.8			8.5	9.3	10.5		3.4	3.7	4.1					20000		
22000																10.5				4.1	4.4	4.9					22000		
24000																				4.8	5.2	5.8					24000		
26000																				5.6	6.0	6.7					26000		
28000																				6.4	6.9	7.4					28000		
30000																				7.3	7.8	8.8					30000		

Tabulated values are for open and enclosed lineshaft.

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