

# Column Load Calculations

## 200.B.05 *(Effective May, 2021)*

Inch Per 100 Feet of Column

Column Load (lb)	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
500	0.007	0.005	0.004	0.003								
600	0.008	0.006	0.005	0.004								
800	0.011	0.008	0.006	0.005								
1000	0.013	0.010	0.008	0.006	0.004							
1200	0.016	0.012	0.009	0.007	0.005							
1400	0.019	0.014	0.011	0.008	0.006							
1600	0.021	0.016	0.012	0.009	0.007	0.005						
1800	0.024	0.018	0.014	0.011	0.008	0.006						
2000	0.027	0.020	0.015	0.012	0.009	0.007						
2400	0.032	0.023	0.019	0.014	0.010	0.008	0.006					
2800	0.037	0.027	0.022	0.016	0.012	0.010	0.007					
3200	0.043	0.031	0.025	0.019	0.014	0.011	0.008					
3600	0.048	0.035	0.028	0.021	0.016	0.012	0.009					
4000		0.039	0.031	0.023	0.017	0.014	0.010					
4400		0.043	0.034	0.026	0.019	0.015	0.011					
4800		0.047	0.037	0.028	0.021	0.016	0.013	0.010	0.009	0.008	0.007	0.006
5200		0.051	0.040	0.030	0.023	0.018	0.014	0.011	0.010	0.009	0.008	0.007
5600		0.055	0.043	0.033	0.024	0.019	0.015	0.012	0.011	0.010	0.009	0.008
6000			0.046	0.035	0.026	0.020	0.016	0.013	0.011	0.009	0.007	0.005
6500			0.050	0.038	0.028	0.022	0.017	0.014	0.012	0.010	0.008	0.006
7000			0.054	0.041	0.030	0.024	0.018	0.015	0.013	0.011	0.009	0.007
7500			0.058	0.044	0.033	0.025	0.020	0.016	0.014	0.012	0.010	0.008
8000			0.062	0.047	0.035	0.027	0.021	0.017	0.015	0.013	0.011	0.009
9000				0.053	0.039	0.030	0.023	0.019	0.017	0.015	0.013	0.011
10000				0.059	0.043	0.034	0.026	0.021	0.019	0.017	0.015	0.013
12000				0.070	0.052	0.041	0.031	0.025	0.023	0.021	0.019	0.017
14000				0.082	0.061	0.048	0.036	0.029	0.026	0.023	0.020	0.017
16000				0.094	0.070	0.054	0.042	0.034	0.030	0.026	0.022	0.018
18000					0.078	0.061	0.047	0.038	0.034	0.030	0.026	0.022
20000					0.087	0.068	0.052	0.042	0.037	0.032	0.027	0.022
22000					0.096	0.075	0.057	0.046	0.041	0.036	0.031	0.026
24000					0.104	0.082	0.063	0.050	0.045	0.040	0.035	0.030
26000					0.113	0.088	0.068	0.055	0.049	0.043	0.037	0.031
28000						0.095	0.073	0.059	0.052	0.045	0.038	0.031
30000						0.102	0.078	0.063	0.056	0.049	0.042	0.035
32000						0.109	0.083	0.067	0.060	0.053	0.046	0.039
34000						0.115	0.089	0.071	0.064	0.057	0.050	0.043
36000						0.122	0.094	0.076	0.068	0.060	0.052	0.044
38000						0.129	0.099	0.080	0.071	0.062	0.053	0.044
40000						0.136	0.104	0.084	0.075	0.066	0.057	0.048

Follow the horizontal Column Load line to the particular Column Size and read the column elongation per 100 feet of column. See back page for Column Load calculation.

# Column Load Calculations

## 200.B.06 *(Effective May, 2021)*

### Column Load = TPH x SG x (KW - K)

TPH = Total Pump Head (ft.)

SG = Specific Gravity

KW = Column Load Factor (See table below)

Column Size (in.)	Column Load Factor (KW)
3	2.26
4	3.58
5	5.85
6	8.34
8	16.7
10	29.9
12	42.8
14	52.8
16	64
18	82
20	102
24	150

### **EXAMPLE:**

12CHC Bowl with TPH = 650 ft., SG = 1.0, Column Size 8"  
Temperature ambient, K = 7.5 ( From the performance Curve)

$$\begin{aligned}\text{Column Load} &= \text{TPH} \times \text{SG} \times (\text{KW} - \text{K}) \\ &= 650 \times 1.0 \times (16.7 - 7.5) \\ &= 5980 \text{ lbs.}\end{aligned}$$

From the table on the front side, For 8" column, the column elongation equals 0.026 inches per 100 feet of column. Subtract the total column elongation from the total shaft elongation. The resulting net shaft elongation is then compared to the available lateral.

This chart is based on ambient temperature and all high temperature application and all applications where insufficient column elongation is obtained should be referred to the factory.

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