Total Dynamic Head Worksheet

During pump operation, how far is it from the surface of the water to the top of the well? If this distance is not known, use the depth of the well._____ft.

How far (in feet) will you be piping the water? (length of pipe from pump to tank)
What size will the pipe be (in inches)?
How many gallons per minute will you be pumping through the pipe?

Using the answers from these 3 questions, refer to the friction loss tables below to determine this figure as expressed in feet of head per 100' of distance._____ft.

As you pipe the water to its point of use, will it be going uphill, downhill, or basically level? Express this in a positive figure for uphill, a negative figure for downhill, and record it as feet of elevation rise or fall._____ft

After the water has reached its point of use, how much pressure will you need? Many applications will be installed with a pressure switch that turns the pump on at 40 psi, and off at 60 psi. To express pressure in feet of head, multiply cutoff pressure x 2.31 (example: 60 psi x 2.31= 115.5 ft of head).
Cutoff pressure =_____psi (x 2.31) = _____ft

Now total all the feet of head figures from above and arrive at your Total Dynamic Head (TDH) _____

PIPE FRICTION LOSS CHART
Loss of Head in feet due to friction (per 100 feet of pipe)

1/2"

Flow U.S. Gal. Min.	Velocity ft / sec	Plastic C = 140 ID .622"	Steel C = 100 ID .622"	Copper C = 130 ID .625"
0.5	0.5	0.314	0.582	0.35
1	1.1	1.14	2.1	1.26
1.5	1.6	2.38	4.44	2.67
2	2.1	4.1	7.57	4.56
2.5	2.6	6.15	11.4	6.88
3	3.2	8.65	16	9.66
3.5	3.7	11.5	21.3	12.9
4	4.2	14.8	27.3	16.4
4.5	4.8	18.3	33.9	20.4
5	5.3	22.2	41.2	24.8
5.5	5.8	26.6	49.2	29.5
6	6.3	31.2	57.8	34.8
6.5	6.9	36.2	67	40.2
7	7.4	41.5	76.8	46.1
7.5	7.9	47.2	87.3	52.5
8	8.4	53	98.3	59.4
8.5	9.0	59.5	110	66
9	9.5	66	122	73.5
9.5	10.0	73	135	81
10	10.6	80.5	149	89.4

3/4"

Flow U.S. Gal. Min.	Velocity ft / sec	Plastic C = 140 ID .824"	Steel C = 100 ID .824"	Copper C = 130 ID .822"
1.5	0.9	0.61	1.13	0.7
2	1.20	1.04	1.93	1.21
2.5	1.5	1.57	2.91	1.82
3	1.8	2.21	4.08	2.56
3.5	2.1	2.93	5.42	3.4
4	2.4	3.74	6.94	4.36
4.5	2.7	4.66	8.63	5.4
5	3.0	5.66	10.5	6.57
6	3.6	7.95	14.7	9.22
7	4.2	10.6	19.6	12.2
8	4.8	13.5	25	15.7
9	5.4	16.8	31.1	19.5
10	6.0	20.4	37.8	23.7
11	6.6	24.4	45.1	28.2
12	7.2	28.6	53	33.2
13	7.8	33.2	61.5	38.5
14	8.4	38	70.5	44.2
16	9.6	48.6	90.2	56.6
18	10.8	60.5	112	70.4
20	12.0	73.5	136	83.5

1"

Flow U.S. Gal. Min.	Velocity ft / sec	Plastic C = 140 ID 1.049"	Steel C = 100 ID 1.049"	Copper C = 130 ID 1.062"
2	0.74	0.322	0.595	0.345
3	1.1	0.68	1.26	0.732
4	1.5	1.15	2.14	1.24
5	1.9	1.75	3.42	1.88
6	2.2	2.45	4.54	2.63
8	3.0	4.16	7.73	4.5
10	3.7	6.31	11.7	6.77
12	4.5	8.85	16.4	9.47
14	5.2	11.8	21.8	12.6
16	5.9	15.1	27.9	16.2
18	6.7	18.7	34.7	20.1
20	7.4	22.8	42.1	24.4
22	8.2	27.1	50.2	28.8
24	8.9	31.9	59	34
26	9.7	36.9	68.4	39.7
28	10.4	42.5	78.5	45.5
30	11.1	48.1	89.2	51.6
35	13.0	64.3	119	68.7
40	14.8	82	152	88
45	16.7	102	189	109

1-1/4"

Flow U.S. Gal. Min.	Velocity ft / sec	Plastic C = 140 ID 1.380"	Steel C = 100 ID 1.380"	Copper C = 130 ID 1.368"
4	0.9	0 .304	0.564	0.364
5	1.1	0.46	0.853	0.545
6	1.3	0.649	1.2	0.765
7	1.5	0.86	1.59	1.02
8	1.7	1.1	2.04	1.31
10	2.1	1.67	3.08	1.98
12	2.6	2.33	4.31	2.75
14	3.0	3.1	5.73	3.64
16	3.4	3.96	7.34	4.68
18	3.9	4.93	9.13	5.81
20	4.3	6	11.1	7.1
25	5.4	9.06	16.8	10.7
30	6.4	12.7	23.5	15
35	7.5	16.9	31.2	20
40	8.6	21.6	40	25.6
50	10.7	32.6	60.4	38.7
60	12.9	45.6	84.7	54.1
70	15.0	61.5	114	72.2
80	17.2	77.9	144	92.4
90	19.3	96.6	179	115

1-1/2"

Flow U.S. Gal. Min.	Velocity ft / sec	Plastic C = 140 ID 1.61"	Steel C = 100 ID 1.61"	Copper C = 130 ID 1.60"
4	0.6	0.144	0.267	0.165
6	0.9	0.305	0.565	0.358
8	1.3	0.52	0.962	0.611
10	1.6	0.785	1.45	0.923
12	1.9	1.1	2.04	1.29
14	2.2	1.46	2.71	1.71
16	2.5	1.87	3.47	2.2
18	2.8	2.33	4.31	2.75
20	3.2	2.83	5.24	3.31
25	3.9	4.26	7.9	5
30	4.7	6	11.1	7
35	5.5	7.94	14.7	9.35
40	6.3	10.2	18.9	12
45	7.1	12.63	23.4	14.9
50	7.9	15.4	28.5	18.1
55	8.7	18.35	34	21.5
60	9.5	21.6	40	25.3
65	10.2	25.1	46.4	29
70	11.0	28.7	53.2	33.8
75	11.8	32.6	60.4	38
80	12.6	36.8	68.1	43.1
85	13.4	41.2	76.2	47.6
90	14.2	45.7	84.7	53.6
95	15.0	50.5	93.6	58.8
100	15.8	56.6	103	65.1

2"

Flow U.S. Gal. Min.	Velocity ft / sec	Plastic C = 140 ID 2.067"	Steel C = 100 ID 2.067"	Copper C = 130 ID 2.062"
10	1.0	0.233	0.431	0.268
15	1.4	0.495	0.916	0.569
20	1.9	0.839	1.55	0.962
25	2.4	1.27	2.35	1.45
30	2.9	1.78	3.29	2.03
35	3.3	2.36	4.37	2.71
40	3.8	3.03	5.6	3.47
45	4.3	3.76	6.96	4.31
50	4.8	4.57	8.46	5.24
55	5.3	5.46	10.1	6.22
60	5.7	6.44	11.9	7.34
70	6.7	8.53	15.8	9.78
80	7.6	10.9	20.2	12.5
90	8.6	13.6	25.1	15.6
100	9.6	16.5	30.5	18.9
110	10.5	19.7	36.4	22.5
120	11.5	23.1	42.7	26.6
130	12.4	26.8	49.6	30.7
140	13.4	30.6	56.9	35.2
150	14.3	35	64.7	40.1
160	15.3	39.3	72.8	45.1
170	16.3	44	81.4	50.5
180	17.2	48.9	90.5	56.1
190	18.2	54	100	62
200	19.1	59.4	110	68

2-1/2"

Flow U.S. Gal. Min.	Velocity ft / sec	Plastic C = 140 ID 2.469"	Steel C = 100 ID 2.469"	Copper C = 130 ID 2.500"
20	1.3	0.353	0.654	0.375
30	2.0	0.75	1.39	0.792
40	2.7	1.27	2.36	1.35
50	3.4	1.92	3.56	2.04
60	4.0	2.69	4.99	2.86
70	4.7	3.58	6.64	3.82
80	5.4	4.59	8.5	4.88
90	6.0	5.72	10.6	6.06
100	6.7	6.9	12.8	7.37
110	7.4	8.25	15.3	8.8
120	8.0	9.71	18	10.3
130	8.7	11.3	20.9	12
140	9.4	12.9	23.9	13.7
150	10.1	14.7	27.3	15.6
160	10.7	16.6	30.7	17.6
170	11.4	18.5	34.3	19.7
180	12.1	20.6	38.1	21.9
190	12.7	22.7	42.1	24.2
200	13.4	25	46.3	26.6
220	14.7	29.8	55.3	31.8
240	16.1	35.8	66.4	37.4
260	17.4	41.6	75.3	43.3
280	18.8	46.6	86.3	49.4
300	20.1	52.9	98.1	56.8

NOTE:
Recommended velocity is 5 FPS (feet per second) with a maximum of 7 FPS.