

## ENVIRO-TEC Riser Sizing Spreadsheet Template

This spreadsheet is a tool to allow you to quickly check riser sizing or to size risers for stack fan coil system.

All blue fields with red font are editable fields and require your input.

1. Enter into Table 1 the "Unit Tag" and "Unit GPM at Floor" for your project based on your unit selections from Web-Select..
2. Determine from your customer's consulting engineer the "Max GPM" for chilled water and hot water for each riser diameter and enter that data into Table 2. The default limits in the spreadsheet have been set according to the Reference table. Note that velocities should be less for hot water greater than 150 F.
3. The default limits already take into account load diversity on the larger riser sizes.
3. Select the appropriate table from: "Risers fed from the top," "Risers fed from the bottom," and single unit per floor/riser and Master/Slave unit per floor/riser.
4. Enter A, B, C, D, E, or F from Table 1 into the "Enter:Unit Tag" column, designated in red, and the Unit Tag column will automatically update and calculate GPM at Floor, Cumulative GPM and Riser Size. Only enter data in cells that are in red.
5. Check the resulting riser sizes. Note that the risers must not change by more than one size from floor to floor.
6. Print the output or copy and save the table to preserve a record of each riser.

Note: Use Type L copper if the job exceeds 12 floors.

Table 1			Table 2		
Selection	Unit Tag	Unit GPM at Floor	Riser Diameter	Chilled Water User Max GPM	Hot Water User Max GPM
A	FCU-A-300	1.8	Call Factory > 3"	1000	1000
B	FCU-B-400	2.25	3"	170	106
C	FCU-C-600	3.34	2.5"	112	74
D	FCU-D-800	3.66	2"	68	43
E	FCU-E-1000	5.6	1.5"	36	25
F	FCU-F-1200	6.7	1.25"	24	16
			1"	14	10
			0.75"	8	5

Reference						
Riser Diameter	GPM in L Copper			Velocity in FPS at this GPM		
	Chilled Water	Hot Water		Chilled Water	Hot Water	
		<= 150F	> 150F		<= 150F	> 150F
3"	170	106	64	8.0	5.0	3.0
2.5"	112	74	45	7.5	5.0	3.0
2"	68	43	24	7.0	4.5	2.5
1.5"	36	25	14	6.5	4.5	2.5
1.25"	24	16	8	6.0	4.0	2.0
1"	14	10	5	5.5	4.0	2.0
0.75"	8	5	3	5.0	3.5	2.0

Risers fed from the top.

Enter: Unit Tag	Riser Number Floor Number	Column A Unit Tag	GPM at Floor	Cumulative GPM	CW Riser Size	HW Riser Size
D	30	FCU-D-800	3.66	61.06	2"	2.5"
D	29	FCU-D-800	3.66	57.4	2"	2.5"
A	28	FCU-A-300	1.8	53.74	2"	2.5"
B	27	FCU-B-400	2.25	51.94	2"	2.5"
C	26	FCU-C-600	3.34	49.69	2"	2.5"
B	25	FCU-B-400	2.25	46.35	2"	2.5"
A	24	FCU-A-300	1.8	44.1	2"	2.5"
A	23	FCU-A-300	1.8	42.3	2"	2"
A	22	FCU-A-300	1.8	40.5	2"	2"
A	21	FCU-A-300	1.8	38.7	2"	2"
B	20	FCU-B-400	2.25	36.9	2"	2"
A	19	FCU-A-300	1.8	34.65	1.5"	2"
A	18	FCU-A-300	1.8	32.85	1.5"	2"
A	17	FCU-A-300	1.8	31.05	1.5"	2"
B	16	FCU-B-400	2.25	29.25	1.5"	2"
A	15	FCU-A-300	1.8	27	1.5"	2"
A	14	FCU-A-300	1.8	25.2	1.5"	2"
A	13	FCU-A-300	1.8	23.4	1.25"	1.5"
A	12	FCU-A-300	1.8	21.6	1.25"	1.5"
A	11	FCU-A-300	1.8	19.8	1.25"	1.5"
A	10	FCU-A-300	1.8	18	1.25"	1.5"
A	9	FCU-A-300	1.8	16.2	1.25"	1.5"
A	8	FCU-A-300	1.8	14.4	1.25"	1.25"
A	7	FCU-A-300	1.8	12.6	1"	1.25"
A	6	FCU-A-300	1.8	10.8	1"	1.25"
A	5	FCU-A-300	1.8	9	1"	1"
A	4	FCU-A-300	1.8	7.2	0.75"	1"
A	3	FCU-A-300	1.8	5.4	0.75"	1"
A	2	FCU-A-300	1.8	3.6	0.75"	0.75"
A	1	FCU-A-300	1.8	1.8	0.75"	0.75"

Risers fed from the bottom.

Enter: Unit Tag	Riser Number Floor Number	Column A Unit Tag	GPM at Floor	Cumulative GPM	CW Riser Size	HW Riser Size
D	30	FCU-D-800	3.66	3.66	0.75"	0.75"
D	29	FCU-D-800	3.66	7.32	0.75"	1"
D	28	FCU-D-800	3.66	10.98	1"	1.25"
D	27	FCU-D-800	3.66	14.64	1.25"	1.25"
D	26	FCU-D-800	3.66	18.3	1.25"	1.5"
D	25	FCU-D-800	3.66	21.96	1.25"	1.5"
D	24	FCU-D-800	3.66	25.62	1.5"	2"
D	23	FCU-D-800	3.66	29.28	1.5"	2"
D	22	FCU-D-800	3.66	32.94	1.5"	2"

D	21	FCU-D-800	3.66	36.6	2"	2"
D	20	FCU-D-800	3.66	40.26	2"	2"
D	19	FCU-D-800	3.66	43.92	2"	2.5"
D	18	FCU-D-800	3.66	47.58	2"	2.5"
D	17	FCU-D-800	3.66	51.24	2"	2.5"
D	16	FCU-D-800	3.66	54.9	2"	2.5"
D	15	FCU-D-800	3.66	58.56	2"	2.5"
D	14	FCU-D-800	3.66	62.22	2"	2.5"
D	13	FCU-D-800	3.66	65.88	2"	2.5"
D	12	FCU-D-800	3.66	69.54	2.5"	2.5"
D	11	FCU-D-800	3.66	73.2	2.5"	2.5"
D	10	FCU-D-800	3.66	76.86	2.5"	3"
D	9	FCU-D-800	3.66	80.52	2.5"	3"
D	8	FCU-D-800	3.66	84.18	2.5"	3"
D	7	FCU-D-800	3.66	87.84	2.5"	3"
D	6	FCU-D-800	3.66	91.5	2.5"	3"
D	5	FCU-D-800	3.66	95.16	2.5"	3"
D	4	FCU-D-800	3.66	98.82	2.5"	3"
D	3	FCU-D-800	3.66	102.48	2.5"	3"
D	2	FCU-D-800	3.66	106.14	2.5"	Call Factory > 3"
D	1	FCU-D-800	3.66	109.8	2.5"	Call Factory > 3"

Master/Slave Risers

Risers fed from the top.

Enter: Master Unit Tag	Riser Number Floor Number	Column A Unit Tag	GPM at Floor	Enter: Slave Unit Tag	Column A Unit Tag	GPM at Floor	Total GPM	Cumulative GPM	CW Riser Size	HW Riser Size
D	30	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	160.08	3"	Call Factory > 3"
D	29	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	152.76	3"	Call Factory > 3"
D	28	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	145.44	3"	Call Factory > 3"
D	27	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	138.12	3"	Call Factory > 3"
D	26	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	130.8	3"	Call Factory > 3"
D	25	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	123.48	3"	Call Factory > 3"
D	24	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	116.16	3"	Call Factory > 3"
D	23	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	108.84	2.5"	Call Factory > 3"
D	22	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	101.52	2.5"	3"
D	21	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	94.2	2.5"	3"
D	20	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	86.88	2.5"	3"
D	19	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	79.56	2.5"	3"
A	18	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	72.24	2.5"	2.5"
A	17	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	68.64	2.5"	2.5"
A	16	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	65.04	2"	2.5"
A	15	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	61.44	2"	2.5"
D	14	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	57.84	2"	2.5"
A	13	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	50.52	2"	2.5"
A	12	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	46.92	2"	2.5"
A	11	FCU-A-300	1.8	D	FCU-D-800	3.66	5.46	43.32	2"	2.5"
D	10	FCU-D-800	3.66	A	FCU-A-300	1.8	5.46	37.86	2"	2"
A	9	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	32.4	1.5"	2"
A	8	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	28.8	1.5"	2"
A	7	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	25.2	1.5"	2"
A	6	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	21.6	1.25"	1.5"
A	5	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	18	1.25"	1.5"
A	4	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	14.4	1.25"	1.25"
A	3	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	10.8	1"	1.25"
A	2	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	7.2	0.75"	1"
A	1	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	3.6	0.75"	0.75"

Master/Slave Risers

Risers fed from the bottom.

Enter: Master Unit Tag	Riser Number Floor Number	Column A Unit Tag	GPM at Floor	Enter: Slave Unit Tag	Column A Unit Tag	GPM at Floor	Total GPM	Cumulative GPM	CW Riser Size	HW Riser Size
D	30	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	7.32	0.75"	1"
D	29	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	14.64	1.25"	1.25"
A	28	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	18.24	1.25"	1.5"
A	27	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	21.84	1.25"	1.5"
A	26	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	25.44	1.5"	2"
A	25	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	29.04	1.5"	2"
D	24	FCU-D-800	3.66	D	FCU-D-800	3.66	7.32	36.36	2"	2"
A	23	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	39.96	2"	2"
A	22	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	43.56	2"	2.5"
D	21	FCU-D-800	3.66	A	FCU-A-300	1.8	5.46	49.02	2"	2.5"
A	20	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	52.62	2"	2.5"
A	19	FCU-A-300	1.8	B	FCU-B-400	2.25	4.05	56.67	2"	2.5"
A	18	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	60.27	2"	2.5"
A	17	FCU-A-300	1.8	C	FCU-C-600	3.34	5.14	65.41	2"	2.5"
A	16	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	69.01	2.5"	2.5"
C	15	FCU-C-600	3.34	B	FCU-B-400	2.25	5.59	74.6	2.5"	3"
A	14	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	78.2	2.5"	3"
A	13	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	81.8	2.5"	3"
A	12	FCU-A-300	1.8	A	FCU-A-300	1.8	3.6	85.4	2.5"	3"
B	11	FCU-B-400	2.25	A	FCU-A-300	1.8	4.05	89.45	2.5"	3"
B	10	FCU-B-400	2.25	A	FCU-A-300	1.8	4.05	93.5	2.5"	3"
B	9	FCU-B-400	2.25	A	FCU-A-300	1.8	4.05	97.55	2.5"	3"
B	8	FCU-B-400	2.25	A	FCU-A-300	1.8	4.05	101.6	2.5"	3"
B	7	FCU-B-400	2.25	A	FCU-A-300	1.8	4.05	105.65	2.5"	3"
B	6	FCU-B-400	2.25	A	FCU-A-300	1.8	4.05	109.7	2.5"	Call Factory > 3"
B	5	FCU-B-400	2.25	A	FCU-A-300	1.8	4.05	113.75	3"	Call Factory > 3"
B	4	FCU-B-400	2.25	A	FCU-A-300	1.8	4.05	117.8	3"	Call Factory > 3"
B	3	FCU-B-400	2.25	A	FCU-A-300	1.8	4.05	121.85	3"	Call Factory > 3"
B	2	FCU-B-400	2.25	A	FCU-A-300	1.8	4.05	125.9	3"	Call Factory > 3"
B	1	FCU-B-400	2.25	A	FCU-A-300	1.8	4.05	129.95	3"	Call Factory > 3"