Bay Voltex

BV Thermal Systems

Division of BUDZAR INDUSTRIES, INC.

Water Flow Recommendations

Water - Delivery Flow Velocity
Steel Pipes & Maximum Water Flow Capacity
Maximum Flow Velocities in Water Systems
Cooling Water Pipe Lines - Main Pipes & Lateral Pipes
Water Flow based on Pipe Size and Inside/Outside Diameters
PolyeEthylene Pipes, Flow and Pressure Loss (1/2" - 6")

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Water - Delivery Flow Velocity			
Normal Pipe Size		Water Delivery Velocity	
Inch	mm	m/s	ft/s
1	25	1	3.5
2	50	1.1	3.6
3	75	1.15	3.8
4	100	1.25	4
6	150	1.5	4.7
8	200	1.75	5.5
10	250	2	6.5
12	300	2.65	8.5

Steel Pipes & Maximum Water Flow Capacity			
Pipe Size (in)	Maximum Flow (gal.min)	Velocity (ft/s)	Head Loss (ft H20/100ft, m/100m)
2	45	4.3	3.9
2 1/2	75	5.0	4.1
3	130	5.6	3.9
4	250	6.6	4.0
6	800	8.9	4.0
8	1600	10.3	3.8
10	3000	12.2	4.0
12	4700	13.4	4.0
14	6000	14.2	4.0
16	8000	14.5	3.5
18	10000	14.3	3.0
20	12000	13.8	2.4
24	18000	14.4	2.1

Maximum Flow Velocities in Water Systems		
Application	Maximum Velocity	
	m/s	ft/s
Tap Water (low noise)	0.5 - 0.7	1.6 - 2.3
Tap Water	1.0 - 2.5	3.3 - 8.2
Cooling Water	1.5 - 2.5	4.9 - 8.2
Suction boiler feed water	0.5 - 1.0	1.6 - 3.3
Discharge boiler feed water	1.5 - 2.5	4.9 - 8.2
Condensate	1.0 - 2.0	3.3 - 6.5
Heating circulation	1.3 - 3.0	3.3 - 9.8

Cooling Water Pipe Lines

Main Pipes
Maximum allowable flow, velocity and pressure drop

Pipe Size	Flow		Velocity		Pressure Drop	
(in)	*(US gpm)*	*(liter/s)*	*(ft/s)*	*(m/s)*	*(ft $_{H2O}$ /100 feet)*	*(Pa/100 m)*
4	140	9	3.5	1.1	2.2	21827
6	380	24	4.2	1.3	1.9	18877
8	650	41	4.2	1.3	1.4	13371
10	1100	69	4.2	1.3	1.2	11700
12	1800	114	4.5	1.4	1.2	12093
14	2200	139	5.1	1.6	1.1	11208
16	3300	208	5.9	1.8	1.2	11405
18	4500	284	6.2	1.9	1.2	11503
20	6000	379	6.7	2.0	1.2	11503
24	11000	694	7.8	2.4	1.2	11700
30	19000	1199	8.7	2.6	1.1	10913
3	70	4	3	0.9	2.3	22712

Cooling Water Pipe Lines

Lateral Pipes
Maximum allowable flow, velocity and pressure drop

Pipe Size	Flow		Velocity		Pressure Drop	
(in)	*(US gpm)*	*(liter/s)*	*(ft/s)*	*(m/s)*	*(ft $_{H2O}$ /100 feet)*	*(Pa/100 m)*
4	200	13	5.1	1.5	4.3	42179
6	500	32	5.6	1.7	3.2	31364
8	900	57	5.8	1.8	2.5	24383
10	1500	95	6.1	1.9	2.1	20745
12	2400	151	6.8	2.1	2.1	20647
14	3100	196	7.2	2.2	2.1	20647
16	4500	284	7.9	2.4	2.1	20549
18	6000	379	8.3	2.5	2	19565
3	100	6	4.3	1.3	4.5	43949

Water Flow (GPM/GPH) based on Pipe Size and Inside/Outside Diameters

			Assume Gravity to Low Pressure. About 6 f/s flow velocity, also suction side of pump		*Assume Average Pressure (20-100PSI). About 12 f/s flow velocity*		*Assume "High Pressure" PEAK flow. About 18 f/s flow velocity*	
Pipe Size (Sch. 40)	I.D. (range)	O.D.	GPM (w/ min. PSI loss & noise)	GPH (w/ min. PSI loss & noise)	GPM (w/ min. PSI loss & noise)	GPH (w/ min. PSI loss & noise)	GPM (w/ min. PSI loss & noise)	GPH (w/ min. PSI loss & noise)
1/2"	0.5 - 0.6"	0.85"	7	420	14	840	21	1,260
3/4"	0.75 - 0.85"	1.06"	11	660	23	1,410	36	2,160
1"	1 - 1.03"	1.33"	16	960	37	2,200	58	3,480
1-1/4"	1.25 - 1.36"	1.67"	25	1,500	62	3,750	100	6,000
1-1/2"	1.5 - 1.6"	1.9"	35	2,100	81	4,830	126	7,560
2"	1.95 - 2.05"	2.38"	55	3,300	127	7,650	200	12,00
2-1/2"	2.35 - 2.45"	2.89"	80	4,800	190	11,400	300	18,000
3"	2.9 - 3.05"	3.5"	140	8,400	273	16,350	425	25,500
4"	3.85 - 3.95"	4.5"	240	14,400	480	28,800	700	42,000
5"	4.95" - 5.05"	5.563"	380	22,800	750	45,000	1,100	66,000
6"	5.85 - 5.95"	6.61"	550	33,000	1100	66,000	1700	102,000
8"	7.96"	8.625"	950	57,000	1900	114,000	2800	168,000

PolyEthylene Pipes, Flow and Pressure Loss								
Nominal Pipe Size: 1/2"								
Flow			Velocity		Pressure Drop			
(m^3/s)	(liter/s)	(US gpm)	(m/s)	(ft/s)	(Pa/100m)	(mmH_2O/100m)	(psi/100ft)	(ftH_2O/100 ft)
3.00E-05	0.03	0.48	0.153	0.5	3550	362	0.157	0.36
4.00E-05	0.04	0.63	0.2	0.67	5785	590	0.26	0.59
5.00E-05	0.05	0.79	0.26	0.84	8629	880	0.38	0.88
6.00E-05	0.06	0.95	0.31	1	11834	1207	0.52	1.21
7.00E-05	0.07	1.11	0.36	1.17	15302	1560	0.68	1.56
8.00E-05	0.08	1.27	0.41	1.34	19460	1984	0.86	1.99
9.00E-05	0.09	1.43	0.46	1.51	23298	2376	1.03	2.4
1.00E-04	0.1	1.59	0.51	1.67	28763	2933	1.27	2.9
1.10E-04	0.11	1.74	0.56	1.84	33809	3447	1.49	3.5
1.20E-04	0.12	1.9	0.61	2	39052	3982	1.73	4
1.30E-04	0.13	2.1	0.66	2.2	44443	4532	1.96	4.5
1.40E-04	0.14	2.2	0.71	2.3	51543	5256	2.3	5.3
1.50E-04	0.15	2.4	0.77	2.5	57321	5845	2.5	5.9
1.60E-04	0.16	2.5	0.82	2.7	65218	6650	2.9	6.7
1.70E-04	0.17	2.7	0.87	2.8	71250	7265	3.1	7.3
1.80E-04	0.18	2.9	0.92	3	79879	8145	3.5	8.2
1.90E-04	0.19	3	0.97	3.2	89001	9075	3.9	9.1
2.00E-04	0.2	3.2	1.02	3.3	95329	9721	4.2	9.7
3.00E-04	0.3	4.8	1.53	5	199697	20363	8.8	20

PolyEthylene Pipes, Flow and Pressure Loss

Nominal Pipe Size: 3/4"

Inside Diameter: *0.021 m (0.82 inches)*

Flow			Velocity		Pressure Drop			
(m^3/s)	*(liter/s)*	*(US gpm)*	*(m/s)*	*(ft/s)*	*(Pa/100m)*	*(mmH_2O/100m)*	*(psi/100ft)*	*(ftH_2O/100ft)*
4.00E-05	0.04	0.63	0.115	0.38	1522	155	0.067	0.155
5.00E-05	0.05	0.79	0.144	0.47	2229	227	0.099	0.23
6.00E-05	0.06	0.95	0.173	0.57	3067	313	0.136	0.31
7.00E-05	0.07	1.11	0.2	0.66	3980	406	0.176	0.41
8.00E-05	0.08	1.27	0.23	0.76	4945	504	0.22	0.5
9.00E-05	0.09	1.43	0.26	0.85	6099	622	0.27	0.62
1.00E-04	0.1	1.59	0.29	0.95	7331	748	0.32	0.75
1.10E-04	0.11	1.74	0.32	1.04	8631	880	0.38	0.88
1.20E-04	0.12	1.9	0.35	1.14	9986	1018	0.44	1.02
1.30E-04	0.13	2.1	0.38	1.23	11720	1195	0.52	1.2
1.40E-04	0.14	2.2	0.4	1.33	13204	1346	0.58	1.35
1.50E-04	0.15	2.4	0.43	1.42	14711	1500	0.65	1.5
1.60E-04	0.16	2.5	0.46	1.52	16738	1707	0.74	1.71
1.70E-04	0.17	2.7	0.49	1.61	18323	1868	0.81	1.87
1.80E-04	0.18	2.9	0.52	1.7	20542	2095	0.91	2.1
1.90E-04	0.19	3	0.55	1.8	22888	2334	1.01	2.3
2.00E-04	0.2	3.2	0.58	1.89	24568	2505	1.09	2.5
3.00E-04	0.3	4.8	0.87	2.8	49929	5091	2.2	5.1
4.00E-04	0.4	6.3	1.15	3.8	85593	8728	3.8	8.7
5.00E-04	0.5	7.9	1.44	4.7	123833	12627	5.5	12.6
6.00E-04	0.6	9.5	1.73	5.7	171186	17456	7.6	17.5

PolyEthylene Pipes, Flow and Pressure Loss

Nominal Pipe Size: 1 1/4"

Inside Diameter: *0.035 m (1.38 inches)*

Flow			Velocity		Pressure Drop			
(m^3/s)	*(liter/s)*	*(US gpm)*	*(m/s)*	*(ft/s)*	*(Pa/100m)*	*(mmH_2O/100m)*	*(psi/100ft)*	*(ftH_2O/100 ft)*
1.30E-04	0.13	2.1	0.135	0.44	1041	106	0.046	0.106
1.40E-04	0.14	2.2	0.146	0.48	1178	120	0.052	0.12
1.50E-04	0.15	2.4	0.156	0.51	1317	134	0.058	0.134
1.60E-04	0.16	2.5	0.166	0.55	1459	149	0.064	0.149
1.70E-04	0.17	2.7	0.177	0.58	1647	168	0.073	0.168
1.80E-04	0.18	2.9	0.187	0.61	1797	183	0.079	0.183
1.90E-04	0.19	3	0.197	0.65	2002	204	0.088	0.2
2.00E-04	0.2	3.2	0.21	0.68	2157	220	0.095	0.22
3.00E-04	0.3	4.8	0.31	1.02	4437	452	0.196	0.45
4.00E-04	0.4	6.3	0.42	1.36	7395	754	0.33	0.75
5.00E-04	0.5	7.9	0.52	1.7	10785	1100	0.48	1.1
6.00E-04	0.6	9.5	0.62	2	14975	1527	0.66	1.53
7.00E-04	0.7	11.1	0.73	2.4	19628	2001	0.87	2
8.00E-04	0.8	12.7	0.83	2.7	24651	2514	1.09	2.5
9.00E-04	0.9	14.3	0.94	3.1	31199	3181	1.38	3.2
1.00E-03	1	15.9	1.04	3.4	36976	3770	1.63	3.8
1.10E-03	1.1	17.4	1.14	3.8	44741	4562	1.98	4.6
1.20E-03	1.2	19	1.25	4.1	51027	5203	2.3	5.2
1.30E-03	1.3	21	1.35	4.4	59886	6107	2.6	6.1
1.40E-03	1.4	22	1.46	4.8	69454	7082	3.1	7.1
1.50E-03	1.5	24	1.56	5.1	76263	7777	3.4	7.8
1.60E-03	1.6	25	1.66	5.5	86771	8848	3.8	8.9
1.70E-03	1.7	27	1.77	5.8	97956	9989	4.3	10
1.80E-03	1.8	29	1.87	6.1	109819	11198	4.9	11.2
1.90E-03	1.9	30	1.97	6.5	116799	11910	5.2	11.9
2.00E-03	2	32	2.1	6.8	129417	13197	5.7	13.2

PolyEthylene Pipes, Flow and Pressure Loss

Nominal Pipe Size: 1 1/2"

Inside Diameter: *0.041 m (1.61 inches)*

Flow			Velocity		Pressure Drop			
(m^3/s)	*(liter/s)*	*(US gpm)*	*(m/s)*	*(ft/s)*	*(Pa/100m)*	*(mmH_2O/100m)*	*(psi/100ft)*	*(ftH_2O/100 ft)*
2.00E-04	0.2	3.2	0.151	0.5	1034	105	0.046	0.106
3.00E-04	0.3	4.8	0.23	0.75	2074	212	0.092	0.21
4.00E-04	0.4	6.3	0.3	0.99	3464	353	0.153	0.35
5.00E-04	0.5	7.9	0.38	1.24	5064	516	0.22	0.52
6.00E-04	0.6	9.5	0.45	1.49	7040	718	0.31	0.72
7.00E-04	0.7	11.1	0.53	1.74	9240	942	0.41	0.94
8.00E-04	0.8	12.7	0.61	1.99	11622	1185	0.51	1.19
9.00E-04	0.9	14.3	0.68	2.2	14709	1500	0.65	1.5
1.00E-03	1	15.9	0.76	2.5	17461	1781	0.77	1.78
1.10E-03	1.1	17.4	0.83	2.7	21128	2154	0.93	2.2
1.20E-03	1.2	19	0.91	3	24138	2461	1.07	2.5
1.30E-03	1.3	21	0.98	3.2	28329	2889	1.25	2.9
1.40E-03	1.4	22	1.06	3.5	31486	3211	1.39	3.2
1.50E-03	1.5	24	1.14	3.7	36145	3686	1.6	3.7
1.60E-03	1.6	25	1.21	4	41124	4193	1.82	4.2
1.70E-03	1.7	27	1.29	4.2	44407	4528	1.96	4.5
1.80E-03	1.8	29	1.36	4.5	49785	5077	2.2	5.1
1.90E-03	1.9	30	1.44	4.7	55470	5656	2.5	5.7
2.00E-03	2	32	1.51	5	61463	6267	2.7	6.3
3.00E-03	3	48	2.3	7.5	125720	12820	5.6	12.8

PolyEthylene Pipes, Flow and Pressure Loss

Nominal Pipe Size: 2"

Inside Diameter: *0.053 m (2.1 inches)*

Flow			Velocity		Pressure Drop			
(m^3/s)	*(liter/s)*	*(US gpm)*	*(m/s)*	*(ft/s)*	*(Pa/100m)*	*(mmH_2O/100m)*	*(psi/100ft)*	*(ftH_2O/100ft)*
4.00E-04	0.4	6.3	0.181	0.59	1022	104	0.045	0.104
5.00E-04	0.5	7.9	0.23	0.74	1500	153	0.066	0.153
6.00E-04	0.6	9.5	0.27	0.89	2090	213	0.092	0.21
7.00E-04	0.7	11.1	0.32	1.04	2750	280	0.122	0.28
8.00E-04	0.8	12.7	0.36	1.19	3467	354	0.153	0.35
9.00E-04	0.9	14.3	0.41	1.34	4232	432	0.187	0.43
1.00E-03	1	15.9	0.45	1.49	5031	513	0.22	0.51
1.10E-03	1.1	17.4	0.5	1.64	6087	621	0.27	0.62
1.20E-03	1.2	19	0.54	1.78	6966	710	0.31	0.71
1.30E-03	1.3	21	0.59	1.93	8175	834	0.36	0.83
1.40E-03	1.4	22	0.63	2.1	9481	967	0.42	0.97
1.50E-03	1.5	24	0.68	2.2	10449	1065	0.46	1.07
1.60E-03	1.6	25	0.73	2.4	11888	1212	0.53	1.21
1.70E-03	1.7	27	0.77	2.5	13421	1369	0.59	1.37
1.80E-03	1.8	29	0.82	2.7	14419	1470	0.64	1.47
1.90E-03	1.9	30	0.86	2.8	16066	1638	0.71	1.64
2.00E-03	2	32	0.91	3	17802	1815	0.79	1.82
3.00E-03	3	48	1.36	4.5	36571	3729	1.62	3.7
4.00E-03	4	63	1.81	5.9	61919	6314	2.7	6.3
5.00E-03	5	79	2.3	7.4	91911	9372	4.1	9.4
6.00E-03	6	95	2.7	8.9	132351	13496	5.8	13.5
7.00E-03	7	111	3.2	10.4	170663	17403	7.5	17.4

PolyEthylene Pipes, Flow and Pressure Loss								
Nominal Pipe Size: 2 1/2"								
Inside Diameter: *0.063 m (2.5 inches)*								
Flow			**Velocity**		**Pressure Drop**			
(m^3/s)	***(liter/s)***	***(US gpm)***	***(m/s)***	***(ft/s)***	***(Pa/100m)***	***(mmH_2O/100m)***	***(psi/100ft)***	***(ftH_2O/100 ft)***
7.00E-04	0.7	11.1	0.22	0.74	1199	122	0.053	0.122
8.00E-04	0.8	12.7	0.26	0.84	1513	154	0.067	0.154
9.00E-04	0.9	14.3	0.29	0.95	1849	189	0.082	0.189
1.00E-03	1	15.9	0.32	1.05	2201	224	0.097	0.22
1.10E-03	1.1	17.4	0.35	1.16	2664	272	0.118	0.27
1.20E-03	1.2	19	0.38	1.26	3053	311	0.135	0.31
1.30E-03	1.3	21	0.42	1.37	3583	365	0.158	0.37
1.40E-03	1.4	22	0.45	1.47	3995	407	0.177	0.41
1.50E-03	1.5	24	0.48	1.58	4586	468	0.2	0.47
1.60E-03	1.6	25	0.51	1.68	5218	532	0.23	0.53
1.70E-03	1.7	27	0.55	1.79	5655	577	0.25	0.58
1.80E-03	1.8	29	0.58	1.89	6340	647	0.28	0.65
1.90E-03	1.9	30	0.61	2	7064	720	0.31	0.72
2.00E-03	2	32	0.64	2.1	7827	798	0.35	0.8
3.00E-03	3	48	0.96	3.2	16144	1646	0.71	1.65
4.00E-03	4	63	1.28	4.2	27396	2794	1.21	2.8
5.00E-03	5	79	1.6	5.3	40768	4157	1.8	4.2
6.00E-03	6	95	1.92	6.3	55771	5687	2.5	5.7
7.00E-03	7	111	2.2	7.4	75910	7741	3.4	7.7
8.00E-03	8	127	2.6	8.4	93929	9578	4.2	9.6
9.00E-03	9	143	2.9	9.5	118879	12122	5.3	12.1
1.00E-02	10	159	3.2	10.5	138611	14134	6.1	14.1
1.10E-02	11	174	3.5	11.6	167719	17102	7.4	17.1
1.20E-02	12	190	3.8	12.6	199600	20353	8.8	20

PolyEthylene Pipes, Flow and Pressure Loss								
Nominal Pipe Size: 3" Inside Diameter: *0.078 m (3.1 inches)*								
Flow			**Velocity**		**Pressure Drop**			
(m^3/s)	***(liter/s)***	***(US gpm)***	***(m/s)***	***(ft/s)***	***(Pa/100m)***	***(mmH_2O/100m)***	***(psi/100ft)***	***(ftH_2O/100 ft)***
1.20E-03	1.2	19	0.25	0.82	1130	115	0.05	0.115
1.30E-03	1.3	21	0.27	0.89	1279	130	0.057	0.131
1.40E-03	1.4	22	0.29	0.96	1483	151	0.066	0.151
1.50E-03	1.5	24	0.31	1.03	1640	167	0.072	0.167
1.60E-03	1.6	25	0.33	1.1	1865	190	0.082	0.19
1.70E-03	1.7	27	0.36	1.17	2106	215	0.093	0.21
1.80E-03	1.8	29	0.38	1.24	2270	231	0.1	0.23
1.90E-03	1.9	30	0.4	1.3	2529	258	0.112	0.26
2.00E-03	2	32	0.42	1.37	2803	286	0.124	0.29
3.00E-03	3	48	0.63	2.1	5802	592	0.26	0.59
4.00E-03	4	63	0.84	2.7	9417	960	0.42	0.96
5.00E-03	5	79	1.05	3.4	14014	1429	0.62	1.43
6.00E-03	6	95	1.26	4.1	20180	2058	0.89	2.1
7.00E-03	7	111	1.46	4.8	26093	2661	1.15	2.7
8.00E-03	8	127	1.67	5.5	34081	3475	1.51	3.5
9.00E-03	9	143	1.88	6.2	40864	4167	1.81	4.2
1.00E-02	10	159	2.1	6.9	50449	5144	2.2	5.1
1.10E-02	11	174	2.3	7.6	61043	6225	2.7	6.2
1.20E-02	12	190	2.5	8.2	72646	7408	3.2	7.4
1.30E-02	13	206	2.7	8.9	80522	8211	3.6	8.2
1.40E-02	14	222	2.9	9.6	93386	9523	4.1	9.5
1.50E-02	15	238	3.1	10.3	107204	10932	4.7	10.9
1.60E-02	16	254	3.3	11	121974	12438	5.4	12.5
1.70E-02	17	269	3.6	11.7	137697	14041	6.1	14.1
1.80E-02	18	285	3.8	12.4	145293	14815	6.4	14.8
1.90E-02	19	301	4	13	161885	16507	7.2	16.5
2.00E-02	20	317	4.2	13.7	179373	18291	7.9	18.3

PolyEthylene Pipes, Flow and Pressure Loss								
Nominal Pipe Size: 4"								
Inside Diameter: *0.102 m (4.0 inches)*								
Flow			**Velocity**		**Pressure Drop**			
(m^3/s)	***(liter/s)***	***(US gpm)***	***(m/s)***	***(ft/s)***	***(Pa/100m)***	***(mmH_2O/100m)***	***(psi/100ft)***	***(ftH_2O/100 ft)***
3.00E-03	3	48	0.37	1.2	1583	161	0.07	0.162
4.00E-03	4	63	0.49	1.61	2697	275	0.119	0.28
5.00E-03	5	79	0.61	2	4031	411	0.178	0.41
6.00E-03	6	95	0.73	2.4	5541	565	0.24	0.57
7.00E-03	7	111	0.86	2.8	7183	732	0.32	0.73
8.00E-03	8	127	0.98	3.2	9381	957	0.41	0.96
9.00E-03	9	143	1.1	3.6	11279	1150	0.5	1.15
1.00E-02	10	159	1.22	4	13925	1420	0.62	1.42
1.10E-02	11	174	1.35	4.4	16850	1718	0.74	1.72
1.20E-02	12	190	1.47	4.8	18997	1937	0.84	1.94
1.30E-02	13	206	1.59	5.2	22295	2273	0.99	2.3
1.40E-02	14	222	1.71	5.6	25857	2637	1.14	2.6
1.50E-02	15	238	1.84	6	29683	3027	1.31	3
1.60E-02	16	254	1.96	6.4	31896	3252	1.41	3.3
1.70E-02	17	269	2.1	6.8	36008	3672	1.59	3.7
1.80E-02	18	285	2.2	7.2	40369	4116	1.78	4.1
1.90E-02	19	301	2.3	7.6	44979	4586	1.99	4.6
2.00E-02	20	317	2.4	8	49838	5082	2.2	5.1
3.00E-02	30	476	3.7	12	105539	10762	4.7	10.8
4.00E-02	40	634	4.9	16.1	175898	17936	7.8	18

PolyEthylene Pipes, Flow and Pressure Loss								
Nominal Pipe Size: 6"								
Inside Diameter: *0.154 m (6.1 inches)*								
Flow			**Velocity**		**Pressure Drop**			
(m^3/s)	***(liter/s)***	***(US gpm)***	***(m/s)***	***(ft/s)***	***(Pa/100m)***	***(mmH_2O/100m)***	***(psi/100ft)***	***(ftH_2O/100 ft)***
7.00E-03	7	111	0.38	1.23	1007	103	0.045	0.103
8.00E-03	8	127	0.43	1.41	1256	128	0.055	0.128
9.00E-03	9	143	0.48	1.59	1589	162	0.07	0.162
1.00E-02	10	159	0.54	1.76	1868	191	0.083	0.191
1.10E-02	11	174	0.59	1.94	2261	231	0.1	0.23
1.20E-02	12	190	0.64	2.1	2691	274	0.119	0.27
1.30E-02	13	206	0.7	2.3	3000	306	0.133	0.31
1.40E-02	14	222	0.75	2.5	3479	355	0.154	0.36
1.50E-02	15	238	0.81	2.6	3994	407	0.177	0.41
1.60E-02	16	254	0.86	2.8	4544	463	0.2	0.46
1.70E-02	17	269	0.91	3	4860	496	0.21	0.5
1.80E-02	18	285	0.97	3.2	5448	556	0.24	0.56
1.90E-02	19	301	1.02	3.3	6071	619	0.27	0.62
2.00E-02	20	317	1.07	3.5	6726	686	0.3	0.69
3.00E-02	30	476	1.61	5.3	14294	1458	0.63	1.46
4.00E-02	40	634	2.1	7	23916	2439	1.06	2.4
5.00E-02	50	793	2.7	8.8	35033	3572	1.55	3.6
6.00E-02	60	951	3.2	10.6	50448	5144	2.2	5.1
7.00E-02	70	1110	3.8	12.3	68665	7002	3	7
8.00E-02	80	1268	4.3	14.1	83706	8535	3.7	8.5
9.00E-02	90	1427	4.8	15.9	105940	10803	4.7	10.8
1.00E-01	100	1585	5.4	17.6	130790	13337	5.8	13.4
1.10E-01	110	1744	5.9	19.4	158256	16137	7	16.2
1.20E-01	120	1902	6.4	21	188338	19205	8.3	19.2

1 psi (lb/in^2) = 6,894.8 Pa (N/m^2) = $6.895x10^{-3}$ N/mm^2 = $6.895x10^{-2}$ bar = 27.71 in H_2O at 62^oF (16.7^oC) = 703.1 mm H_2O at 62^oF (16.7^oC) = 2.0416 in mercury at 62^oF (16.7^oC) = 51.8 mm mercury at 62^oF (16.7^oC) = 703.6 kg/m^2 = 0.06895 atm = 2.307 Ft. H_2O = 16 ounces

1 ft/s = 0.3048 m/s

1 gal (US)/min =$6.30888x10^{-5}$ m^3/s = 0.0227 m^3/h = 0.06309 dm^3 (litre)/s = $2.228x10^{-3}$ ft^3/s = 0.1337 ft^3/min = 0.8327 Imperial gal (UK)/min

Units available from BV Thermal Systems

Standard Recirculating Chillers

MODEL	MC050	MC100	MC500	MC1000
Cooling Capacity	1702 watts @ 20°C	3575 watts @ 20°C	17,614 watts @ 20°C	33,704 watts @ 20°C
Stability	±0.1°C			
Temperature Range	+5°c to +27°c			
Pump	2 GPM to 99 PSI		10 GPM to 40 PSI	
Reservoir Volume	1.3 gal	2 gal	7 gal	
Dimensions (w x d x h) in	14.5 x 22 x 29	24.125×31.125 ×36	48.5 x 33 x 48	
Power Requirements	230V, 8A	230V, 12A	230V-3, 20A	460V-3, 20A
Weight (lbs)	142	258	531	955

Benchtop Chillers

Model	BTC-025	BTC-033	BTC-050	BTC-075
Cooling Capacity	861 watts @ 20°C	1119 watts @ 20°C	1702 watts @ 20°C	2681 watts @ 20°C
Stability	±0.1°C			
Temperature Range	+5°c to +27°c			
Pump	2.2 GPM to 99 PSI			
Reservoir Volume	1.3 gal			
Dimensions (w x d x h) in	17 x 22 x 15.75			
Power Requirements	115V, 9A	115V, 12A	230V, 8A	230V, 10A
Weight (lbs)	130	130	142	180

Rackmount Chillers

MODEL	MC017-19	MC025-19	MC033-19	MC050-19
Cooling Capacity	500 watts @20°C	861 watts @20°C	1119 watts @ 20°C	1702watts @20°C
Stability	±0.1°C			
Temperature Range	+5°C to +35°C			
Pump	2.2 GPM to 60 PSI	2.2 GPM to 60 PSI	2.2 GPM to 60 PSI	2.2 GPM to 60 PSI
Reservoir Volume	0.55 gal			
Power Requirements	120V, 6A	120V, 8A	120V, 9A	120V, 15A
Weight (lbs)	60	68	68	79

Liquid Heat Exchanger

MODEL	HRE200	HRE400	HRE500	HRE1000
Cooling Capacity	20,000 watts @5°C⌂	40,000 watts @5°C⌂	50,000 watts @6°C⌂ w/12 GPM supply	100,000 watts @10°C⌂ w/15 GPM supply
Stability	±0.1°C			
Temperature Range	5°c to +50°c			
Pump	2.2 GPM to 60 PSI	4.2 GPM to 60 PSI	7 GPM to 40 PSI	10 GPM to 40 PSI
Reservoir Volume	1.3 gal	1.3 gal	2 gal	2 gal
Dimensions (w x d x h) in	14.5 x 22 x 29		22 x 30 x 28.5	24 x 29.5 x 37
Power Requirements	115V, 5A	115V, 7A	200-230V, 10A	200-230V, 10A
Weight (lbs)	50	60	100	110