

LV4 Slip Jointed Enclosure

## Specification

**ENCLOSURE:**

- STYLE: Flat Top, Rounded Outlet
- OUTLET: Stamped Louvers  
Pencil Proof
- LENGTHS: 2'0" thru 8'0" in 6" Increments
- MAT'L:  16 Ga. CRS (Std)  
 14 Ga. Aluminum (Opt'l)
- HEIGHT:  24"  
 30"  
 36"
- FINISH:  Baked Powder (Std)  
 Baked Enamel (Opt'l)

**ACCESSORIES:**

- LV Overlapping Type
- All accessories return to the wall at the bottom and have pre-punched holes for fastening to the wall.

**ELEMENT:**

- TYPE:  Cu/Al (Mechanically Expanded)
- LENGTHS: 2'0" thru 12'6" in 1" Increments for 1" & 1-1/4" Cu.  
2'0" thru 8'0" in 1" Increments for 3/4" Cu.
- One End Flared (Std)
- See Catalog for Working Pressures

**DAMPER:**

- Damper Blades Factory Installed
- Knob Damper (Opt'l)
- Tamper Resistant (Opt'l)

**BACKPLATE:**

- TYPE:  Partial B/P
- LENGTHS: 8'0" Only
- MAT'L:  20 Ga. Prepainted (Std)  
 18 Ga. Galvannealed (Opt'l)
- TYPE:  Full Ht. B/P (Opt'l)
- LENGTHS: 2'0" thru 8'0" in 6" Increments
- MAT'L:  20 Ga. Galvannealed (Opt'l)  
 20 Ga. Painted (Opt'l)  
 18 Ga. Painted (Opt'l)

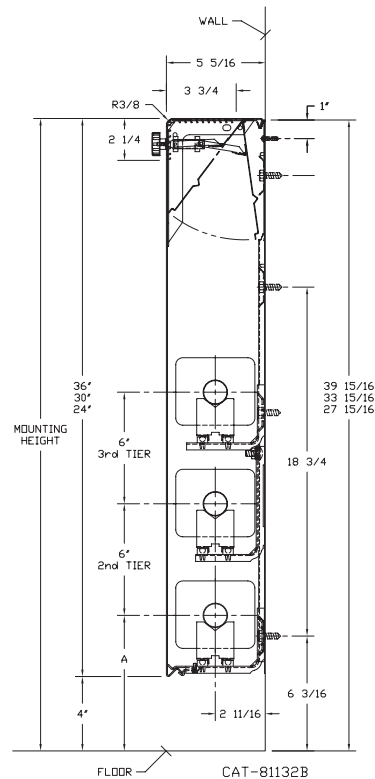
**AIRSEAL:**

- 1/8" x 3/8" Closed Cell (Opt'l)

**BRACKETS:**

- Water Bracket (with Stand-Off) Stand-Off not required 24" height
- B.B. Hanger, Bracket Mtd
- B.B. Hanger, Wall Mtd
- Wall Mtd B.B. Hanger required for 3rd Tier Element

ELEMENT TUBE SIZE	FIN SIZE HEIGHT x WIDTH	CRADLE NUMBER	A
3/4" COPPER	3-5/8 x 4-1/4	2	7"
3/4" COPPER	4-1/4 x 4-1/4	3A	7-3/8"
1" COPPER	3-5/8 x 4-1/4	2	7-3/16"
1" COPPER	4-1/4 x 4-1/4	2	7-3/16"
1-1/4" COPPER	3-5/8 x 4-1/4	2	7-5/16"
1-1/4" COPPER	4-1/4 x 4-1/4	2	7-5/16"
1" STEEL	4-1/4 x 4-1/4	2	7-5/16"
1-1/4" STEEL	4-1/4 x 4-1/4	2	7-1/2"
2" STEEL	4-1/4 x 4-1/4	1	7-1/4"



- LV4-R 24
- LV4-R 30
- LV4-R 36



260 North Elm St., Westfield, MA 01085  
(413) 568-9571  
www.vulcanrad.com



PROJECT: \_\_\_\_\_ DATE: \_\_\_\_\_  
 LOCATION: \_\_\_\_\_  
 ARCHITECT: \_\_\_\_\_  
 ENGINEER: \_\_\_\_\_  
 CONTRACTOR: \_\_\_\_\_  
 PO NUMBER: \_\_\_\_\_

# LV4-R Style "R" Flat Top Enclosures

## COPPER/ALUMINUM ELEMENT RATINGS

### STYLE LT Series "R"

ALL RATINGS ARE BASED ON 3 FPS WATER VELOCITY, 65°EAT

TUBE SIZE	CATALOG DESIGNATION	FIN SIZE HEIGHT X WIDTH	FIN PER FT.	FIN THICKNESS IN INCHES	ENCL HEIGHT IN INCHES	TIERS AND CENTERS IN INCHES	MTG. HEIGHT IN INCHES	STEAM 215°F FACTOR	HOT WATER (AVG.)										
									200°F	190°F	180°F	170°F	160°F	150°F	140°F	130°F	120°F	110°F	100°F
									CORRECTION FACTORS FOR AVERAGE WATER TEMPERATURES										
3/4"	VC3/4-433	3-5/8" x 4-1/4"	32	.020	24	1	28	1565	1350	1220	1080	950	830	700	630	520	410	310	230
					24	2-6 CL	28	2215	1900	1730	1530	1350	1170	1000	890	730	580	440	330
					24	3-6 CL	28	2550	2190	1990	1760	1560	1350	1150	1020	840	660	510	380
					30	1	34	1740	1500	1360	1200	1060	920	780	700	570	450	350	260
					30	2-6 CL	34	2300	1980	1790	1590	1400	1220	1040	920	760	600	460	350
					30	3-6 CL	34	2650	2280	2070	1830	1620	1400	1190	1060	870	690	530	400
					36	1	40	1920	1650	1500	1320	1170	1020	860	770	630	500	380	290
					36	2-6 CL	40	2540	2180	1980	1750	1550	1350	1140	1020	840	660	510	380
					36	3-6 CL	40	2920	2510	2280	2010	1780	1550	1310	1170	960	760	580	440
					24	1	28	1870	1610	1460	1290	1140	990	840	750	620	490	370	280
					24	2-6 CL	28	2590	2230	2020	1790	1580	1370	1170	1040	850	670	520	390
					24	3-6 CL	28	2950	2540	2300	2040	1800	1560	1330	1180	970	770	590	440
30	1	34	2080	1790	1620	1440	1270	1100	940	830	690	540	420	310					
30	2-6 CL	34	2750	2370	2150	1900	1680	1460	1240	1100	910	720	550	410					
30	3-6 CL	34	3130	2690	2440	2160	1910	1660	1410	1250	1030	810	630	470					
36	1	40	2290	1970	1790	1580	1400	1210	1030	920	760	600	460	340					
36	2-6 CL	40	3030	2610	2360	2090	1850	1610	1360	1210	1000	790	610	450					
36	3-6 CL	40	3450	2970	2690	2380	2100	1830	1550	1380	1140	900	690	520					
3/4"	VC3/4-434	3-5/8" x 4-1/4"	40	.020	24	1	28	2210	1900	1720	1520	1350	1170	990	880	730	570	440	330
					24	2-6 CL	28	2820	2430	2200	1950	1720	1490	1270	1130	930	730	560	420
					24	3-6 CL	28	3190	2740	2490	2200	1950	1690	1440	1280	1050	830	640	480
					30	1	34	2460	2120	1920	1700	1500	1300	1110	980	810	640	490	370
					30	2-6 CL	34	3260	2800	2540	2250	1990	1730	1470	1300	1080	850	650	490
					30	3-6 CL	34	3680	3160	2870	2540	2240	1950	1660	1470	1210	960	740	550
					36	1	40	2710	2330	2110	1870	1650	1440	1220	1080	890	700	540	410
					36	2-6 CL	40	3590	3090	2800	2480	2190	1900	1620	1440	1180	930	720	540
					36	3-6 CL	40	4060	3490	3170	2800	2480	2150	1830	1620	1340	1060	810	610
					24	1	28	1650	1420	1290	1140	1010	870	740	660	540	430	330	250
					24	2-6 CL	28	2560	2200	2000	1770	1560	1360	1150	1020	840	670	510	380
					24	3-6 CL	28	2940	2530	2290	2030	1790	1560	1320	1180	970	760	590	440
30	1	34	1830	1570	1430	1260	1120	970	820	730	600	480	370	270					
30	2-6 CL	34	2420	2080	1890	1670	1480	1280	1090	970	800	630	480	360					
30	3-6 CL	34	2780	2390	2170	1920	1700	1470	1250	1110	920	720	560	420					
36	1	40	2010	1730	1570	1390	1230	1070	900	800	660	520	400	300					
36	2-6 CL	40	2660	2290	2070	1840	1620	1410	1200	1060	880	690	530	400					
36	3-6 CL	40	3060	2630	2390	2110	1870	1620	1380	1220	1010	800	610	460					
1"	VC433	3-5/8" x 4-1/4"	32	.020	24	1	28	1950	1680	1520	1350	1190	1030	880	780	640	510	390	290
					24	2-6 CL	28	2720	2340	2120	1880	1660	1440	1220	1090	900	710	540	410
					24	3-6 CL	28	3100	2670	2420	2140	1890	1640	1400	1240	1020	810	620	470
					30	1	34	2170	1870	1690	1500	1320	1150	980	870	720	560	430	330
					30	2-6 CL	34	2870	2470	2240	1980	1750	1520	1290	1150	950	750	570	430
					30	3-6 CL	34	3270	2810	2550	2260	1990	1730	1470	1310	1080	850	650	490
					36	1	40	2390	2060	1860	1650	1460	1270	1080	960	790	620	480	360
					36	2-6 CL	40	3160	2720	2460	2180	1930	1670	1420	1260	1040	820	630	470
					36	3-6 CL	40	3600	3100	2810	2480	2200	1910	1620	1440	1190	940	720	540
					24	1	28	2330	2000	1820	1610	1420	1230	1050	930	770	610	470	350
					24	2-6 CL	28	2970	2550	2320	2050	1810	1570	1340	1190	980	770	590	450
					24	3-6 CL	28	3360	2890	2620	2320	2050	1780	1510	1340	1110	870	670	500
30	1	34	2590	2230	2020	1790	1580	1370	1170	1040	850	670	520	390					
30	2-6 CL	34	3430	2950	2680	2370	2090	1820	1540	1370	1130	890	690	510					
30	3-6 CL	34	3880	3340	3030	2680	2370	2060	1750	1550	1280	1010	780	580					
36	1	40	2850	2450	2220	1970	1740	1510	1280	1140	940	740	570	430					
36	2-6 CL	40	3770	3240	2940	2600	2300	2000	1700	1510	1240	980	750	570					
36	3-6 CL	40	4260	3660	3320	2940	2600	2260	1920	1700	1410	1110	850	640					
1-1/4"	VC1433	3-5/8" x 4-1/4"	32	.020	24	1	28	1630	1400	1270	1120	990	860	730	650	540	420	330	240
					24	2-6 CL	28	2580	2220	2010	1780	1570	1370	1160	1030	850	670	520	390
					24	3-6 CL	28	2970	2550	2320	2050	1810	1570	1340	1190	980	770	590	450
					30	1	34	1810	1560	1410	1250	1100	960	810	720	600	470	360	270
					30	2-6 CL	34	2400	2060	1870	1660	1460	1270	1080	960	790	620	480	360
					30	3-6 CL	34	2760	2370	2150	1900	1680	1460	1240	1100	910	720	550	410
					36	1	40	1990	1710	1550	1370	1210	1050	900	800	660	520	400	300
					36	2-6 CL	40	2630	2260	2050	1810	1600	1390	1180	1050	870	680	530	390
					36	3-6 CL	40	3020	2600	2360	2080	1840	1600	1360	1210	1000	790	600	450
					24	1	28	1920	1650	1500	1320	1170	1020	860	770	630	500	380	290
					24	2-6 CL	28	2750	2370	2150	1900	1680	1460	1240	1100	910	720	550	410
					24	3-6 CL	28	3130	2690	2440	2160	1910	1660	1410	1250	1030	810	630	470
30	1	34	2140	1840	1670	1480	1310	1130	960	860	710	560	430	320					
30	2-6 CL	34	2830	2430	2210	1950	1730	1500	1270	1130	930	740	570	420					
30	3-6 CL	34	3230	2780	2520	2230	1970	1710	1450	1290	1070	840	650	480					
36	1	40	2360	2030	1840	1630	1440	1250	1060	940	780	610	470	350					
36	2-6 CL	40	3120	2680	2430	2150	1900	1650	1400	1250	1030	810	620	470					
36	3-6 CL	40	3560	3060	2780	2460	2170	1890	1600	1420	1170	930	710	530					
1-1/4"	VC1435	3-5/8" x 4-1/4"	50	.020	24	1	28	2380	2050	1860	1640	1450	1260	1070	950	790	620	480	360
					24	2-6 CL	28	3000	2580	2340	2070	1830	1590	1350	1200	990	780	600	450
					24	3-6 CL	28	3390	2920	2640	2340	2070	1800	1530	1360	1120	880	680	510
					30	1	34	2650	2280	2070	1830	1620	1400	1190	1060	870	690	530	400
					30	2-6 CL	34	3510	3020	2740	2420	2140	1860	1580	1400	1160	910	700	530
					30	3-6 CL	34	3970	3410	3100	2740	2							

# LV4-R Style "R" Flat Top Enclosures

## COPPER/ALUMINUM ELEMENT RATINGS

ALL RATINGS ARE BASED ON 3 FPS WATER VELOCITY, 65°F AT

### STYLE LT Series "R"

TUBE SIZE	CATALOG DESIGNATION	FIN SIZE HEIGHT X WIDTH	FIN PER FT.	FIN THICKNESS IN INCHES	ENCL HEIGHT IN INCHES	TIERS AND CENTERS IN INCHES	MTG. HEIGHT IN INCHES	STEAM 215°F FACTOR	HOT WATER (AVG.)															
									200°F	190°F	180°F	170°F	160°F	150°F	140°F	130°F	120°F	110°F	100°F					
									CORRECTION FACTORS FOR AVERAGE WATER TEMPERATURES															
3/4"	VC3/4-43	4-1/4" SQ.	32	.020	24	1	28	1685	1450	1310	1160	1030	890	760	670	560	440	340	250					
					24	2-6 CL	28	2435	2090	1900	1680	1490	1290	1100	970	800	630	490	370					
					24	3-6 CL	28	2800	2410	2180	1930	1710	1480	1260	1120	920	730	560	420					
					30	1	34	1870	1610	1460	1290	1140	990	840	750	620	490	370	280					
					30	2-6 CL	34	2480	2130	1930	1710	1510	1310	1120	990	820	640	500	370					
					30	3-6 CL	34	2850	2450	2220	1970	1740	1510	1280	1140	940	740	570	430					
					36	1	40	2060	1770	1610	1420	1260	1090	930	820	680	540	410	310					
					36	2-6 CL	40	2730	2350	2130	1880	1670	1450	1230	1090	900	710	550	410					
					36	3-6 CL	40	3140	2700	2450	2170	1920	1660	1410	1260	1040	820	630	470					
					24	1	28	2350	2020	1830	1620	1430	1250	1060	940	780	610	470	350					
					24	2-6 CL	28	3270	2810	2550	2260	1990	1730	1470	1310	1080	850	650	490					
					24	3-6 CL	28	3730	3210	2910	2570	2280	1980	1680	1490	1230	970	750	560					
30	1	34	2610	2240	2040	1800	1590	1380	1170	1040	860	680	520	390										
30	2-6 CL	34	3460	2980	2700	2390	2110	1830	1560	1380	1140	900	690	520										
30	3-6 CL	34	3940	3390	3070	2720	2400	2090	1770	1580	1300	1020	790	590										
36	1	40	2870	2470	2240	1980	1750	1520	1290	1150	950	750	570	430										
36	2-6 CL	40	3800	3270	2960	2620	2320	2010	1710	1520	1250	990	760	570										
36	3-6 CL	40	4330	3720	3380	2990	2640	2290	1950	1730	1430	1130	870	650										
3/4"	VC3/4-44	4-1/4" SQ.	40	.020	24	1	28	2550	2190	1990	1760	1560	1350	1150	1020	840	660	510	380					
					24	2-6 CL	28	3380	2910	2640	2330	2060	1790	1520	1350	1120	880	680	510					
					24	3-6 CL	28	3820	3290	2980	2640	2330	2020	1720	1530	1260	990	760	570					
					30	1	34	2840	2440	2220	1960	1730	1510	1280	1140	940	740	570	430					
					30	2-6 CL	34	3760	3230	2930	2590	2290	1990	1690	1500	1240	980	750	560					
					30	3-6 CL	34	4250	3660	3320	2930	2590	2250	1910	1700	1400	1110	850	640					
					36	1	40	3130	2690	2440	2160	1910	1660	1410	1250	1030	810	630	470					
					36	2-6 CL	40	4140	3560	3230	2860	2530	2190	1860	1660	1370	1080	830	620					
					36	3-6 CL	40	4680	4020	3650	3230	2850	2480	2110	1870	1540	1220	940	700					
					3/4"	VC3/4-45	4-1/4" SQ.	50	.020	24	1	28	2810	2420	2190	1940	1710	1490	1260	1120	930	730	560	420
										24	2-6 CL	28	3820	3290	2980	2640	2330	2020	1720	1530	1260	990	760	570
										30	1	34	2840	2440	2220	1960	1730	1510	1280	1140	940	740	570	430
30	2-6 CL	34	3760	3230						2930	2590	2290	1990	1690	1500	1240	980	750	560					
30	3-6 CL	34	4250	3660						3320	2930	2590	2250	1910	1700	1400	1110	850	640					
36	1	40	3130	2690						2440	2160	1910	1660	1410	1250	1030	810	630	470					
36	2-6 CL	40	4140	3560						3230	2860	2530	2190	1860	1660	1370	1080	830	620					
36	3-6 CL	40	4680	4020						3650	3230	2850	2480	2110	1870	1540	1220	940	700					
1"	VC43	4-1/4" SQ.	32	.020						24	1	28	1810	1560	1410	1250	1100	960	810	720	600	470	360	270
										24	2-6 CL	28	2810	2420	2190	1940	1710	1490	1260	1120	930	730	560	420
										24	3-6 CL	28	3230	2780	2520	2230	1970	1710	1450	1290	1070	840	650	480
										30	1	34	2010	1730	1570	1390	1230	1070	900	800	660	520	400	300
					30	2-6 CL	34	2660	2290	2070	1840	1620	1410	1200	1060	880	690	530	400					
					30	3-6 CL	34	3060	2630	2390	2110	1870	1620	1380	1220	1010	800	610	460					
					36	1	40	2210	1900	1720	1520	1350	1170	990	880	730	570	440	330					
					36	2-6 CL	40	2930	2520	2290	2020	1790	1550	1320	1170	970	760	590	440					
					36	3-6 CL	40	3370	2900	2630	2330	2060	1790	1520	1350	1110	880	670	510					
					1"	VC44	4-1/4" SQ.	40	.020	24	1	28	2140	1840	1670	1480	1310	1130	960	860	710	560	430	320
										24	2-6 CL	28	2990	2570	2330	2060	1820	1580	1350	1200	990	780	600	450
										24	3-6 CL	28	3410	2930	2660	2350	2080	1810	1530	1360	1130	890	680	510
30	1	34	2380	2050						1860	1640	1450	1260	1070	950	790	620	480	360					
30	2-6 CL	34	3150	2710						2460	2170	1920	1670	1420	1260	1040	820	630	470					
30	3-6 CL	34	3590	3090						2800	2480	2190	1900	1620	1440	1180	930	720	540					
36	1	40	2620	2250						2040	1810	1600	1390	1180	1050	860	680	520	390					
36	2-6 CL	40	3470	2980						2710	2390	2120	1840	1560	1390	1150	900	690	520					
36	3-6 CL	40	3960	3410						3090	2730	2420	2100	1780	1580	1310	1030	790	590					
1"	VC45	4-1/4" SQ.	50	.020						24	1	28	2550	2190	1990	1760	1560	1350	1150	1020	840	660	510	380
										24	2-6 CL	28	3250	2800	2540	2240	1980	1720	1460	1300	1070	850	650	490
										24	3-6 CL	28	3670	3160	2860	2530	2240	1950	1650	1470	1210	950	730	550
					30	1	34	2840	2440	2220	1960	1730	1510	1280	1140	940	740	570	430					
					30	2-6 CL	34	3760	3230	2930	2590	2290	1990	1690	1500	1240	980	750	560					
					30	3-6 CL	34	4250	3660	3320	2930	2590	2250	1910	1700	1400	1110	850	640					
					36	1	40	3130	2690	2440	2160	1910	1660	1410	1250	1030	810	630	470					
					36	2-6 CL	40	4140	3560	3230	2860	2530	2190	1860	1660	1370	1080	830	620					
					36	3-6 CL	40	4680	4020	3650	3230	2850	2480	2110	1870	1540	1220	940	700					
					1-1/4"	VC143	4-1/4" SQ.	32	.020	24	1	28	1780	1530	1390	1230	1090	940	800	710	590	460	360	270
										24	2-6 CL	28	2720	2340	2120	1880	1660	1440	1220	1090	900	710	540	410
										24	3-6 CL	28	3130	2690	2440	2160	1910	1660	1410	1250	1030	810	630	470
30	1	34	1980	1700						1540	1370	1210	1050	890	790	650	510	400	300					
30	2-6 CL	34	2620	2250						2040	1810	1600	1390	1180	1050	860	680	520	390					
30	3-6 CL	34	3010	2590						2350	2080	1840	1600	1350	1200	990	780	600	450					
36	1	40	2180	1870						1700	1500	1330	1160	980	870	720	570	440	330					
36	2-6 CL	40	2890	2490						2250	1990	1760	1530	1300	1160	950	750	580	430					
36	3-6 CL	40	3320	2860						2590	2290	2030	1760	1490	1330	1100	860	660	500					
1-1/4"	VC144	4-1/4" SQ.	40	.020						24	1	28	2160	1860	1680	1490	1320	1140	970	860	710	560	430	320
										24	2-6 CL	28	2940	2530	2290	2030	1790	1560	1320	1180	970	760	590	440
										24	3-6 CL	28	3350	2880	2610	2310	2040	1780	1510	1340	1110	870	670	500
					30	1	34	2400	2060	1870	1660	1460	1270	1080	960	790	620	480	360					
					30	2-6 CL	34	3180	2730	2480	2190	1940	1690	1430	1270	1050	830	640	480					
					30																			

# LV4-R Style "R" Flat Top Enclosures

## STYLE LT Series "R"

## STEEL ELEMENT RATINGS

ALL RATINGS ARE BASED ON 3 FPS WATER VELOCITY, 65°EAT

TUBE SIZE	CATALOG DESIGNATION	FIN SIZE HEIGHT X WIDTH	FIN PER FT.	FIN THICKNESS IN INCHES	ENCL HEIGHT IN INCHES	TIERS AND CENTERS IN INCHES	MTG. HEIGHT IN INCHES	STEAM 215°F FACTOR	HOT WATER (AVG.)										
									200°F	190°F	180°F	170°F	160°F	150°F	140°F	130°F	120°F	110°F	100°F
									CORRECTION FACTORS FOR AVERAGE WATER TEMPERATURES										
1"	VS43	4-1/4" SQ.	32	.032	24	1	28	1520	1310	1190	1050	930	810	680	610	500	400	300	230
					24	2-6 CL	28	2255	1940	1760	1560	1380	1200	1010	900	740	590	450	340
					24	3-6 CL	28	2590	2230	2020	1790	1580	1370	1170	1040	850	670	520	390
					30	1	34	1690	1450	1320	1170	1030	900	760	680	560	440	340	250
					30	2-6 CL	34	2240	1930	1750	1550	1370	1190	1010	900	740	580	450	340
					30	3-6 CL	34	2580	2220	2010	1780	1570	1370	1160	1030	850	670	520	390
					36	1	40	1860	1600	1450	1280	1130	990	840	740	610	480	370	280
					36	2-6 CL	40	2460	2120	1920	1700	1500	1300	1110	980	810	640	490	370
					36	3-6 CL	40	2830	2430	2210	1950	1730	1500	1270	1130	930	740	570	420
					24	1	28	1765	1520	1380	1220	1080	940	790	710	580	460	350	260
					24	2-6 CL	28	2470	2120	1930	1700	1510	1310	1110	990	820	640	490	370
					24	3-6 CL	28	2820	2430	2200	1950	1720	1490	1270	1130	930	730	560	420
1"	VS44	4-1/4" SQ.	40	.032	24	1	34	1960	1690	1530	1350	1200	1040	880	780	650	510	390	290
					24	2-6 CL	34	2600	2240	2030	1790	1590	1380	1170	1040	860	680	520	390
					24	3-6 CL	34	2960	2550	2310	2040	1810	1570	1330	1180	980	770	590	440
					30	1	40	2160	1860	1680	1490	1320	1140	970	860	710	560	430	320
					30	2-6 CL	40	2860	2460	2230	1970	1740	1520	1290	1140	940	740	570	430
					30	3-6 CL	40	3260	2800	2540	2250	1990	1730	1470	1300	1080	850	650	490
					36	1	40	2270	1950	1770	1570	1380	1200	1020	910	750	590	450	340
					36	2-6 CL	40	3010	2590	2350	2080	1840	1600	1350	1200	990	780	600	450
					36	3-6 CL	40	3400	2920	2650	2350	2070	1800	1530	1360	1120	880	680	510
					24	1	28	1850	1590	1440	1280	1130	980	830	740	610	480	370	280
					24	2-6 CL	28	2535	2180	1980	1750	1550	1340	1140	1010	840	660	510	380
					24	3-6 CL	28	2860	2460	2230	1970	1740	1520	1290	1140	940	740	570	430
1"	VS45	4-1/4" SQ.	50	.032	24	1	34	2060	1770	1610	1420	1260	1090	930	820	680	540	410	310
					24	2-6 CL	34	2730	2350	2130	1880	1670	1450	1230	1090	900	710	550	410
					24	3-6 CL	34	3080	2650	2400	2130	1880	1630	1390	1230	1020	800	620	460
					30	1	40	2270	1950	1770	1570	1380	1200	1020	910	750	590	450	340
					30	2-6 CL	40	3010	2590	2350	2080	1840	1600	1350	1200	990	780	600	450
					30	3-6 CL	40	3400	2920	2650	2350	2070	1800	1530	1360	1120	880	680	510
					36	1	40	2270	1950	1770	1570	1380	1200	1020	910	750	590	450	340
					36	2-6 CL	40	3010	2590	2350	2080	1840	1600	1350	1200	990	780	600	450
					36	3-6 CL	40	3400	2920	2650	2350	2070	1800	1530	1360	1120	880	680	510
					24	1	28	1320	1140	1030	910	810	700	590	530	440	340	260	200
					24	2-6 CL	28	2120	1820	1650	1460	1290	1120	950	850	700	550	420	320
					24	3-6 CL	28	2440	2100	1900	1680	1490	1290	1100	980	810	630	490	370
1-1/4"	VS143	4-1/4" SQ.	32	.032	30	1	34	1470	1260	1150	1010	900	780	660	590	490	380	290	220
					30	2-6 CL	34	1950	1680	1520	1350	1190	1030	880	780	640	510	390	290
					30	3-6 CL	34	2240	1930	1750	1550	1370	1190	1010	900	740	580	450	340
					36	1	40	1620	1390	1260	1120	990	860	730	650	530	420	320	240
					36	2-6 CL	40	2140	1840	1670	1480	1310	1130	960	860	710	560	430	320
					36	3-6 CL	40	2460	2120	1920	1700	1500	1300	1110	980	810	640	490	370
					24	1	28	1680	1440	1310	1160	1020	890	760	670	550	440	340	250
					24	2-6 CL	28	2510	2160	1960	1730	1530	1330	1130	1000	830	650	500	380
					24	3-6 CL	28	2860	2460	2230	1970	1740	1520	1290	1140	940	740	570	430
					30	1	34	1870	1610	1460	1290	1140	990	840	750	620	490	370	280
					30	2-6 CL	34	2480	2130	1930	1710	1510	1310	1120	990	820	640	500	370
					30	3-6 CL	34	2830	2430	2210	1950	1730	1500	1270	1130	930	740	570	420
1-1/4"	VS144	4-1/4" SQ.	40	.032	36	1	40	2060	1770	1610	1420	1260	1090	930	820	680	540	410	310
					36	2-6 CL	40	2730	2350	2130	1880	1670	1450	1230	1090	900	710	550	410
					36	3-6 CL	40	3110	2670	2430	2150	1900	1650	1400	1240	1030	810	620	470
					24	1	28	1835	1580	1430	1270	1120	970	830	730	610	480	370	280
					24	2-6 CL	28	2485	2140	1940	1710	1520	1320	1120	990	820	650	500	370
					24	3-6 CL	28	2810	2420	2190	1940	1710	1490	1260	1120	930	730	560	420
					30	1	34	2040	1750	1590	1410	1240	1080	920	820	670	530	410	310
					30	2-6 CL	34	2700	2320	2110	1860	1650	1430	1220	1080	890	700	540	410
					30	3-6 CL	34	3050	2620	2380	2100	1860	1620	1370	1220	1010	790	610	460
					36	1	40	2250	1940	1760	1550	1370	1190	1010	900	740	590	450	340
					36	2-6 CL	40	2980	2560	2320	2060	1820	1580	1340	1190	980	770	600	450
					36	3-6 CL	40	3370	2900	2630	2330	2060	1790	1520	1350	1110	880	670	510
2"	VS242	4-1/4" SQ.	25	.032	24	1	28	1250	1080	980	860	760	660	560	500	410	330	250	190
					24	2-6 CL	28	2000	1720	1560	1380	1220	1060	900	800	660	520	400	300
					24	3-6 CL	28	2300	1980	1790	1590	1400	1220	1040	920	760	600	460	350
					30	1	34	1390	1200	1080	960	850	740	630	560	460	360	280	210
					30	2-6 CL	34	1840	1580	1440	1270	1120	980	830	740	610	480	370	280
					30	3-6 CL	34	2120	1820	1650	1460	1290	1120	950	850	700	550	420	320
					36	1	40	1530	1320	1190	1060	930	810	690	610	500	400	310	230
					36	2-6 CL	40	2030	1750	1580	1400	1240	1080	910	810	670	530	410	300
					36	3-6 CL	40	2330	2000	1820	1610	1420	1230	1050	930	770	610	470	350
					24	1	28	1480	1270	1150	1020	900	780	670	590	490	380	300	220
					24	2-6 CL	28	2220	1910	1730	1530	1350	1180	1000	890	730	580	440	330
					24	3-6 CL	28	2550	2190	1990	1760	1560	1350	1150	1020	840	660	510	380
30	1	34	1650	1420	1290	1140	1010	870	740	660	540	430	330	250					
30	2-6 CL	34	2180	1870	1700	1500	1330	1160	980	870	720	570	440	330					
30	3-6 CL	34	2510	2160	1960	1730	1530	1330	1130	1000	830	650	500	380					
36	1	40	1820	1570	1420	1260	1110	960	820	730	600	470	360	270					
36	2-6 CL	40	2410	2070	1880	1660	1470	1280	1080	960	800	630	480	360					
36	3-6 CL	40	2770	2380	2160	1910	1690	1470	1250	1110	910	720	550						

# Design Data

## COMMERCIAL FINNED TUBE CHARTS FOR RATING CORRECTIONS

For assistance with ratings and selection, please use our online Specifier.

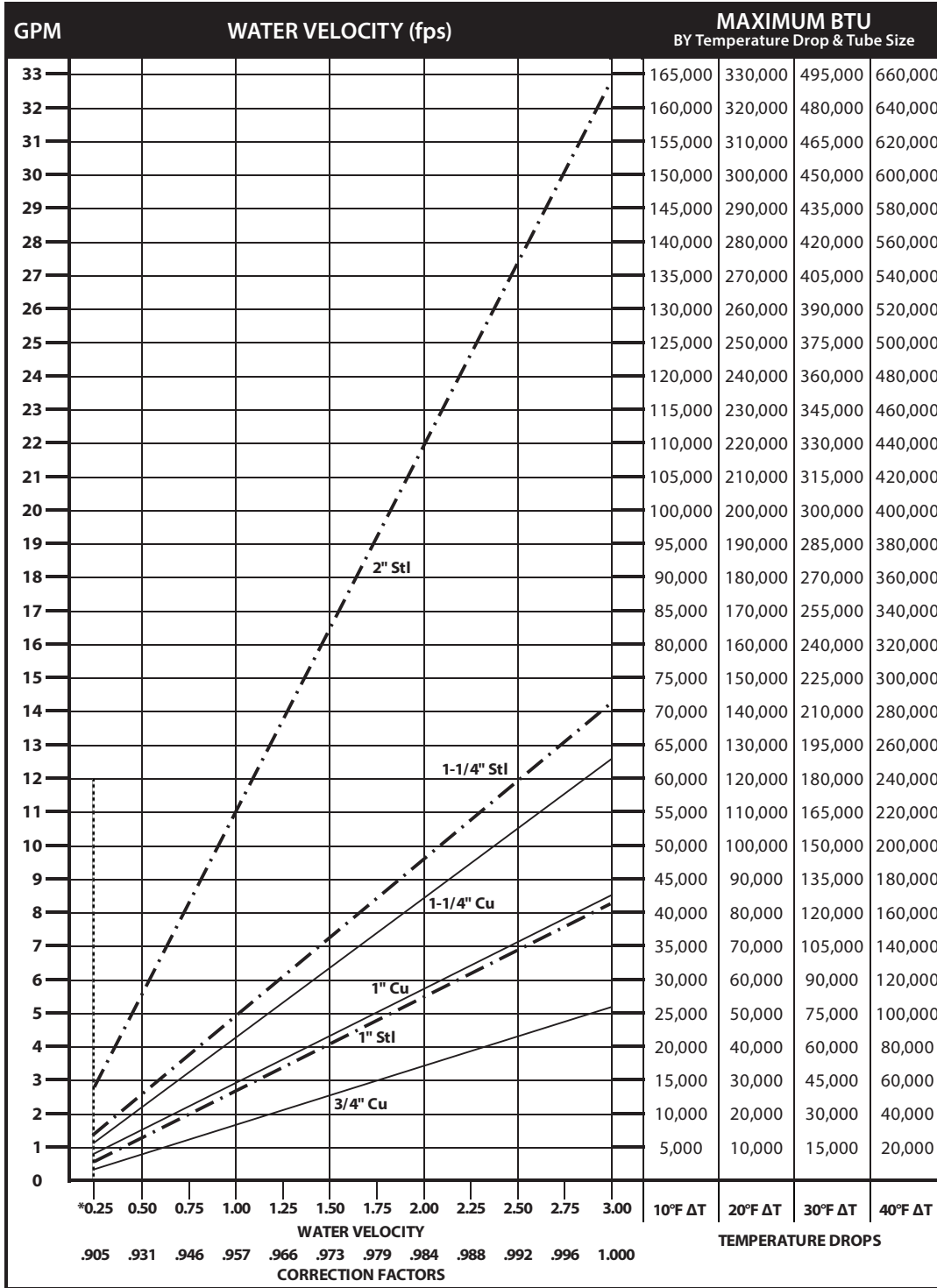
CORRECTION FACTORS FOR WATER TEMPERATURES AND AIR TEMPERATURES OTHER THAN STANDARD															
AVERAGE WATER TEMP. °F	ENTERING AIR TEMPERATURE °F														
	45	55	STD 65	70	75	80	85	90	95	100	110	120	130	140	150
90	.19	.13	.11	.06											
100	.25	.19	.15	.11	.08	.06									
110	.31	.25	.20	.16	.13	.11	.08	.06							
120	.38	.31	.26	.21	.19	.16	.13	.11	.08	.06					
130	.45	.38	.33	.28	.25	.21	.19	.16	.13	.11	.06				
140	.53	.45	.40	.34	.31	.28	.25	.21	.19	.16	.11	.06			
150	.61	.53	.45	.41	.38	.34	.31	.28	.25	.21	.16	.11	.06		
160	.69	.61	.53	.49	.45	.41	.38	.34	.31	.28	.21	.16	.11	.06	
170	.77	.69	.61	.57	.53	.49	.45	.41	.38	.34	.28	.21	.16	.11	.06
180	.86	.77	.69	.65	.61	.57	.53	.49	.45	.41	.34	.28	.21	.16	.11
190	.95	.86	.78	.73	.69	.65	.61	.57	.53	.49	.41	.34	.28	.21	.16
200	1.05	.95	.86	.82	.77	.73	.69	.65	.61	.57	.49	.41	.34	.28	.21
210	1.14	1.05	.95	.91	.86	.82	.77	.73	.69	.65	.57	.49	.41	.34	.28
▶ 215 (STD.)	1.19	1.09	1.00	.95	.91	.86	.82	.77	.73	.69	.61	.53	.45	.38	.31
220	1.24	1.14	1.05	1.00	.95	.91	.86	.82	.77	.73	.65	.57	.49	.41	.34
230	1.34	1.24	1.14	1.09	1.05	1.00	.95	.91	.86	.82	.73	.65	.57	.49	.41
240	1.44	1.34	1.25	1.19	1.14	1.09	1.05	1.00	.95	.91	.82	.73	.65	.57	.49
250	1.55	1.44	1.34	1.29	1.24	1.19	1.14	1.09	1.05	1.00	.91	.82	.73	.65	.57
260	1.66	1.55	1.44	1.39	1.34	1.29	1.24	1.19	1.14	1.09	1.00	.91	.82	.73	.65
270	1.76	1.66	1.55	1.50	1.44	1.39	1.34	1.29	1.24	1.19	1.09	1.00	.91	.82	.73
280	1.87	1.76	1.66	1.60	1.55	1.50	1.44	1.39	1.34	1.29	1.19	1.09	1.00	.91	.82
290	1.99	1.87	1.76	1.71	1.66	1.60	1.55	1.50	1.44	1.39	1.29	1.19	1.09	1.00	.91
300	2.10	1.99	1.87	1.82	1.76	1.71	1.66	1.60	1.55	1.50	1.39	1.29	1.19	1.09	1.00

CORRECTION FACTORS FOR STEAM PRESSURES AND AIR TEMPERATURES OTHER THAN STANDARD																
STEAM		TEMP. °F	ENTERING AIR TEMPERATURE °F													
PRESSURE			45	55	STD 65	70	75	80	85	90	100	110	120	130	140	150
GAUGE	ABS. PSI															
(VAC) 15" HG	7.32	178.9	0.90	0.80	0.70	0.65	0.60	0.56	0.51	0.45	0.39	0.32	0.25	0.18	0.13	0.08
(VAC) 10" HG	9.78	192.2	1.02	0.91	0.81	0.76	0.71	0.66	0.62	0.55	0.48	0.40	0.33	0.26	0.20	0.14
(VAC) 5" HG	12.25	202.9	1.11	1.00	0.90	0.85	0.79	0.75	0.70	0.63	0.56	0.48	0.40	0.33	0.27	0.20
▶ 0 PSI	14.696	212.0	1.19	1.09	0.97	0.92	0.87	0.82	0.77	0.70	0.63	0.54	0.46	0.38	0.31	0.25
.899	15.595	215.0	1.22	1.11	1.00	0.95	0.90	0.84	0.80	0.75	0.65	0.57	0.48	0.40	0.33	0.26
5	19.70	227.1	1.34	1.22	1.11	1.05	1.00	0.95	0.90	0.81	0.75	0.66	0.57	0.49	0.41	0.34
10	24.70	239.4	1.45	1.33	1.22	1.17	1.11	1.05	1.00	0.91	0.85	0.75	0.66	0.58	0.50	0.42
15	29.70	249.8	1.55	1.43	1.31	1.26	1.20	1.14	1.09	1.00	0.94	0.84	0.75	0.66	0.57	0.49
20	34.70	258.5	1.63	1.52	1.40	1.33	1.28	1.23	1.17	1.07	1.02	0.92	0.82	0.73	0.64	0.55
25	39.70	266.8	1.71	1.59	1.47	1.41	1.36	1.30	1.25	1.15	1.09	0.98	0.89	0.80	0.71	0.62
30	44.70	274.0	1.78	1.66	1.54	1.48	1.42	1.37	1.31	1.21	1.15	1.05	0.95	0.85	0.76	0.68
40	54.70	286.7	1.91	1.79	1.66	1.61	1.54	1.49	1.43	1.32	1.27	1.16	1.06	0.97	0.87	0.78
50	64.70	297.7	2.02	1.90	1.77	1.71	1.65	1.60	1.54	1.42	1.37	1.26	1.16	1.06	0.96	0.87
60	74.70	307.3	2.10	2.00	1.87	1.81	1.75	1.69	1.63	1.51	1.47	1.35	1.25	1.15	1.05	0.95
70	84.70	316.0	2.20	2.09	1.95	1.89	1.83	1.77	1.71	1.59	1.55	1.44	1.33	1.23	1.12	1.03
80	94.70	323.9	2.27	2.17	2.03	1.97	1.91	1.85	1.80	1.69	1.63	1.52	1.41	1.31	1.20	1.10
90	104.70	331.2	2.36	2.24	2.11	2.05	1.98	1.93	1.87	1.74	1.70	1.59	1.48	1.38	1.28	1.17
100	114.70	337.9	2.43	2.31	2.18	2.11	2.05	2.00	1.94	1.81	1.77	1.65	1.54	1.44	1.33	1.23
125	139.70	352.9	2.59	2.47	2.33	2.27	2.21	2.16	2.10	1.96	1.92	1.80	1.69	1.59	1.48	1.38
150	164.70	365.9	2.73	2.62	2.47	2.43	2.35	2.29	2.23	2.08	2.05	1.94	1.82	1.72	1.61	1.51
175	189.70	377.4	2.86	2.74	2.60	2.54	2.47	2.41	2.35	2.21	2.17	2.05	1.95	1.85	1.73	1.63
200	214.70	387.8	2.95	2.85	2.71	2.63	2.58	2.52	2.47	2.31	2.29	2.17	2.06	1.96	1.84	1.75

From Keenan and Keyes — Linear Interpolation. NOTE: Gauge pressure should be corrected for altitude.

Rate of pitch for steam 1/2" drop over 20-foot run.

# Design Data



## DYNAMIC FORMULAS

$$\text{BTU} = \text{GPM} \times 500 \times \text{TD}$$

$$\text{GPM} = \left( \frac{\text{BTU}}{500} \right) \div \text{TD}$$

$$\text{TD} = \left( \frac{\text{BTU}}{500} \right) \div \text{GPM}$$

\*Do not design below .25 fps.

## Pressure Drop at Given Water Velocities (Feet of Water per 100 ft. of pipe) based on Hazen - Williams calculation

Nominal Pipe Size	Water Velocity (ft/sec)											
	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00
3/4" Copper	0.06	0.20	0.42	0.72	1.09	1.53	2.04	2.61	3.25	3.95	4.71	5.53
1" Copper	0.04	0.15	0.32	0.54	0.81	1.14	1.52	1.94	2.42	2.94	3.50	4.11
1 1/4" Copper	0.03	0.12	0.25	0.43	0.64	0.90	1.20	1.54	1.92	2.33	2.78	3.26
1" Steel	0.04	0.15	0.32	0.54	0.81	1.14	1.52	1.95	2.42	2.94	3.51	4.12
1 1/4" Steel	0.03	0.11	0.23	0.40	0.60	0.84	1.12	1.44	1.79	2.17	2.59	3.05
2" Steel	0.02	0.07	0.14	0.25	0.37	0.52	0.69	0.89	1.10	1.34	1.60	1.88

# Design Data

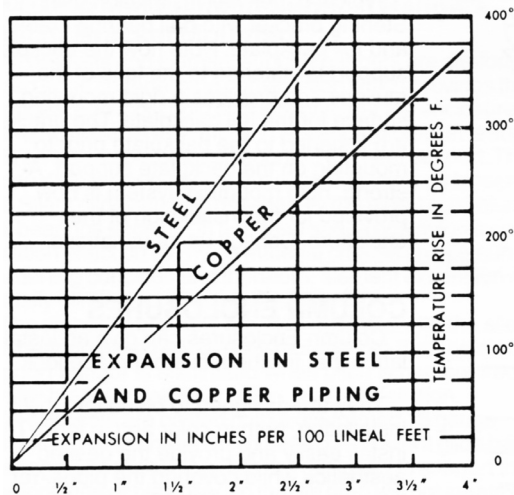
## GUARANTEED WORKING PRESSURES

- 1" IPS – 780 at Temperatures up to 650°F.
- 1-1/4" IPS – 660 at Temperatures up to 650°F.
- 2" IPS – 405 at Temperatures up to 650°F.
- 1-1/4" CU – 194 at Temperatures up to 300°F.
- 1" CU 204 at Temperatures up to 300°F.
- 3/4" CU 218 PSI at Temperatures up to 300°F.

MAXIMUM PRESSURES AT OTHER TEMPERATURES  
ARE AVAILABLE UPON REQUEST.

### Pipe Water Capacities and Quantities Circulated at Velocity of 3 Feet Per Second

Nominal Pipe Size	Pipe I.D. (inches)	Gals Per Lin. Ft.	GPM @ 3' per sec Velocity
3/4" Copper	0.835	0.028	5.12
1" Copper	1.077	0.047	8.52
1 1/4" Copper	1.315	0.071	12.70
1" Steel	1.075	0.047	8.49
1 1/4" Steel	1.395	0.079	14.29
2" Steel	2.115	0.183	32.85



### Glycol Correction Factors

#### Fluid Temperature 200°F

% Solution	Ethylene Glycol	Propylene Glycol
20	.952	.988
30	.921	.968
40	.888	.943
50	.852	.912

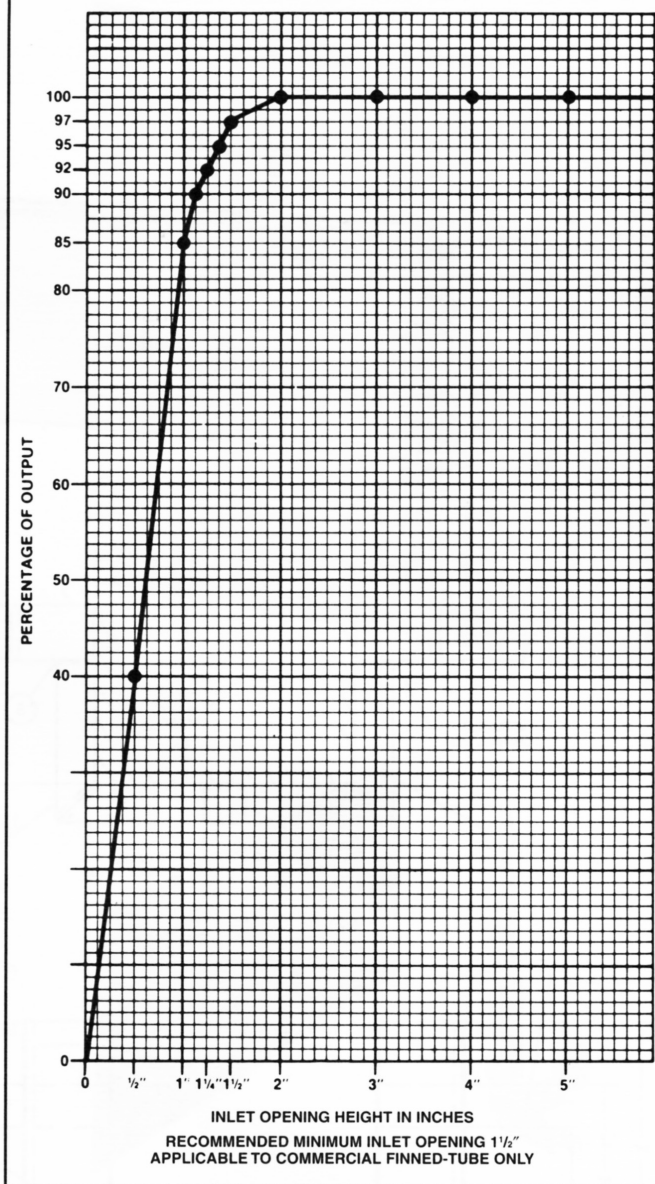
#### Fluid Temperature 180°F

% Solution	Ethylene Glycol	Propylene Glycol
20	.946	.982
30	.913	.961
40	.879	.934
50	.842	.902

#### Fluid Temperature 140°F

% Solution	Ethylene Glycol	Propylene Glycol
20	.934	.97
30	.898	.946
40	.861	.916
50	.821	.881

### INLET VS. OUTPUT/BTUH CAPACITY REDUCTION



### ALTITUDE FACTORS

Approximate factors for convective heat value at varying altitudes

Altitude	Ferrous Units	Copper Alum. Units
Sea Level	1.000	1.000
1,000 ft.	.984	.969
2,000 ft.	.968	.938
3,000 ft.	.952	.908
4,000 ft.	.936	.878
5,000 ft.	.920	.850
6,000 ft.	.904	.822
7,000 ft.	.889	.795
8,000 ft.	.874	.768
9,000 ft.	.859	.743
10,000 ft.	.844	.718
15,000 ft.	.771	.603
20,000 ft.	.703	.502