

# LINOVECTOR II

Style LV3-X / LV4-X  
Copper/Aluminum and  
Steel Element Ratings

## Submittal

# Specification

### LV3-X Flat Top Element Supported Enclosure

#### ENCLOSURE:

STYLE: Flat Top  
OUTLET: 3/4" Sq. Perf

LENGTHS: 2'0" thru 8'0" in 6" Increments

MAT'L:  18 Ga. CRS (Std)  
 16 Ga. CRS (Opt'l)  
 14 Ga. CRS (Opt'l)  
 18 Ga. Stainless Steel (Opt'l)  
 16 Ga. Stainless Steel (Opt'l)  
 14 Ga. Stainless Steel (Opt'l)  
 16 Ga. Aluminum (Opt'l)  
 14 Ga. Aluminum (Opt'l)  
 12 Ga. Aluminum (Opt'l)

HEIGHT:  5 5/8" (LV3-X only)  
 6 1/8" (LV4-X only)  
 11 5/8" (LV3-X only)  
 12 1/8" (LV4-X only)  
 17 5/8" (LV3-X only)  
 18 1/8" (LV4-X only)

FINISH:  Baked Powder (Std)  
 Baked Metallic (Opt'l)

#### 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)

TYPE:  IPS Steel (Mechanically Expanded)

LENGTHS: 2'0" thru 12'6" in 1" Increments  
 NPT Thread both Ends (Std)  
 Beveled Ends for Field Weld (Opt'l)

See Catalog for Working Pressures

### LV4-X Flat Top Element Supported Enclosure

#### BACKPLATE:

TYPE: Not Applicable

#### BRACKETS:

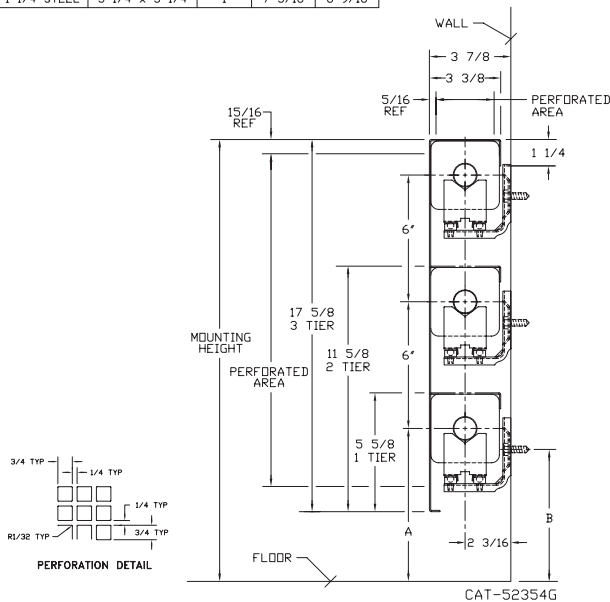
Wall Mtd B.B. Hngr (Copper or steel elements)  
 Pipe & Cover Supports (Steel elements only)

#### ACCESSORIES:

All Overlapping Type

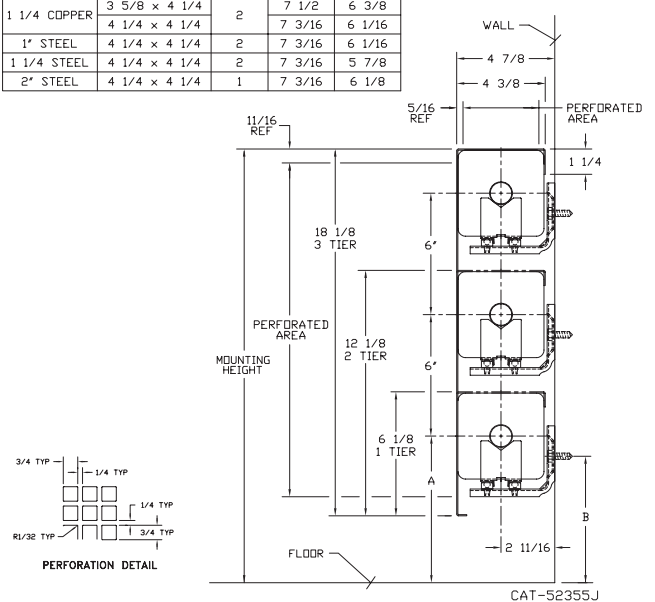
### LV3-X

ELEMENT TUBE SIZE	FIN SIZE HEIGHT x WIDTH	CRADLE NUMBER	A	B
3/4 COPPER	3 1/4 x 3 1/4	2	7 3/16	6 3/8
1" COPPER	3 1/4 x 3 1/4	2	7 3/16	6 3/16
1 1/4 COPPER	3 1/4 x 3 1/4	1	7 3/16	6 3/4
1" STEEL	3 1/4 x 3 1/4	2	7 3/16	6 1/16
1 1/4 STEEL	3 1/4 x 3 1/4	1	7 3/16	6 9/16



### LV4-X

ELEMENT TUBE SIZE	FIN SIZE HEIGHT x WIDTH	CRADLE NUMBER	A	B
3/4 COPPER	3 5/8 x 4 1/4	2	7 1/2	6 11/16
	4 1/4 x 4 1/4	3A	7 3/16	5 15/16
1" COPPER	3 5/8 x 4 1/4	2	7 1/2	6 1/2
	4 1/4 x 4 1/4		7 3/16	6 3/16
1 1/4 COPPER	3 5/8 x 4 1/4	2	7 1/2	6 3/8
	4 1/4 x 4 1/4		7 3/16	6 1/16
1" STEEL	4 1/4 x 4 1/4	2	7 3/16	6 1/16
1 1/4 STEEL	4 1/4 x 4 1/4	2	7 3/16	5 7/8
2" STEEL	4 1/4 x 4 1/4	1	7 3/16	6 1/8



# Vulcan

RADIATOR

260 North Elm St., Westfield, MA 01085  
(413) 568-9571 Fax: (413) 564-5661  
www.vulcanrad.com

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

# STYLE "LV3-X / LV4-X" LINOVECTOR II

## COPPER/ALUMINUM ELEMENTS

ALL RATINGS ARE IN BTU/HR/LIN FT AND BASED ON 3 FPS VELOCITY, 65° EAT

TUBE SIZE	CATALOG DESIGNATION	FIN SIZE HEIGHT X WIDTH	FINS PER FT.	FIN THICKNESS IN INCHES	ENCL HEIGHT IN INCHES	TIERS AND CENTERS IN INCHES	MOUNTING HEIGHT IN INCHES	STEAM 215° FACTOR	HOT WATER (AVG.)									
									200°	190°	180°	170°	160°	150°	140°	130°	120°	
									CORRECTION FACTORS FOR AVERAGE WATER TEMPERATURES									
									1.00	0.86	0.78	0.69	0.61	0.53	0.45	.40	.33	.26
3/4"	VC3/4-33	3-1/4" SQ.	32	.020	5	1	8-7/8	930	800	730	640	570	490	420	370	310	240	
					11	2 @ 6 CL	14-7/8	1650	1420	1290	1140	1010	870	740	660	540	430	
					17	3 @ 6 CL	20-7/8	2310	1990	1800	1590	1410	1220	1040	920	760	600	
3/4"	VC3/4-34	3-1/4" SQ.	40	.020	5	1	8-7/8	1090	940	850	750	660	580	490	440	360	280	
					11	2 @ 6 CL	14-7/8	1800	1550	1400	1240	1100	950	810	720	590	470	
					17	3 @ 6 CL	20-7/8	2470	2120	1930	1700	1510	1310	1110	990	820	640	
3/4"	VC3/4-35	3-1/4" SQ.	50	.020	5	1	8-7/8	1210	1040	940	830	740	640	540	480	400	310	
					11	2 @ 6 CL	14-7/8	1930	1660	1510	1330	1180	1020	870	770	640	500	
					17	3 @ 6 CL	20-7/8	2580	2220	2010	1780	1570	1370	1160	1030	850	670	
1"	VC33	3-1/4" SQ.	32	.020	5	1	8-7/8	930	800	730	640	570	490	420	370	310	240	
					11	2 @ 6 CL	14-7/8	1650	1420	1290	1140	1010	870	740	660	540	430	
					17	3 @ 6 CL	20-7/8	2280	1960	1780	1570	1390	1210	1030	910	750	590	
1"	VC34	3-1/4" SQ.	40	.020	5	1	8-7/8	1040	890	810	720	630	550	470	420	340	270	
					11	2 @ 6 CL	14-7/8	1780	1530	1390	1230	1090	940	800	710	590	460	
					17	3 @ 6 CL	20-7/8	2390	2060	1860	1650	1460	1270	1080	960	790	620	
1"	VC35	3-1/4" SQ.	50	.020	5	1	8-7/8	1160	1000	900	800	710	610	520	460	380	300	
					11	2 @ 6 CL	14-7/8	1860	1600	1450	1280	1130	990	840	740	610	480	
					17	3 @ 6 CL	20-7/8	2500	2150	1950	1720	1530	1330	1130	1000	830	650	
1-1/4"	VC133	3-1/4" SQ.	32	.020	5	1	8-7/8	930	800	730	640	570	490	420	370	310	240	
					11	2 @ 6 CL	14-7/8	1610	1380	1260	1110	980	850	720	640	530	420	
					17	3 @ 6 CL	20-7/8	2270	1950	1770	1570	1380	1200	1020	910	750	590	
1-1/4"	VC134	3-1/4" SQ.	40	.020	5	1	8-7/8	1020	880	800	700	620	540	460	410	340	270	
					11	2 @ 6 CL	14-7/8	1770	1520	1380	1220	1080	940	800	710	580	460	
					17	3 @ 6 CL	20-7/8	2350	2020	1830	1620	1430	1250	1060	940	780	610	
1-1/4"	VC135	3-1/4" SQ.	50	.020	5	1	8-7/8	1120	960	870	770	680	590	500	450	370	290	
					11	2 @ 6 CL	14-7/8	1820	1570	1420	1260	1110	960	820	730	600	470	
					17	3 @ 6 CL	20-7/8	2450	2110	1910	1690	1490	1300	1100	980	810	640	
3/4"	VC3/4-433	3-5/8" X 4-1/4"	32	.020	6	1	9-3/8	1160	1000	900	800	710	610	520	460	380	300	
					12	2 @ 6 CL	15-3/8	2040	1750	1590	1410	1240	1080	920	820	670	530	
					18	3 @ 6 CL	21-3/8	2760	2370	2150	1900	1680	1460	1240	1100	910	720	
3/4"	VC3/4-434	3-5/8" X 4-1/4"	40	.020	6	1	9-3/8	1390	1200	1080	960	850	740	630	560	460	360	
					12	2 @ 6 CL	15-3/8	2390	2060	1860	1650	1460	1270	1080	960	790	620	
					18	3 @ 6 CL	21-3/8	3170	2730	2470	2190	1930	1680	1430	1270	1050	820	
3/4"	VC3/4-435	3-5/8" X 4-1/4"	50	.020	6	1	9-3/8	1540	1320	1200	1060	940	820	690	620	510	400	
					12	2 @ 6 CL	15-3/8	2540	2180	1980	1750	1550	1350	1140	1020	840	660	
					18	3 @ 6 CL	21-3/8	3310	2850	2580	2280	2020	1750	1490	1320	1090	860	
1"	VC433	3-5/8" X 4-1/4"	32	.020	6	1	9-3/8	1210	1040	940	830	740	640	540	480	400	310	
					12	2 @ 6 CL	15-3/8	2130	1830	1660	1470	1300	1130	960	850	700	550	
					18	3 @ 6 CL	21-3/8	2880	2480	2250	1990	1760	1530	1300	1150	950	750	
1"	VC434	3-5/8" X 4-1/4"	40	.020	6	1	9-3/8	1350	1160	1050	930	820	720	610	540	450	350	
					12	2 @ 6 CL	15-3/8	2320	2000	1810	1600	1420	1230	1040	930	770	600	
					18	3 @ 6 CL	21-3/8	3070	2640	2390	2120	1870	1630	1380	1230	1010	800	
1"	VC435	3-5/8" X 4-1/4"	50	.020	6	1	9-3/8	1540	1320	1200	1060	940	820	690	620	510	400	
					12	2 @ 6 CL	15-3/8	2530	2180	1970	1750	1540	1340	1140	1010	830	660	
					18	3 @ 6 CL	21-3/8	3310	2850	2580	2280	2020	1750	1490	1320	1090	860	
1-1/4"	VC1433	3-5/8" X 4-1/4"	32	.020	6	1	9-3/8	1260	1080	980	870	770	670	570	500	420	330	
					12	2 @ 6 CL	15-3/8	2220	1910	1730	1530	1350	1180	1000	890	730	580	
					18	3 @ 6 CL	21-3/8	3000	2580	2340	2070	1830	1590	1350	1200	990	780	
1-1/4"	VC1434	3-5/8" X 4-1/4"	40	.020	6	1	9-3/8	1380	1190	1080	950	840	730	620	550	460	360	
					12	2 @ 6 CL	15-3/8	2370	2040	1850	1640	1450	1260	1070	950	780	620	
					18	3 @ 6 CL	21-3/8	3130	2690	2440	2160	1910	1660	1410	1250	1030	810	
1-1/4"	VC1435	3-5/8" X 4-1/4"	50	.020	6	1	9-3/8	1540	1320	1200	1060	940	820	690	620	510	400	
					12	2 @ 6 CL	15-3/8	2540	2180	1980	1750	1550	1350	1140	1020	840	660	
					18	3 @ 6 CL	21-3/8	3320	2860	2590	2290	2030	1760	1490	1330	1100	860	
3/4"	VC3/4 43	4-1/4" SQ.	32	.020	6	1	9-3/8	1290	1110	1010	890	790	680	580	520	430	340	
					12	2 @ 6 CL	15-3/8	2250	1940	1760	1550	1370	1190	1010	900	740	590	
					18	3 @ 6 CL	21-3/8	3070	2640	2390	2120	1870	1630	1380	1230	1010	800	
3/4"	VC3/4 44	4-1/4" SQ.	40	.020	6	1	9-3/8	1540	1320	1200	1060	940	820	690	620	510	400	
					12	2 @ 6 CL	15-3/8	2440	2100	1900	1680	1490	1290	1100	980	810	630	
					18	3 @ 6 CL	21-3/8	3200	2750	2500	2210	1950	1700	1440	1280	1060	830	
3/4"	VC3/4 45	4-1/4" SQ.	50	.020	6	1	9-3/8	1580	1360	1230	1090	960	840	710	630	520	410	
					12	2 @ 6 CL	15-3/8	2520	2170	1970	1740	1540	1340	1130	1010	830	660	
					18	3 @ 6 CL	21-3/8	3290	2830	2570	2270	2010	1740	1480	1320	1090	860	
1"	VC43	4-1/4" SQ.	32	.020	6	1	9-3/8	1290	1110	1010	890	790	680	580	520	430	340	
					12	2 @ 6 CL	15-3/8	2280	1960	1780	1570	1390	1210	1030	910	750	590	
					18	3 @ 6 CL	21-3/8	3100	2670	2420	2140	1890	1640	1400	1240	1020	810	

# STYLE "LV3-X / LV4-X" LINOVECTOR II

## COPPER/ALUMINUM ELEMENTS

ALL RATINGS ARE IN BTU/HR/LIN FT AND BASED ON 3 FPS VELOCITY, 65° EAT

TUBE SIZE	CATALOG DESIGNATION	FIN SIZE HEIGHT X WIDTH	FINS PER FT.	FIN THICKNESS IN INCHES	ENCL HEIGHT IN INCHES	TIERS AND CENTERS IN INCHES	MOUNTING HEIGHT IN INCHES	STEAM 215° FACTOR	HOT WATER (AVG.)								
									200°	190°	180°	170°	160°	150°	140°	130°	120°
									CORRECTION FACTORS FOR AVERAGE WATER TEMPERATURES								
								1.00	0.86	0.78	0.69	0.61	0.53	0.45	.40	.33	.26
1"	VC44	4-1/4" SQ.	40	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1430 2390 3190	1230 2060 2740	1120 1860 2490	990 1650 2200	870 1460 1950	760 1270 1690	640 1080 1440	570 960 1280	470 790 1050	370 620 830
1"	VC45	4-1/4" SQ.	50	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1610 2540 3320	1380 2180 2860	1260 1980 2590	1110 1750 2290	980 1550 2030	850 1350 1760	720 1140 1490	640 1020 1330	530 840 1100	420 660 860
1-1/4"	VC143	4-1/4" SQ.	32	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1340 2370 3230	1150 2040 2780	1050 1850 2520	920 1640 2230	820 1450 1970	710 1260 1710	600 1070 1450	540 950 1290	440 780 1070	350 620 840
1-1/4"	VC144	4-1/4" SQ.	40	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1590 2570 3350	1370 2210 2880	1240 2000 2610	1100 1770 2310	970 1570 2040	840 1360 1780	720 1160 1510	640 1030 1340	520 850 1110	410 670 870
1-1/4"	VC145	4-1/4" SQ.	50	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1640 2360 3070	1410 2030 2640	1280 1840 2390	1130 1630 2120	1000 1440 1870	870 1250 1630	740 1060 1380	660 940 1230	540 780 1010	430 610 800

Note: Copper tube furnished flared one end standard.

## STEEL ELEMENTS

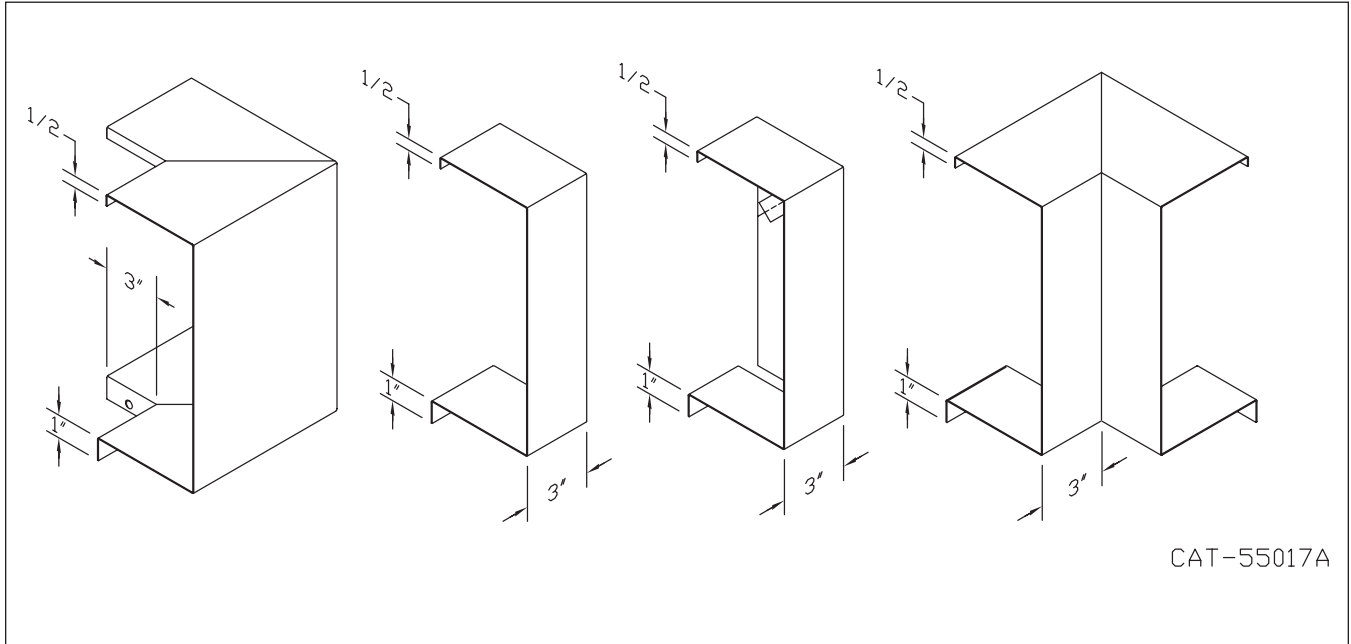
ALL RATINGS ARE IN BTU/HR/LIN FT AND BASED ON 3 FPS VELOCITY, 65° EAT

TUBE SIZE	CATALOG DESIGNATION	FIN SIZE HEIGHT X WIDTH	FINS PER FT.	FIN THICKNESS IN INCHES	ENCL HEIGHT IN INCHES	TIERS AND CENTERS IN INCHES	MOUNTING HEIGHT IN INCHES	STEAM 215° FACTOR	HOT WATER (AVG.)								
									200°	190°	180°	170°	160°	150°	140°	130°	120°
									CORRECTION FACTORS FOR AVERAGE WATER TEMPERATURES								
								1.00	0.86	0.78	0.69	0.61	0.53	0.45	.40	.33	.26
1"	VS33	3-1/4" SQ.	32	.032	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	870 1520 2110	750 1310 1810	680 1190 1650	600 1050 1460	530 930 1290	460 810 1120	390 680 950	350 610 840	290 500 700	230 400 550
1"	VS34	3-1/4" SQ.	40	.032	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	950 1630 2260	820 1400 1940	740 1270 1760	660 1120 1560	580 990 1380	500 860 1200	430 730 1020	380 650 900	310 540 750	250 420 590
1"	VS35	3-1/4" SQ.	50	.032	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	1020 1720 2350	880 1480 2020	800 1340 1830	700 1190 1620	620 1050 1430	540 910 1250	460 770 1060	410 690 940	340 570 780	270 450 610
1-1/4"	VS133	3-1/4" SQ.	32	.032	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	860 1560 2150	740 1340 1850	670 1220 1680	590 1080 1480	520 930 1310	460 830 1140	390 700 970	340 620 860	280 510 710	220 410 560
1-1/4"	VS134	3-1/4" SQ.	40	.032	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	960 1630 2160	830 1400 1860	750 1270 1680	660 1120 1490	590 990 1320	510 860 1140	430 730 970	380 650 860	320 540 710	250 420 560
1-1/4"	VS135	3-1/4" SQ.	50	.032	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	990 1680 2190	850 1440 1880	770 1310 1710	680 1160 1510	600 1020 1340	520 890 1160	450 760 990	400 670 880	330 550 720	260 440 570
1"	VS43	4-1/4" SQ.	32	.032	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1270 2230 2930	1090 1920 2520	990 1740 2290	880 1540 2020	770 1360 1790	670 1180 1550	570 1000 1320	510 890 1170	420 740 970	330 580 760
1"	VS44	4-1/4" SQ.	40	.032	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1430 2350 3050	1230 2020 2620	1120 1830 2380	990 1620 2100	870 1430 1860	760 1250 1620	640 1060 1370	570 940 1220	470 780 1010	370 610 790
1"	VS45	4-1/4" SQ.	50	.032	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1520 2410 3100	1310 2070 2670	1190 1880 2420	1050 1660 2140	930 1470 1890	810 1280 1640	680 1080 1400	610 960 1240	500 800 1020	400 630 810
1-1/4"	VS143	4-1/4" SQ.	32	.032	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1170 2210 2910	1010 1900 2500	910 1720 2270	810 1520 2010	710 1350 1780	620 1170 1540	530 990 1310	470 880 1160	390 730 960	300 570 760
1-1/4"	VS144	4-1/4" SQ.	40	.032	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1420 2340 3040	1220 2010 2610	1110 1830 2370	980 1610 2100	870 1430 1850	750 1240 1610	640 1050 1370	570 940 1220	470 770 1000	370 610 790
1-1/4"	VS145	4-1/4" SQ.	50	.032	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1490 2360 3070	1280 2030 2640	1160 1840 2390	1030 1630 2120	910 1440 1870	790 1250 1630	670 1060 1380	600 940 1230	490 780 1010	390 610 800
2"	VS242	4-1/4" SQ.	25	.032	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1090 1950 2590	940 1680 2230	850 1520 2020	750 1350 1790	660 1190 1580	580 1030 1370	490 880 1170	440 780 1040	360 640 850	280 510 670
2"	VS243	4-1/4" SQ.	32	.032	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1270 2140 2790	1090 1840 2400	990 1670 2180	880 1480 1930	770 1310 1700	670 1130 1480	570 960 1260	510 860 1120	420 710 920	330 560 730

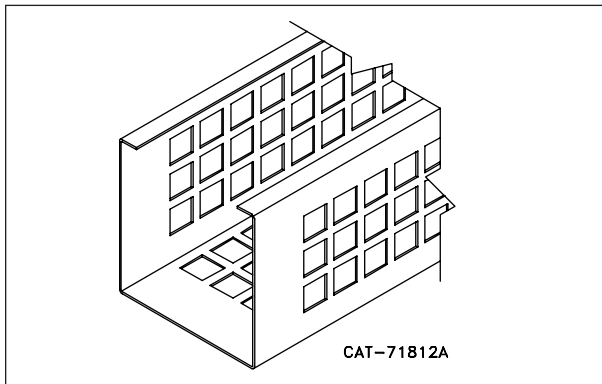
- Notes: 1) Steel fins furnished as .032 thick, painted black.  
 2) NPT threads furnished on steel elements. Please use domestic fittings for proper installation.  
 3) The ends can be provided chamfered for field welded fittings when specified.

# STYLE "LV3-X / LV4-X" LINOVECTOR II

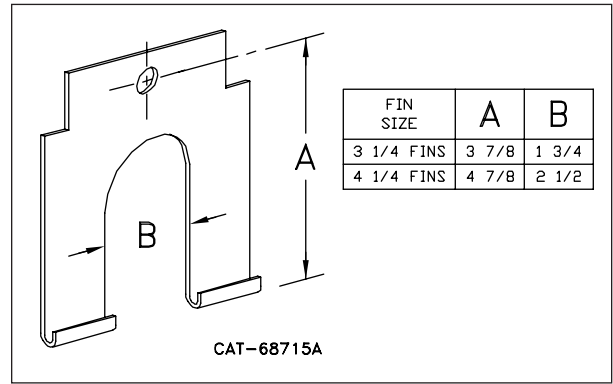
## STYLE X ACCESSORIES



## CEILING COVER



## CEILING HANGER



# Design Data

## Correction Factor Chart for Non-Standard Mounting Heights

MOUNTING HEIGHT (Inches)	ENCLOSURE STYLE						
	BARE FIN ALL SIZES	FRONT OUTLET	FT (FRONT & TOP)		SLOPE		
			3 1/4" FINS	4 1/4" FINS	2 3/4" FINS	3 1/4" FINS	4 1/4" FINS
40 or more	1.000	1.000	1.000	1.000	1.000	1.000	1.000
38	1.000	1.000	1.000	1.000	1.000	1.000	1.003
36	1.000	1.004	1.005	1.005	1.006	1.007	1.009
34	1.010	1.014	1.011	1.010	1.012	1.013	1.016
32	1.020	1.024	1.017	1.015	1.019	1.020	1.025
30	1.030	1.039	1.029	1.024	1.031	1.033	1.039
29	1.040	1.049	1.035	1.029	1.038	1.040	1.045
28	1.050	1.059	1.041	1.034	1.045	1.047	1.052
27	1.060	1.069	1.046	1.039	1.051	1.053	1.059
26	1.070	1.079	1.052	1.044	1.058	1.060	1.065
25	1.080	1.089	1.058	1.049	1.065	1.067	1.072
24	1.090	1.099	1.064	1.054	1.071	1.073	1.079
23	1.100	1.109	1.070	1.059	1.078	1.080	1.085
22	1.110	1.119	1.076	1.064	1.085	1.087	1.092
21	1.120	1.129	1.082	1.069	1.091	1.093	1.099
20	1.130	1.139	1.088	1.074	1.098	1.100	1.100
19	1.140	1.149	1.089	1.075	1.100	1.100	1.100
18 or less	1.150	1.150	1.089	1.075	1.100	1.100	1.100

**TOP OUTLET "T" IS NOT AFFECTED.**

The AHRI Ratings cataloged include the factor shown for the recommended mounting height.

If the unit is to be installed at a different height than that recommended, the AHRI Rating (except for Top Outlet) must be adjusted as follows: AHRI Rating multiplied by

$$\frac{\text{Factor from Table Above for actual mounting height}}{\text{Factor from Table Above for recommended mounting height}}$$

**FORMULA:**

$$\text{Catalog Rating} \times \frac{\text{Factor at 30" Height}}{\text{Factor at 18" Height}}$$

$$\text{SOLUTION: } 1950 \times \frac{1.039}{1.150} = 1760 \text{ BTU/Hr.}$$

**DYNAMIC FORMULAS**

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

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

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

# Design Data

## COMMERCIAL FINNED TUBE RATING CORRECTION CHARTS

CATALOG FINNED TUBE RATINGS ARE BASED UPON THE FOLLOWING CONDITIONS:

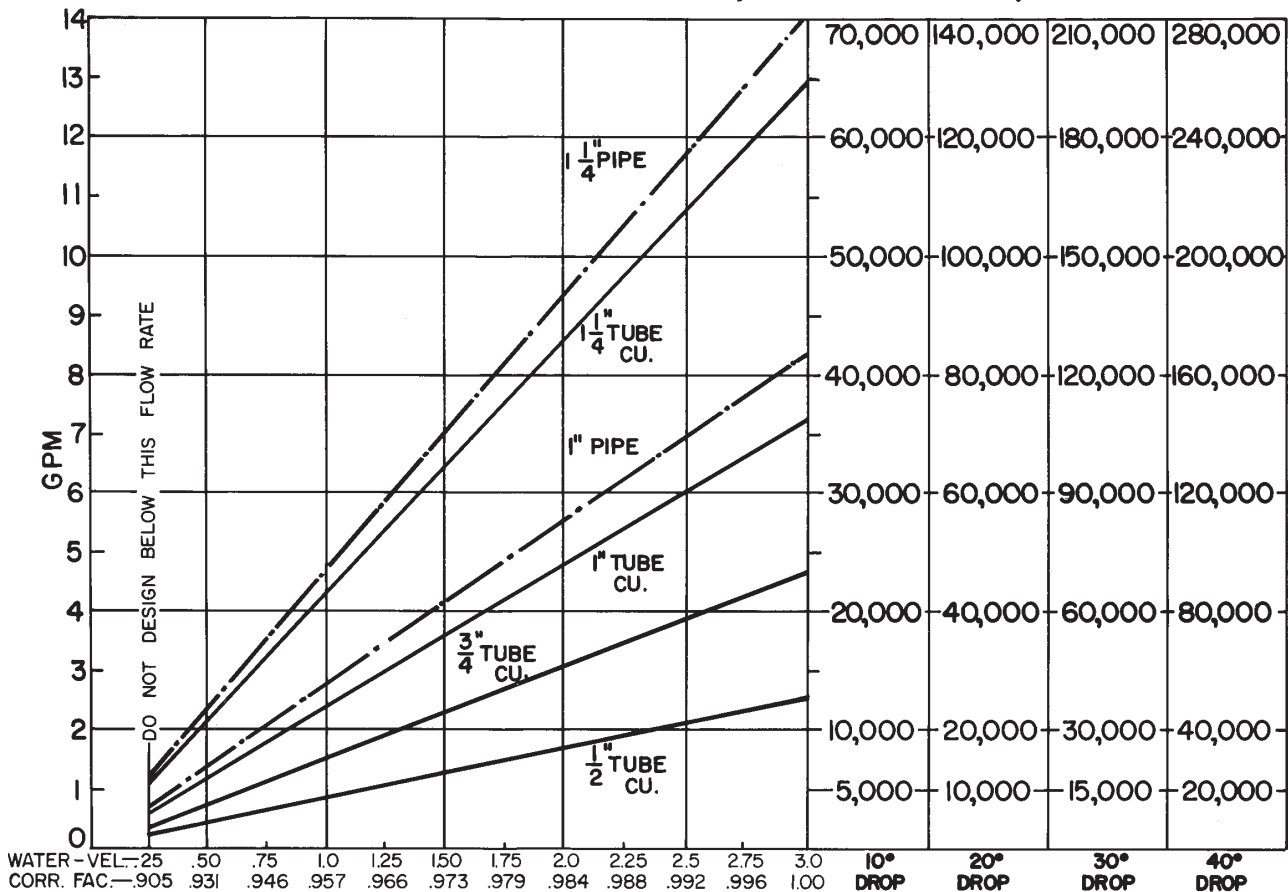
- 215°F AVERAGE WATER OR STEAM TEMPERATURE
- 65°F ENTERING AIR TEMPERATURE
- 3 FEET PER SECOND WATER FLOW RATE
- CATALOG MOUNTING HEIGHT

USE THE FOLLOWING CALCULATION WITH CORRECTION FACTORS FOR JOB CONDITIONS TO DETERMINE CORRECTED RATING:

$$\text{CORRECTED RATING} = (\text{215°F CATALOG RATING}) \times \left( \frac{\text{CORRECTION FACTOR FOR STEAM OR WATER AND AVERAGE AIR TEMP.}}{\text{CORRECTION FACTOR FOR MOUNTING HTG.-SEE CATALOG RATING}} \right) \times \left( \frac{\text{CORRECTION FACTOR FOR FLOW RATE}}{\text{CORRECTION FACTOR FOR MOUNTING HTG.-SEE CATALOG RATING}} \right)$$

USE THE FOLLOWING CHARTS TO SELECT CORRECTION FACTORS

### CHART/WATER VEL./CORR. FACTOR / PRESS. DROP/TOTAL BTU.

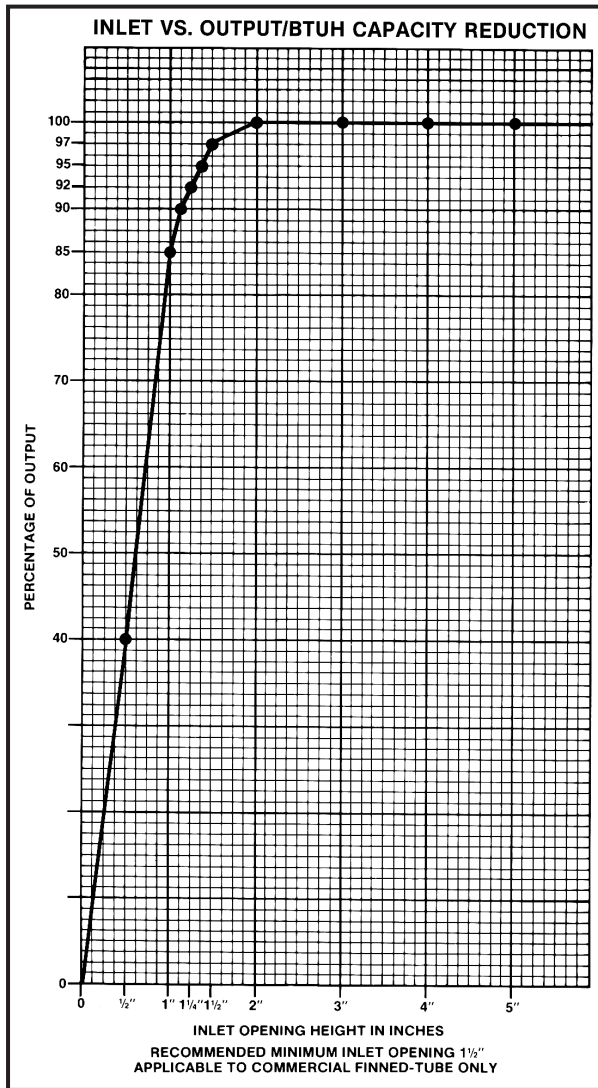


1/2" COP. ALUM.	1.80	2.33	5.33	9.16									
3/4" COP. ALUM.	.5	1.5	3.16	5.4	6.25								
1" COP. ALUM.	.233	.41	.83	1.45	2.16	2.83	3.66						
1" PIPE		.37	.79	1.3	2.00	2.70	3.70	4.80					
1 1/4" COP. ALUM.	.16	.33	.55	.79	1.08	1.33	1.8	2.25	2.26	2.91	3.3		
1 1/4" PIPE	.09	.18	.31	.5	.70	1.0	1.1	1.3	1.6	1.8	2.58	2.3	3.3

PRESSURE DROP PER 100 LINEAR FT., IN FEET OF HEAD

# Design Data

## INLET AIR CORRECTION FACTOR



### GUARANTEED WORKING PRESSURES

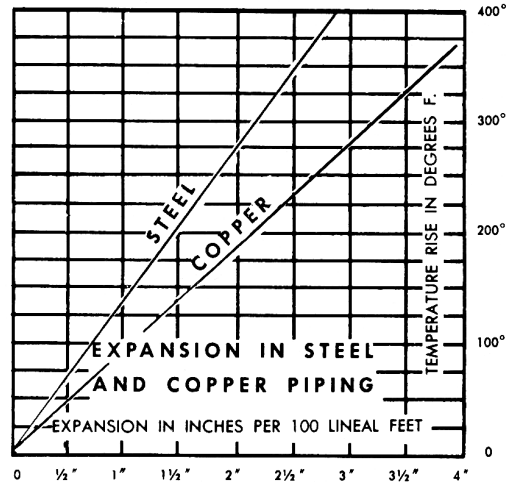
- 1" IPS — 780 AT TEMPERATURES UP TO 650°F.
  - 1 1/4" IPS — 660 AT TEMPERATURES UP TO 650°F.
  - 2" IPS — 405 AT TEMPERATURES UP TO 650°F.
  - 1 1/4" CU — 194 AT TEMPERATURES UP TO 300°F.
  - 1" CU — 204 AT TEMPERATURES UP TO 300°F.
  - 3/4" CU — 218 PSI AT TEMPERATURES UP TO 300°F.
- MAXIMUM PRESSURES AT OTHER TEMPERATURES ARE AVAILABLE UPON REQUEST.

### RATE OF PITCH FOR STEAM 1/2" DROP OVER 20 FT. RUN.

PIPE WATER CAPACITIES AND QUANTITIES CIRCULATED AT VELOCITY OF 3* FEET PER SECOND			
Pipe Size	Gals. Per Linear Ft.	Gals./Min. @ 3' Sec. Vel.*	Lbs./Hr. @ 3' Sec. Vel.*
1/2"	.016	2.88	1440
3/4"	.023	4.14	2070
1"	.040	7.20	3600
1 1/4"	.063	11.34	5660
1 1/2"	.102	18.36	9160
2"	.170	30.60	15300
2 1/2"	.275	49.50	24850
3"	.390	70.20	35000

\*3 Ft./Sec. Velocity is Basic for Hot Water Rating Factors Shown on this Page.

$$\text{VELOCITY FT./SEC.} = \frac{\text{LBS. PER HOUR}}{(\text{GALS. PER FT.}) (3600) (8.3)}$$



## 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

## 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



# Design Data

## CORRECTION FACTORS FOR STEAM PRESSURES AND AIR TEMPERATURES OTHER THAN STANDARD

STEAM		▼ ENTERING AIR TEMPERATURE, °F														
Pressure		Temp.														
Gauge	Abs. Psi	°F	45	55	65	70	75	80	85	90	100	110	120	130	140	150
(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"	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"	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
(Vac) 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	258.8	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.

## 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