

LINOVECTOR II

Submittal

LV3-C / LV4-C
Copper/Aluminum and
Steel Element Ratings

Specification

LV3-C Flat Top Element Supported Enclosure

ENCLOSURE:

STYLE: Flat Top, Top Outlet
OUTLET: Stamped Louvers
Pencil Proof

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-C only)
 6 1/8" (LV4-C only)
 11 5/8" (LV3-C only)
 12 1/8" (LV4-C only)
 17 5/8" (LV3-C only)
 18 1/8" (LV4-C 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-C Flat Top Element Supported Enclosure

BACKPLATE:

TYPE: Not Applicable

BRACKETS:

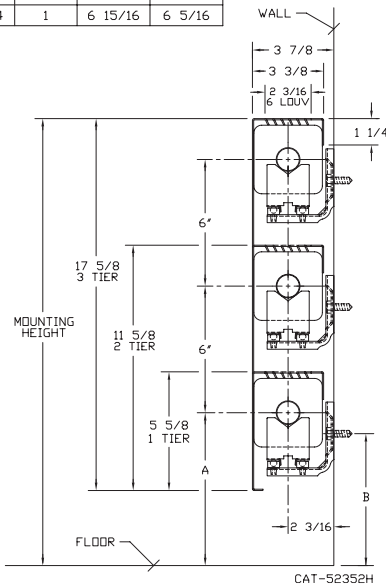
Wall Mtd B.B. Hngr (Copper or steel elements)
 Pipe & Cover Supports (Steel elements only)

ACCESSORIES:

All Overlapping Type

LV3-C

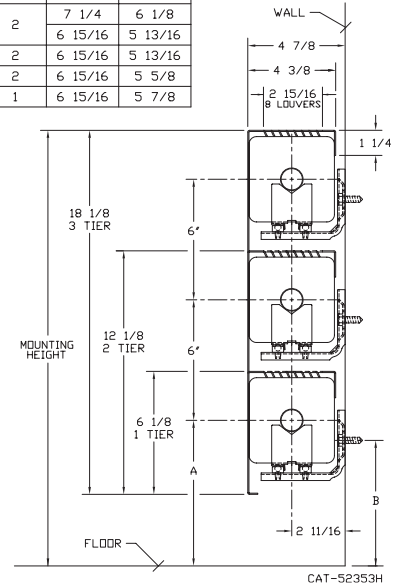
ELEMENT TUBE SIZE	FIN SIZE HEIGHT x WIDTH	CRADLE NUMBER	A	B
3/4 COPPER	3 1/4 x 3 1/4	2	6 15/16	6 1/8
1" COPPER	3 1/4 x 3 1/4	2	6 15/16	5 15/16
1 1/4 COPPER	3 1/4 x 3 1/4	1	6 15/16	6 1/2
1" STEEL	3 1/4 x 3 1/4	2	6 15/16	5 13/16
1 1/4 STEEL	3 1/4 x 3 1/4	1	6 15/16	6 5/16



CAT-52352H

LV4-C

ELEMENT TUBE SIZE	FIN SIZE HEIGHT x WIDTH	CRADLE NUMBER	A	B
3/4 COPPER	3 5/8 x 4 1/4	2	7 1/4	6 7/16
	4 1/4 x 4 1/4	3A	6 15/16	5 11/16
1" COPPER	3 5/8 x 4 1/4	2	7 1/4	6 1/4
	4 1/4 x 4 1/4	2	6 15/16	5 15/16
1 1/4 COPPER	3 5/8 x 4 1/4	2	7 1/4	6 1/8
	4 1/4 x 4 1/4	2	6 15/16	5 13/16
1" STEEL	4 1/4 x 4 1/4	2	6 15/16	5 13/16
1 1/4 STEEL	4 1/4 x 4 1/4	2	6 15/16	5 5/8
2" STEEL	4 1/4 x 4 1/4	1	6 15/16	5 7/8



CAT-52353H



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www.vulcanrad.com

PROJECT: _____ DATE: _____
LOCATION: _____
ARCHITECT: _____
ENGINEER: _____
CONTRACTOR: _____
PO NUMBER: _____

STYLE "LV3-C / LV4-C" 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 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	870 1460 1930	750 1260 1660	680 1140 1510	600 1010 1330	530 890 1180	460 770 1020	390 660 870	350 580 770	290 480 640	230 380 500
3/4"	VC3/4-34	3-1/4" SQ.	40	.020	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	1030 1600 2060	890 1380 1770	800 1250 1610	710 1100 1420	630 980 1260	550 850 1090	460 720 930	410 640 820	340 530 680	270 420 540
3/4"	VC3/4-35	3-1/4" SQ.	50	.020	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	1130 1710 2150	970 1470 1850	880 1330 1680	780 1180 1480	690 1040 1310	600 910 1140	510 770 970	450 680 860	370 560 710	290 440 560
1"	VC33	3-1/4" SQ.	32	.020	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	870 1460 1900	750 1260 1630	680 1140 1480	600 1010 1310	530 890 1160	460 770 1010	390 660 860	350 580 760	290 480 630	230 380 490
1"	VC34	3-1/4" SQ.	40	.020	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	970 1570 1990	830 1350 1710	760 1220 1550	670 1080 1370	590 960 1210	510 830 1050	440 710 900	390 630 800	320 520 660	250 410 520
1"	VC35	3-1/4" SQ.	50	.020	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	1090 1650 2080	940 1420 1790	850 1290 1620	750 1140 1440	660 1010 1270	580 870 1100	490 740 940	440 660 830	360 540 690	280 430 540
1-1/4"	VC133	3-1/4" SQ.	32	.020	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	870 1430 1890	750 1230 1630	680 1120 1470	600 990 1300	530 870 1150	460 760 1000	390 640 850	350 570 760	290 470 620	230 370 490
1-1/4"	VC134	3-1/4" SQ.	40	.020	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	950 1560 1960	820 1340 1690	740 1080 1530	660 950 1350	580 830 1200	500 700 1040	430 620 880	380 510 780	310 410 650	250 410 510
1-1/4"	VC135	3-1/4" SQ.	50	.020	5 11 17	1 2 @ 6 CL 3 @ 6 CL	8-7/8 14-7/8 20-7/8	1050 1620 2040	900 1390 1750	820 1260 1590	720 1120 1410	640 990 1240	560 860 1080	470 730 920	420 650 820	350 530 670	270 420 530
3/4"	VC3/4-433	3-5/8" X 4-1/4"	32	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1090 1810 2300	940 1560 1980	850 1410 1790	750 1250 1590	660 1100 1400	580 960 1220	490 810 1040	440 720 920	360 600 760	280 470 600
3/4"	VC3/4-434	3-5/8" X 4-1/4"	40	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1310 2120 2640	1130 1820 2270	1020 1650 2060	900 1460 1820	800 1290 1610	690 1120 1400	590 950 1190	520 850 1060	430 700 870	340 550 690
3/4"	VC3/4-435	3-5/8" X 4-1/4"	50	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1440 2250 2760	1240 1940 2370	1120 1760 2150	990 1550 1900	880 1370 1680	760 1190 1460	650 1010 1240	580 900 1100	480 740 910	370 590 720
1"	VC433	3-5/8" X 4-1/4"	32	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1130 1890 2400	970 1630 2060	880 1470 1870	780 1300 1660	690 1150 1460	600 1000 1270	510 850 1080	450 760 960	370 620 790	290 490 620
1"	VC434	3-5/8" X 4-1/4"	40	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1270 2060 2560	1090 1770 2200	990 1610 2000	880 1420 1770	770 1260 1560	670 1090 1360	570 930 1150	510 820 1020	420 680 840	330 540 670
1"	VC435	3-5/8" X 4-1/4"	50	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1440 2240 2760	1240 1930 2370	1120 1750 2150	990 1550 1900	880 1370 1680	760 1190 1460	650 1010 1240	580 900 1100	480 740 910	370 580 720
1-1/4"	VC1433	3-5/8" X 4-1/4"	32	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1180 1960 2500	1010 1690 2150	920 1530 1950	810 1350 1720	720 1200 1530	630 1040 1330	530 880 1130	470 780 1000	390 650 830	310 510 650
1-1/4"	VC1434	3-5/8" X 4-1/4"	40	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1300 2100 2610	1120 1810 2240	1010 1640 2040	900 1450 1800	790 1280 1590	690 1110 1380	590 950 1170	520 840 1040	430 690 860	340 550 680
1-1/4"	VC1435	3-5/8" X 4-1/4"	50	.020	6 12 18	1 2 @ 6 CL 3 @ 6 CL	9-3/8 15-3/8 21-3/8	1440 2250 2770	1240 1940 2380	1120 1760 2160	990 1550 1910	880 1370 1690	760 1190 1470	650 1010 1240	580 900 1110	480 740 910	370 590 720
3/4"	VC3/4 43	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	1210 1990 2560	1040 1710 2200	940 1550 2000	830 1370 1770	740 1210 1560	640 1050 1360	540 900 1150	480 800 1020	400 660 840	310 520 670
3/4"	VC3/4 44	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	1440 2160 2660	1240 1860 2290	1120 1680 2070	990 1490 1840	880 1320 1620	760 1140 1410	650 970 1200	580 860 1060	480 710 880	370 560 690
3/4"	VC3/4 45	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	1490 2230 2740	1280 1920 2360	1160 1740 2140	1030 1540 1890	910 1360 1670	790 1180 1450	670 1000 1230	600 890 1100	490 740 900	390 580 710
1"	VC43	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	1210 2010 2580	1040 1730 2220	940 1570 2010	830 1390 1780	740 1230 1570	640 1070 1370	540 900 1160	480 800 1030	400 660 850	310 520 670

STYLE "LV3-C / LV4-C" 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	1340 2120 2660	1150 1820 2290	1050 1650 2070	920 1460 1840	820 1290 1620	710 1120 1410	600 950 1200	540 850 1060	440 700 880	350 550 690
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	1510 2250 2770	1300 1940 2380	1180 1760 2160	1040 1550 1910	920 1370 1690	800 1190 1470	680 1010 1250	600 900 1110	500 740 910	390 590 720
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	1260 2100 2690	1080 1810 2310	980 1640 2100	870 1450 1860	770 1280 1640	670 1110 1430	570 950 1210	500 840 1080	420 690 890	330 550 700
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	1490 2280 2790	1280 1960 2400	1160 1780 2180	1030 1570 1930	910 1390 1700	790 1210 1480	670 1030 1260	600 910 1120	490 750 920	390 590 730
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	1540 2090 2560	1320 1800 2200	1200 1630 2000	1060 1440 1770	940 1270 1560	820 1110 1360	690 940 1150	620 840 1020	510 690 840	400 540 670

Note: Copper tube furnished flared one end standard.

STEEL ELEMENTS

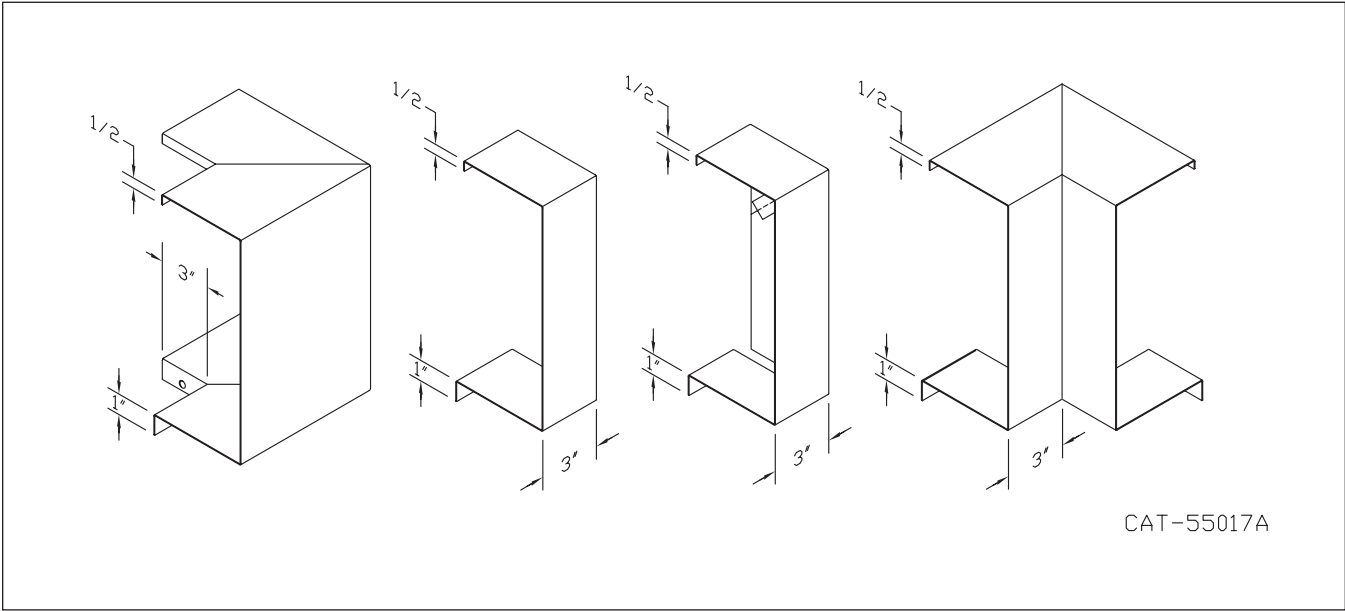
ALL RATINGS ARE IN BTU/HR/LIN FT AND BASED ON 3 FPS VELOCITY, 65° EAT

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	820 1340 1760	710 1150 1510	640 1050 1370	570 920 1210	500 820 1070	430 710 930	370 600 790	330 540 700	270 440 580	210 350 460
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	890 1450 1880	770 1250 1620	690 1130 1470	610 1000 1300	540 880 1150	470 770 1000	400 650 850	360 580 750	290 480 620	230 380 490
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	950 1520 1960	820 1310 1690	740 1190 1530	660 1050 1350	580 930 1200	500 810 1040	430 680 880	380 610 780	310 500 650	250 400 510
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	810 1380 1790	700 1190 1540	630 1080 1400	560 950 1240	490 840 1090	430 730 950	360 620 810	320 550 720	270 460 590	210 360 470
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	900 1450 1800	770 1250 1550	700 1130 1400	620 1000 1240	550 880 1100	480 770 950	410 650 810	360 580 720	300 480 590	230 380 470
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	930 1490 1820	800 1280 1570	730 1160 1420	640 1030 1260	570 910 1110	490 790 960	420 670 820	370 600 730	310 490 600	240 390 470
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	1190 1970 2440	1020 1690 2100	930 1540 1900	820 1360 1680	730 1200 1490	630 1040 1290	540 890 1100	480 790 980	390 650 810	310 510 630
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	1340 2080 2540	1150 1790 2180	1050 1620 1980	920 1440 1750	820 1270 1550	710 1100 1350	600 940 1140	540 830 1020	440 690 840	350 540 660
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	1420 2130 2580	1220 1830 2220	1110 1660 2010	980 1470 1780	870 1300 1570	750 1130 1370	640 960 1160	570 850 1030	470 700 850	370 550 670
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	1100 1960 2420	950 1690 2080	860 1530 1890	760 1350 1670	670 1200 1480	580 1040 1280	500 880 1090	440 780 970	360 650 800	290 510 630
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	1330 2070 2540	1140 1780 2180	1040 1610 1980	920 1430 1750	810 1260 1550	700 1100 1350	600 930 1140	530 830 1020	440 680 840	350 540 660
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	1400 2090 2560	1200 1800 2200	1090 1630 2000	970 1440 1770	850 1270 1560	740 1110 1360	630 940 1150	560 840 1020	460 690 840	360 540 670
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	1030 1730 2160	890 1490 1860	800 1350 1680	710 1190 1490	630 1060 1320	550 920 1140	460 780 970	410 690 860	340 570 710	270 450 560
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	1190 1900 2330	1020 1630 2000	930 1480 1820	820 1310 1610	730 1160 1420	630 1010 1230	540 860 1050	480 760 930	390 630 770	310 490 610

- 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-C / LV4-C" LINOVECTOR II

STYLE C ACCESSORIES



Design Data

COMMERCIAL FINNED TUBE CHARTS FOR RATING CORRECTIONS

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

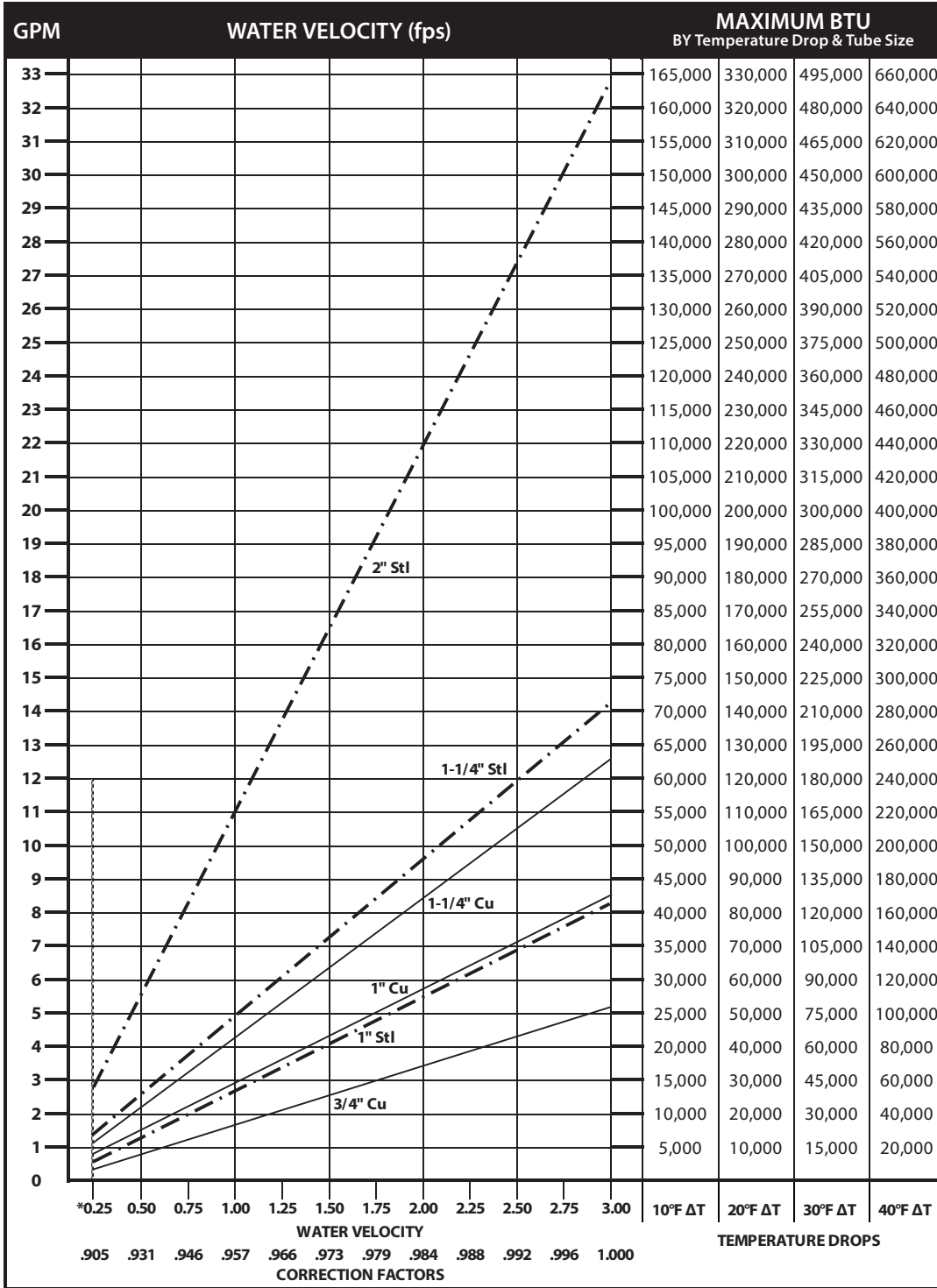
CORRECTION FACTORS FOR WATER TEMPERATURES AND AIR TEMPERATURES OTHER THAN STANDARD															
AVERAGE WATER TEMP. °F	ENTERING AIR TEMPERATURE °F														
	45	55	STD 65	70	75	80	85	90	95	100	110	120	130	140	150
90	.19	.13	.11	.06											
100	.25	.19	.15	.11	.08	.06									
110	.31	.25	.20	.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		ENTERING AIR TEMPERATURE °F														
PRESSURE		TEMP. °F	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"	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
▶ 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

$$BTU = GPM \times 500 \times TD$$

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

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

*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

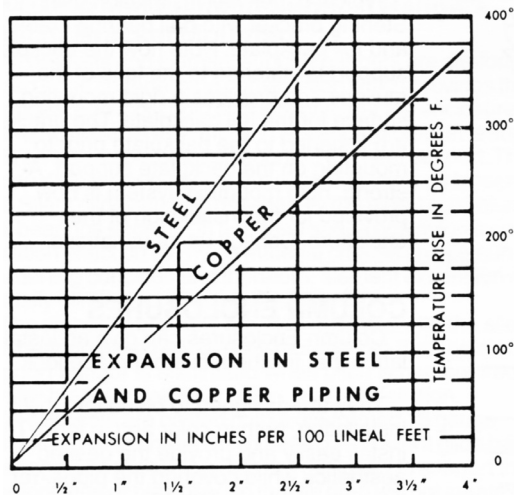
GUARANTEED WORKING PRESSURES

- 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

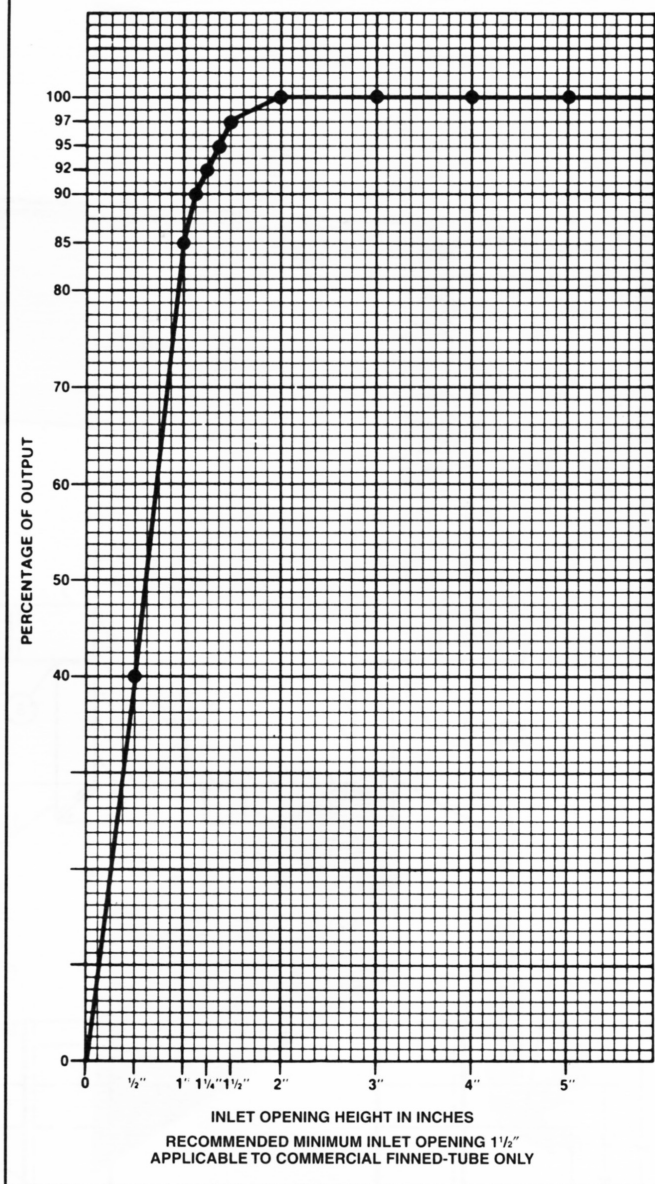
Fluid Temperature 180°F

% 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