



VariCool Series

TECHNICAL DATA MANUAL

Variable Air Volume System
Water-Cooled
9 thru 70 Tons

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VariCool Series

Basic Model Designation

EXAMPLE: $\frac{AV}{a} \frac{W}{b} \frac{40}{c} \frac{G}{d} \frac{3}{e} \frac{A}{f} \frac{100}{g} - \frac{T}{h}$

- a. "AV" Variable Air Volume
- b. "W" Water-Cooled Self Contained
- c. "9", "11", "13", "18", "23", "27", "29", "35", "36", "42", "47",
"51", "54", "57", "63", "70"
Model Number
- d. "G" Common to all
- e. "3", "4" or "5" Indicates Voltage
 - "3" 208-230V, 3 PH
 - "4" 460V, 3 PH
 - "5" 575V, 3 PH
- f. "A", "D"
 - "A" Indicates 2 Refrigerant Circuits
 - "D" Indicates 4 Refrigerant Circuits
- g. "30", "40", "45", "60", "70", "75", "80", "90", "100"
Indicates Nominal kW Rating for Heaters
- h. "T", "L", "R" Indicates Air Path Configuration
 - "T" = Top Supply Air
 - "L" = Left Side Supply Air (When facing return air inlet)
 - "R" = Right Side Supply Air (When facing return air inlet)

-----Product Overview-----

The VariCool is a self-contained air conditioning system for use with floor-by-floor cooling applications. The VariCool was designed and engineered specifically for fast, trouble-free installation in renovation and retrofit applications. The modular, knock-down, three-piece construction allows easy access through standard doorways and elevators preserving the building's architectural integrity. It also eliminates unnecessary construction, saving both time and money. The unit is shipped in three sections and fully charged with refrigerant eliminating brazing, evacuation and charging in the field. All components are pre-wired for reduced installation time and expense without sacrificing reliability. The VariCool can be custom tailored with many options and special features for your unique application.

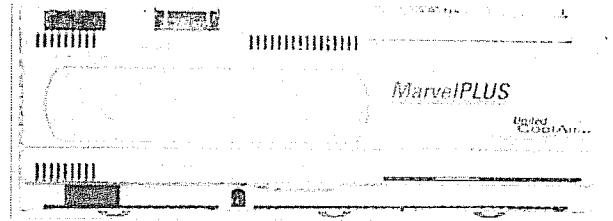
UNIT FEATURES

- 114.4 – 852.4 Total Cooling MBH (9½ - 71 Equivalent Tons)
- Water-Cooled, Self-Contained
- Meets ASHRAE 90.1 Standards for Efficiency
- Modular Construction (Shipped in 3 Sections)
- Indoor Configuration with Compact Footprint and Vertical Design
- Functionally Run Tested at the Factory
- R-22, Factory Charged Unit (R-407C optional)
- Single-Point Power Connection (Dual-Point Power required for larger KW Electric Heaters)
- Right or Left Hand Access to Control Panel
- Re-Sealable Refrigerant Connections
- Quick Connect Water Connections
- All Major Components Located Out of Air Stream
- Air Discharge Top, Right or Left
- Cabinets Have Durable Powder Coated Finish
- Removable Hinged Access Doors with Tool Operated Latches
- Welded Frame and Heavy-Gauge Sheet Metal Panels
- 2" High Density Thermal / Acoustical Insulation
- Co-axial Counterflow Heat Exchangers
- Water Regulating Head Pressure Control
- Hot Gas Bypass
- 2 to 4 Scroll Compressors (Max. 15 Tons/Circuit)
- Filter Drier & Sight Glass with Moisture Indication on Each Circuit
- High and Low Pressure Controls
- Aluminum Fin / Copper Tube Evaporator Coil, Draw Through Design
- High-Capacity Row-Split Evaporator Coil
- Double-Sloped Stainless Steel IAQ Drain Pan
- 2", 30% Pleated Throwaway Filters Accessible from Both Sides of Unit
- Maximum Operating Pressure (MOP) Externally Equalized TXV's
- Isolated VFD Compartment
- VFD Air Volume Control with Monitored Duct Static Pressure Capability
- EPACT Motor
- Seismic Spring Isolated Air Foil Plenum Fan and Motor Assembly
- Pillow Block Bearings on Plenum Fan with 200,000 Hour Life Expectancy
- DDC Controls with Time Clock
- 24 Volt Control Circuits
- Air Flow Switch, High Static Switch, Dirty Filter Switch, Drain Pan Overflow Switch
- One Year Limited Warranty on Parts and Five Year Limited Warranty on Compressor (Labor Not Included)

Product Overview

Marvel™ Plus FEATURES

- Four Line by 20 Character LCD Display
- Manual Control is Possible for Any System from the Controller Keypad
- Password Protection
- Automatic Restart from a Power Failure Situation
- SCR Capability
- Real Time Clock
- BACNET, LONWORKS, METASYS & MODBUS Compatible Without a Gateway
- Return Air Temperature Sensor
- Supply Air Temperature Sensor
- Water Temperature Sensor
- Water Flow Switch Input
- Modem Ready
- pLAN Network Capability (RS485)
- Air Pressure Transducer (static) Input
- Air Pressure Switch (high static) Input
- High & low Refrigerant Pressure Switch Input
- 6MB Flash Memory
- 10 Analogue Inputs
- 18 Digital Inputs
- 6 Analogue Outputs
- 18 Digital Outputs
- Plastic Housing with Standard DIN Rail Mounting
- Pop-Up Covers on Housing that Allows Insertion of Communication and Printer Boards
- Screw Down Plug-in Connectors
- Alarm History Stored in Memory
- Operating Conditions -10°C to 60°C, <90% RH Non-Condensing



Alarms:

- High Static
- High & Low Refrigerant Pressure
- Loss of Water Flow
- Loss of Air Flow
- Evaporator Motor Overload
- High & Low Supply Air Temperature
- Dirty Filter
- Smoke Detector
- Firestat
- Drain Pan Overflow
- Heater High Limit

Options:

- LONWORKS & BACNET Compatible
- User Interface
- Relative Humidity Sensor
- Outside Air Temperature Sensor
- Outside Air Humidity Sensor
- Smoke Detector
- Firestat
- Freezestat
- Maintenance Run Times
- Printer output

VariCool Physical Data

Model		9	11	13	18
Capacity (a)	Total	113.2	140.8	166.4	218.2
	Sensible	82.5	102.8	121.9	161.1
Blower	Type	Air Foil Plenum Fan			
	Size (Dia.)	14"	16"	16"	18"
	CFM Range	2400 - 3200	3000 - 4000	3600 - 4800	4800 - 6400
Filter	Type	Pleated Throwaway			
	Size (All 2" Th.)	25 x 20			20 x 20
	Qty	3			6
	Efficiency	30%			
Evaporator Coil	Type	Row Split			
	Face Area (Sq. Ft.)	7.2	9.0	9.0	12.6
	Rows	6			
	FPI	12			
Condenser	Type	Co-Axial			
	Working Pressure	400 psig			
Return Air	Duct Size	25" x 60"			40" x 60"
Supply Air	Duct Size	16 x 26		18 x 32	
Compressor	Type	Hermetic Scroll			
	Qty	2	2	2	2
	HP	4	5	6	8
Refrigerant	Type	R-407c			
	Lbs-Ozs	17 - 8	20 - 0	23 - 2	28 - 1
Weight (b) (Net Operating)	Evaporator	525	550	565	620
	Condensing	595	645	735	800
	Blower	590	620	700	760
	Assembly	1710	1815	2000	2180
Dimensions	Evaporator	68" H x 68" W x 32" D			
	Condenser	30" H x 68" W x 32" D			
	Blower	38" H x 68" W x 32" D			
	Assembly	68" H x 68" W x 64" D			

(a) Capacity based on 80° F DB / 67° F WB with 85° F EFT and 3 GPM / Ton

(b) Basic unit only. Options will add weight.

VariCool Physical Data

Model		23	27	29	35
Capacity (a)	Total	281.2	329.3	352.9	425.9
	Sensible	203.6	243.7	260.9	309.1
Blower	Type	Air Foil Plenum Fan			
	Size (Dia.)	20"	22"	22"	25"
	CFM Range	6000 - 8000	7200 - 9600	7800 - 10400	9000 - 12000
Filter	Type	Pleated Throwaway			
	Size (All 2" Th.)	25 x 20 / 25 x 25			20 x 20 / 20 x 25
	Qty	2 / 4			3 / 6
	Efficiency	30%			
Evaporator Coil	Type	Row Split			
	Face Area (Sq. Ft.)	17.7	21.1	21.1	24.4
	Rows	6			
	FPI	10	12		
Condenser	Type	Co-Axial			
	Working Pressure	400 psig			
Return Air	Duct Size	50" x 70"			60" x 70"
Supply Air	Duct Size	20 x 36		20 x 44	
Compressor	Type	Hermetic Scroll			
	Qty	2	2	2	2
	HP	10	12	13	15
Refrigerant	Type	R-407c			
	Lbs-Ozs	44 - 5	48 - 12	48 - 12	56 - 2
Weight (b) (Net Operating)	Evaporator	860	955	955	990
	Condensing	910	1050	1200	1225
	Blower	1135	1270	1305	1305
	Assembly	2905	3275	3460	3520
Dimensions	Evaporator	80" H x 80" W x 35" D			
	Condenser	32" H x 80" W x 35" D			
	Blower	48" H x 80" W x 35" D			
	Assembly	80" H x 80" W x 70" D			

(a) Capacity based on 80° F DB / 67° F WB with 85° F EFT and 3 GPM / Ton

(b) Basic unit only. Options will add weight.

VariCool Physical Data

Model	36	42	47	51	54	57	63	70
Capacity (a)								
Total	439.2	507.7	573.1	616.3	659.6	690.0	766.8	843.7
Sensible	322.2	370.8	418.1	448.4	478.6	505.0	560.4	615.8
Blower	Air Foil Plenum Fan							
Type	25"	28"	28"	32"	32"	32"	32"	36"
Size (Dia.)	9600 - 12800	10800 - 14400	12000 - 16000	13200 - 17600	14400 - 19200	15600 - 20800	16800 - 22400	18000 - 24000
CFM Range	Pleated Throwaway							
Type	20 x 20 / 20 x 25							
Size (All 2" Th.)	9 / 3							
Qty	12 / 4							
Efficiency	30%							
Evaporator	Row Split							
Type	25.6	29.9	34.1	37.0	39.9	39.9	42.7	45.5
Face Area (Sq. Ft.)	6							
Rows	12							
FPI	Co-Axial							
Type	400 psig							
Working Pressure	80" x 85"							
Return Air	30 x 42							
Duct Size	Hermetic Scroll							
Supply Air	R-407c							
Compressor	4	4	4	4	4	4	4	4
Qty	8	(2) 8 / (2) 10	10	(2) 10 / (2) 12	12	13	(2) 13 / (2) 15	15
HP	96 - 0							
Type	57 - 8	72 - 10	87 - 12	91 - 14	96 - 0	96 - 0	103 - 1	110 - 2
Lbs-Ozs	1260	1325	1390	1425	1480	1490	1535	1595
Evaporator	1700	1675	1850	1900	1945	2230	2250	2290
Condensing	1735	1790	1805	1955	1955	2090	2155	2155
Blower	4695	4790	5045	5280	5380	5810	5940	6040
Assembly	98" H x 100" W x 35" D							
Evaporator	36" H x 100" W x 52" D							
Condenser	62" H x 100" W x 52" D							
Blower	98" H x 100" W x 87" D							
Assembly								

(a) Capacity based on 80° F DB / 67° F WB with 85° F EFT and 3 GPM / Ton
 (b) Basic unit only. Options will add weight.

Water-Cooled Performance Data

Small Cabinet Two Compressors

TONS	CFM	ENTERING AIR TEMP. °F		GPM	Entering Water Temperature (10°F Rise)					
					80		85		90	
		DB	WB		TOTAL	SENSIBLE	TOTAL	SENSIBLE	TOTAL	SENSIBLE
9	3200	86	72	24	124,260	85,830	121,180	84,570	117,360	83,060
		80	67		115,120	83,400	113,210	82,530	111,240	81,570
		75	62.5		105,110	81,830	102,610	80,320	100,190	79,390
		72	60		101,990	80,990	98,270	79,150	96,180	78,510
11	4000	86	72	30	154,560	106,620	151,480	105,720	147,600	104,150
		80	67		142,690	103,770	140,890	102,880	136,510	100,950
		75	62.5		131,600	102,030	128,550	100,870	126,850	99,970
		72	60		128,210	101,570	125,410	100,150	121,980	98,980
13	4800	86	72	36	182,960	125,900	178,720	125,070	175,460	122,820
		80	67		167,640	122,860	166,430	121,910	161,530	119,350
		75	62.5		154,160	120,020	151,370	118,930	147,290	116,630
		72	60		148,520	118,410	144,960	116,820	141,270	114,610
18	6400	86	72	48	241,510	167,570	238,040	166,860	231,410	163,400
		80	67		220,500	162,120	218,290	161,150	212,660	158,040
		75	62.5		203,110	159,120	200,540	158,610	196,390	155,510
		72	60		195,880	157,100	192,880	156,160	188,360	152,820

Medium Cabinet Two Compressors

TONS	CFM	ENTERING AIR TEMP. °F		GPM	Entering Water Temperature (10°F Rise)					
					80		85		90	
		DB	WB		TOTAL	SENSIBLE	TOTAL	SENSIBLE	TOTAL	SENSIBLE
23	8000	86	72	60	313,370	213,270	306,710	210,460	301,310	208,940
		80	67		285,950	205,990	281,210	203,670	274,000	200,480
		75	62.5		263,370	202,480	259,860	201,360	253,190	198,100
		72	60		251,200	199,300	249,320	197,420	244,420	195,510
27	9600	86	72	72	361,400	253,740	355,670	251,290	349,130	248,580
		80	67		333,990	245,920	329,350	243,780	324,300	242,200
		75	62.5		310,490	243,650	307,260	240,980	299,830	238,220
		72	60		303,780	243,410	298,810	239,910	291,790	237,190
29	10400	86	72	78	387,940	270,750	383,980	269,880	372,720	265,750
		80	67		354,940	262,070	352,960	260,920	341,220	255,510
		75	62.5		324,370	256,220	323,610	255,530	314,230	252,000
		72	60		318,150	256,070	312,900	253,190	303,440	248,430
35	12000	86	72	90	469,090	320,770	463,430	320,480	453,800	315,180
		80	67		431,140	310,640	425,920	309,150	412,250	303,050
		75	62.5		395,000	305,480	393,410	305,280	377,870	297,980
		72	60		377,780	301,140	376,210	300,770	366,570	294,690

Water-Cooled Performance Data

Large Cabinet Four Compressors

TONS	CFM	ENTERING AIR TEMP. °F		GPM	Entering Water Temperature (10°F Rise)					
		DB	WB		80		85		90	
					TOTAL	SENSIBLE	TOTAL	SENSIBLE	TOTAL	SENSIBLE
36	12800	86	72	96	482,380	334,850	478,870	333,110	471,860	329,890
		80	67		443,900	324,550	439,240	322,200	430,050	318,020
		75	62.5		407,160	318,710	403,360	317,220	390,410	310,900
		72	60		396,600	315,930	386,520	311,860	379,620	308,150
42	14400	86	72	108	550,940	382,560	544,890	380,090	540,100	377,240
		80	67		510,850	372,800	507,760	370,850	495,980	365,350
		75	62.5		468,290	365,300	463,790	363,200	455,320	359,010
		72	60		452,910	361,490	447,140	358,040	440,910	354,890
47	16000	86	72	120	624,390	431,470	616,680	428,070	608,350	424,600
		80	67		580,260	421,700	573,100	418,190	561,900	412,670
		75	62.5		529,010	411,930	526,850	410,660	520,230	407,110
		72	60		512,390	407,450	506,520	404,150	502,210	401,630
51	17600	86	72	132	669,420	462,940	661,370	459,380	651,150	455,160
		80	67		623,900	452,100	616,380	448,420	604,170	442,690
		75	62.5		574,050	445,200	569,010	441,660	561,330	437,600
		72	60		553,080	438,470	544,870	434,020	539,050	430,700
54	19200	86	72	144	714,450	494,400	706,000	490,700	693,960	485,710
		80	67		667,740	482,510	659,670	478,660	646,440	472,710
		75	62.5		619,100	478,480	611,180	472,660	602,430	468,100
		72	60		593,770	469,500	583,220	463,900	575,890	459,770
57	20800	86	72	156	762,540	527,370	753,300	523,220	745,860	521,310
		80	67		698,930	511,130	690,010	505,060	679,980	500,280
		75	62.5		647,010	502,720	637,580	497,820	629,370	495,340
		72	60		622,420	495,780	612,490	490,680	605,100	486,500
63	22400	86	72	168	846,280	583,150	837,410	579,020	828,070	575,670
		80	67		776,560	564,930	766,880	560,460	755,280	553,870
		75	62.5		717,880	557,030	710,270	551,770	700,580	547,560
		72	60		688,360	546,960	680,080	543,560	671,820	538,840
70	24000	86	72	180	930,020	638,920	921,520	634,820	910,280	630,030
		80	67		854,190	618,730	843,750	615,860	830,550	607,460
		75	62.5		788,750	611,350	782,960	605,710	771,810	599,790
		72	60		754,290	598,150	747,680	596,440	738,540	591,170

VariCool Electrical Data (d) (e)

Small Cabinet Two Compressors

Model	Voltage	ESP	Compressor		Motor		Electric Heat (a)		MCA	MFS
			LRA	RLA	HP	FLA	kW	Amps		
9	208/230-3-60	1", 1.5"	91 ea	14.7 ea	3	9.2	---	---	42.3	60
		2"	91 ea	14.7 ea	5	13.5	---	---	46.6	65
	460-3-60	1", 1.5"	50 ea	7.1 ea	3	4.3	---	---	20.3	30
		2"	50 ea	7.1 ea	5	6.2	---	---	22.2	30
	208/230-3-60	1", 1.5"	91 ea	14.7 ea	3	9.2	15 (b)	37.7	58.6	60
			91 ea	14.7 ea	3	9.2	30 (c)	75.3	105.6	110
		2"	91 ea	14.7 ea	5	13.5	15 (b)	37.7	64.0	70
			91 ea	14.7 ea	5	13.5	30 (c)	75.3	111.0	115
	460-3-60	1", 1.5"	50 ea	7.1 ea	3	4.3	15 (b)	18.8	28.9	30
			50 ea	7.1 ea	3	4.3	30 (c)	37.7	52.5	55
		2"	50 ea	7.1 ea	5	6.2	15 (b)	18.8	31.3	35
			50 ea	7.1 ea	5	6.2	30 (c)	37.7	54.9	55
11	208/230-3-60	1", 1.5", 2"	128 ea	18.6 ea	5	13.5	---	---	55.4	75
	460-3-60	1", 1.5", 2"	63 ea	9.0 ea	5	6.2	---	---	26.5	40
	208/230-3-60	1", 1.5", 2"	128 ea	18.6 ea	5	13.5	20 (b)	50.2	79.6	85
			128 ea	18.6 ea	5	13.5	40 (c)	100.4	142.4	145
	460-3-60	1", 1.5", 2"	63 ea	9.0 ea	5	6.2	20 (b)	25.1	39.1	40
			63 ea	9.0 ea	5	6.2	40 (c)	50.2	70.5	75
13	208/230-3-60	1", 1.5", 2"	156 ea	18.6 ea	5	13.5	---	---	55.4	75
	460-3-60	1", 1.5", 2"	75 ea	9.0 ea	5	6.2	---	---	26.5	40
	208/230-3-60	1", 1.5", 2"	156 ea	18.6 ea	5	13.5	25 (b)	62.8	95.4	100
			156 ea	18.6 ea	5	13.5	45 (c)	113	158.1	160
	460-3-60	1", 1.5", 2"	75 ea	9.0 ea	5	6.2	25 (b)	31.4	47.0	50
			75 ea	9.0 ea	5	6.2	45 (c)	56.5	78.4	80
18	208/230-3-60	1"	195 ea	28.8 ea	5	13.5	---	---	78.3	110
		1.5", 2"	195 ea	28.8 ea	7.5	21	---	---	85.8	115
	460-3-60	1"	95 ea	14.7 ea	5	6.2	---	---	39.3	55
		1.5", 2"	95 ea	14.7 ea	7.5	9.6	---	---	42.7	60
	208/230-3-60	1"	195 ea	28.8 ea	5	13.5	30 (b)	75.3	111.0	115
			195 ea	28.8 ea	5	13.5	60 (c)	150.6	205.1	210
		1.5", 2"	195 ea	28.8 ea	7.5	21	30 (b)	75.3	120.4	125
			195 ea	28.8 ea	7.5	21	60 (c)	150.6	214.5	215
	460-3-60	1"	95 ea	14.7 ea	5	6.2	30 (b)	37.7	54.9	55
			95 ea	14.7 ea	5	6.2	60 (c)	75.3	101.9	105
		1.5", 2"	95 ea	14.7 ea	7.5	9.6	30 (b)	37.7	59.1	60
			95 ea	14.7 ea	7.5	9.6	60 (c)	75.3	106.1	110

(a) Electric heaters nominally rated at 230 volts or 460 volts. Amps listed at 230 volts or 460 volts.

(b) Typical morning warm up heat amount.

(c) Maximum amount of heat.

(d) Use Copper Conductors Only.

(e) Values listed are typical and may vary dependent upon the components utilized.

Manufacturer reserves the right to make changes without notice.

VariCool Electrical Data (d) (e)

Medium Cabinet Two Compressors

Model	Voltage	ESP	Compressor		Motor		Electric Heat (a)		Unit		Heater		
			LRA	RLA	HP	FLA	kW	Amps	MCA	MFS	MCA	MFS	
23	208/230-3-60	1", 1.5"	239 ea	37.2 ea	7.5	21	---	---	104.7	145	---	---	
		2"	239 ea	37.2 ea	10	28	---	---	111.7	150	---	---	
	460-3-60	1", 1.5"	125 ea	17.2 ea	7.5	9.6	---	---	48.3	70	---	---	
		2"	125 ea	17.2 ea	10	12.5	---	---	51.2	70	---	---	
	208/230-3-60	1", 1.5"	239 ea	37.2 ea	7.5	21	40 (b)	100.4	151.8	155	---	---	
			239 ea	37.2 ea	7.5	21	70 (c)	175.7	104.7	145	219.6	220	
		2"	239 ea	37.2 ea	10	28	40 (b)	100.4	160.5	165	---	---	
			239 ea	37.2 ea	10	28	70 (c)	175.7	111.7	150	219.6	220	
		460-3-60	1", 1.5"	125 ea	17.2 ea	7.5	9.6	40 (b)	50.2	74.8	75	---	---
			2"	125 ea	17.2 ea	7.5	9.6	70 (c)	87.9	121.9	125	---	---
	27	208/230-3-60	1", 1.5"	245 ea	42.3 ea	7.5	21	---	---	116.2	160	---	---
			2"	245 ea	42.3 ea	10	28	---	---	123.2	170	---	---
460-3-60		1", 1.5"	125 ea	17.6 ea	7.5	9.6	---	---	49.2	70	---	---	
		2"	125 ea	17.6 ea	10	12.5	---	---	52.1	70	---	---	
208/230-3-60		1", 1.5"	245 ea	42.3 ea	7.5	21	45 (b)	113	167.4	170	---	---	
			245 ea	42.3 ea	7.5	21	70 (c)	175.7	116.2	160	219.6	220	
		2"	245 ea	42.3 ea	10	28	45 (b)	113	176.2	180	---	---	
			245 ea	42.3 ea	10	28	70 (c)	175.7	123.2	170	219.6	220	
		460-3-60	1", 1.5"	125 ea	17.6 ea	7.5	9.6	45 (b)	56.5	82.6	85	---	---
			2"	125 ea	17.6 ea	7.5	9.6	70 (c)	87.9	121.8	125	---	---
460-3-60		1", 1.5"	125 ea	17.6 ea	10	12.5	45 (b)	56.5	86.2	90	---	---	
			125 ea	17.6 ea	10	12.5	70 (c)	87.9	86.2	90	---	---	
	2"	125 ea	17.6 ea	10	12.5	45 (b)	56.5	86.2	90	---	---		
		125 ea	17.6 ea	10	12.5	70 (c)	87.9	125.4	130	---	---		

- (a) Electric heaters nominally rated at 230 volts or 460 volts. Amps listed at 230 volts or 460 volts.
- (b) Typical morning warm up heat amount.
- (c) Maximum amount of heat.
- (d) Use Copper Conductors Only.
- (e) Values listed are typical and may vary dependent upon the components utilized.

Manufacturer reserves the right to make changes without notice.

VariCool Electrical Data (d) (e)

Medium Cabinet Two Compressors

Model	Voltage	ESP	Compressor		Motor		Electric Heat (a)		Unit		Heater		
			LRA	RLA	HP	FLA	kW	Amps	MCA	MFS	MCA	MFS	
29	208/230-3-60	1", 1.5"	350 ea	41 ea	10	28	---	---	120.3	165	---	---	
		2"	350 ea	41 ea	15	42	---	---	134.5	180	---	---	
	460-3-60	1", 1.5"	158 ea	21.8 ea	10	12.5	---	---	61.6	85	---	---	
		2"	158 ea	21.8 ea	15	19.5	---	---	68.6	95	---	---	
	208/230-3-60	1", 1.5"	350 ea	41 ea	10	28	50 (b)	125.5	120.3	165	156.9	160	
			350 ea	41 ea	10	28	70 (c)	175.7	120.3	165	219.6	220	
		2"	350 ea	41 ea	15	42	50 (b)	125.5	134.5	180	156.9	160	
			350 ea	41 ea	15	42	70 (c)	175.7	134.5	180	219.6	220	
		460-3-60	1", 1.5"	158 ea	21.8 ea	10	12.5	50 (b)	62.8	94.1	95	---	---
			2"	158 ea	21.8 ea	10	12.5	70 (c)	87.9	125.4	130	---	---
	35	208/230-3-60	1", 1.5", 2"	158 ea	21.8 ea	15	19.5	50 (b)	62.8	102.8	110	---	---
				158 ea	21.8 ea	15	19.5	70 (c)	87.9	134.2	135	---	---
460-3-60		1", 1.5", 2"	425 ea	48.1 ea	15	42	---	---	150.3	200	---	---	
			187 ea	23.7 ea	15	19.5	---	---	72.9	100	---	---	
208/230-3-60		1", 1.5", 2"	425 ea	48.1 ea	15	42	60 (b)	150.6	150.3	200	188.3	190	
			425 ea	48.1 ea	15	42	75 (c)	188.3	150.3	200	235.4	240	
460-3-60	1", 1.5", 2"	187 ea	23.7 ea	15	19.5	60 (b)	75.3	118.5	120	---	---		
		187 ea	23.7 ea	15	19.5	75 (c)	94.1	72.9	100	117.6	120		

(a) Electric heaters nominally rated at 230 volts or 460 volts. Amps listed at 230 volts or 460 volts.

(b) Typical morning warm up heat amount.

(c) Maximum amount of heat.

(d) Use Copper Conductors Only.

(e) Values listed are typical and may vary dependent upon the components utilized.

Manufacturer reserves the right to make changes without notice.

VariCool Electrical Data (d) (e)

Large Cabinet Four Compressors

Model	Voltage	ESP	Compressor		Motor		Electric Heat (a)		Unit		Heater		
			LRA	RLA	HP	FLA	kW	Amps	MCA	MFS	MCA	MFS	
36	208/230-3-60	1"	195 ea	28.8 ea	10	28	---	---	150.4	180	---	---	
		1.5", 2"	195 ea	28.8 ea	15	42	---	---	167.7	210	---	---	
		1"	95 ea	14.7 ea	10	12.5	---	---	75.0	90	---	---	
		1.5", 2"	95 ea	14.7 ea	15	19.5	---	---	83.2	105	---	---	
	460-3-60	1"	195 ea	28.8 ea	10	28	60 (b)	150.6	150.4	180	188.3	190	
		1.5", 2"	195 ea	28.8 ea	15	42	60 (b)	200.8	150.4	180	251	255	
		1"	95 ea	14.7 ea	10	12.5	60 (b)	75.3	109.8	110	---	---	
		1.5", 2"	95 ea	14.7 ea	15	19.5	60 (b)	75.3	118.5	120	---	---	
	42	208/230-3-60	1"	(2) 239	(2) 37.2	10	28	---	---	169.3	210	---	---
			1.5", 2"	(2) 239	(2) 37.2	15	42	---	---	184.5	230	---	---
			1"	(2) 195	(2) 17.2	10	12.5	---	---	80.6	100	---	---
			1.5", 2"	(2) 195	(2) 17.2	15	19.5	---	---	88.2	110	---	---
460-3-60		1"	(2) 239	(2) 37.2	10	28	70 (b)	175.7	169.3	210	219.6	220	
		1.5", 2"	(2) 239	(2) 37.2	15	42	70 (b)	175.7	167.7	210	219.6	220	
		1"	(2) 195	(2) 17.2	10	12.5	90 (c)	225.9	169.3	210	282.4	285	
		1.5", 2"	(2) 195	(2) 17.2	15	19.5	90 (c)	225.9	167.7	210	282.4	285	
460-3-60		1"	(2) 195	(2) 17.2	10	12.5	70 (b)	87.9	125.4	130	---	---	
		1.5", 2"	(2) 195	(2) 17.2	15	19.5	70 (b)	87.9	134.2	135	---	---	
		1"	(2) 195	(2) 17.2	10	12.5	90 (c)	113	80.6	100	141.3	145	
		1.5", 2"	(2) 195	(2) 17.2	15	19.5	90 (c)	113	88.2	110	141.3	145	

(a) Electric heaters nominally rated at 230 volts or 460 volts. Amps listed at 230 volts or 460 volts.

(b) Typical morning warm up heat amount.

(c) Maximum amount of heat.

(d) Use Copper Conductors Only.

(e) Values listed are typical and may vary dependent upon the components utilized.

Manufacturer reserves the right to make changes without notice.

VariCool Electrical Data (d) (e)

Large Cabinet Four Compressors

Model	Voltage	ESP	Compressor		Motor		Electric Heat (a)		Unit		Heater		
			LRA	RLA	HP	FLA	kW	Amps	MCA	MFS	MCA	MFS	
47	208/230-3-60	1", 1.5"	239 ea	37.2 ea	15	42	---	---	201.3	245	---	---	
		2"	239 ea	37.2 ea	20	55	---	---	217.6	275	---	---	
	460-3-60	1", 1.5"	125 ea	17.2 ea	15	19.5	---	---	93.2	115	---	---	
		2"	125 ea	17.2 ea	20	26	---	---	101.3	130	---	---	
	208/230-3-60	1", 1.5"	239 ea	37.2 ea	15	42	75 (b)	188.3	201.3	245	235.4	240	
			239 ea	37.2 ea	20	55	100 (c)	251.0	201.3	245	313.8	315	
		2"	239 ea	37.2 ea	20	55	75 (b)	188.3	217.6	275	235.4	240	
			239 ea	37.2 ea	20	55	100 (c)	251.0	217.6	275	313.8	315	
		460-3-60	1", 1.5"	125 ea	17.2 ea	15	19.5	75 (b)	94.1	93.2	115	117.6	120
			2"	125 ea	17.2 ea	20	26	100 (c)	125.5	93.2	115	156.9	160
51	208/230-3-60	1"	(2) 245	(2) 42.3	15	42	---	---	211.6	255	---	---	
		1.5", 2"	(2) 239	(2) 37.2	20	55	---	---	227.8	285	---	---	
	460-3-60	1"	125 ea	(2) 17.6	15	19.5	---	---	94	115	---	---	
		1.5", 2"	125 ea	(2) 17.2	20	26	---	---	102.1	130	---	---	
	208/230-3-60	1"	(2) 245	(2) 42.3	15	42	85 (b)	213.4	211.6	255	266.8	270	
			(2) 239	(2) 37.2	20	55	100 (c)	251	211.6	255	313.8	315	
		1.5", 2"	(2) 245	(2) 42.3	20	55	85 (b)	213.4	227.8	285	266.8	270	
			(2) 239	(2) 37.2	20	55	100 (c)	251	227.8	285	313.8	315	
		460-3-60	1"	125 ea	(2) 17.6	15	19.5	85 (b)	106.7	94	115	133.4	135
			1.5", 2"	125 ea	(2) 17.2	20	26	100 (c)	125.5	94	115	156.9	160

(a) Electric heaters nominally rated at 230 volts or 460 volts. Amps listed at 230 volts or 460 volts.

(b) Typical morning warm up heat amount.

(c) Maximum amount of heat.

(d) Use Copper Conductors Only.

(e) Values listed are typical and may vary dependent upon the components utilized.

Manufacturer reserves the right to make changes without notice.

VariCool Electrical Data (d) (e)

Large Cabinet Four Compressors

Model	Voltage	ESP	Compressor		Motor		Electric Heat (a)		Unit		Heater		
			LRA	RLA	HP	FLA	kW	Amps	MCA	MFS	MCA	MFS	
54	208/230-3-60	1"	245 ea	42.3 ea	15	42	---	---	221.8	265	---	---	
		1.5", 2"	245 ea	42.3 ea	20	55	---	---	238.0	295	---	---	
		1"	125 ea	17.6 ea	15	19.5	---	---	94.8	115	---	---	
	460-3-60	1.5", 2"	125 ea	17.6 ea	20	26	---	---	102.9	130	---	---	
		1"	245 ea	42.3 ea	15	42	95 (b)	238.5	221.8	265	298.1	300	
		1.5", 2"	245 ea	42.3 ea	15	42	100 (c)	251.0	221.8	265	313.8	315	
	460-3-60	1"	1.5", 2"	245 ea	42.3 ea	20	55	95 (b)	238.5	238.0	295	298.1	300
				245 ea	42.3 ea	20	55	100 (c)	251.0	238.0	295	313.8	315
				125 ea	17.6 ea	15	19.5	95 (b)	119.2	94.8	115	149	150
		1.5", 2"	1"	125 ea	17.6 ea	15	19.5	100 (c)	125.5	94.8	115	156.9	160
				125 ea	17.6 ea	20	26	95 (b)	119.2	102.9	130	149	150
				125 ea	17.6 ea	20	26	100 (c)	125.5	102.9	130	156.9	160
57	208/230-3-60	1", 1.5"	350 ea	41 ea	20	55	---	---	232.8	290	---	---	
		2"	350 ea	41 ea	25	66	---	---	246.5	315	---	---	
		1", 1.5"	158 ea	21.8 ea	20	26	---	---	119.7	150	---	---	
	460-3-60	2"	158 ea	21.8 ea	25	30	---	---	124.7	155	---	---	
			350 ea	41 ea	20	55	100 (b)	251	232.8	290	313.8	315	
			350 ea	41 ea	20	55	100 (c)	251	232.8	290	313.8	315	
460-3-60	1", 1.5"	2"	350 ea	41 ea	25	66	100 (b)	251	246.5	315	313.8	315	
			350 ea	41 ea	25	66	100 (c)	251	246.5	315	313.8	315	
			158 ea	21.8 ea	20	26	100 (b)	125.5	119.7	150	156.9	160	
	2"	1", 1.5"	158 ea	21.8 ea	20	26	100 (c)	125.5	119.7	150	156.9	160	
			158 ea	21.8 ea	25	30	100 (b)	125.5	124.7	155	156.9	160	
			158 ea	21.8 ea	25	30	100 (c)	125.5	124.7	155	156.9	160	

(a) Electric heaters nominally rated at 230 volts or 460 volts. Amps listed at 230 volts or 460 volts.

(b) Typical morning warm up heat amount.

(c) Maximum amount of heat.

(d) Use Copper Conductors Only.

(e) Values listed are typical and may vary dependent upon the components utilized.

Manufacturer reserves the right to make changes without notice.

VariCool Electrical Data (d) (e)

Large Cabinet Four Compressors

Model	Voltage	ESP	Compressor		Motor		Electric Heat (a) kW	Amps	Unit		Heater	
			LRA	RLA	HP	FLA			MCA	MFS	MCA	MFS
63	208/230-3-60	1"	(2) 425	(2) 48.1	20	55	---	---	247.0	305	---	---
		1.5", 2"	(2) 350	(2) 41	25	66	---	---	260.7	330	---	---
	460-3-60	1"	(2) 187	(2) 23.7	20	26	---	---	123.5	150	---	---
		1.5", 2"	(2) 158	(2) 21.8	25	30	---	---	128.5	160	---	---
	208/230-3-60	1"	(2) 425	(2) 48.1	20	55	100 (b)	251	247	305	313.8	315
			(2) 350	(2) 41	20	55	100 (c)	251	247	305	313.8	315
1.5", 2"		(2) 425	(2) 48.1	25	66	100 (b)	251	260.7	330	313.8	315	
		(2) 350	(2) 41	25	66	100 (c)	251	260.7	330	313.8	315	
70	208/230-3-60	1"	(2) 187	(2) 23.7	20	26	100 (b)	125.5	123.5	150	156.9	160
		2"	(2) 158	(2) 21.8	20	26	100 (c)	125.5	123.5	150	156.9	160
	460-3-60	1", 1.5"	425 ea	48.1 ea	25	66	---	---	274.9	345	---	---
		2"	187 ea	23.7 ea	30	80	---	---	292.4	375	---	---
	208/230-3-60	1", 1.5"	425 ea	48.1 ea	25	66	100 (b)	251	274.9	345	313.8	315
			187 ea	23.7 ea	30	80	100 (c)	251	274.9	345	313.8	315
2"		425 ea	48.1 ea	30	80	100 (b)	251	292.4	375	313.8	315	
		187 ea	23.7 ea	30	80	100 (c)	251	292.4	375	313.8	315	
460-3-60	1", 1.5"	187 ea	23.7 ea	25	30	100 (b)	125.5	132.3	165	156.9	160	
	2"	187 ea	23.7 ea	30	35	100 (c)	125.5	132.3	165	156.9	160	

(a) Electric heaters nominally rated at 230 volts or 460 volts. Amps listed at 230 volts or 460 volts.

(b) Typical morning warm up heat amount.

(c) Maximum amount of heat.

(d) Use Copper Conductors Only.

(e) Values listed are typical and may vary dependent upon the components utilized.

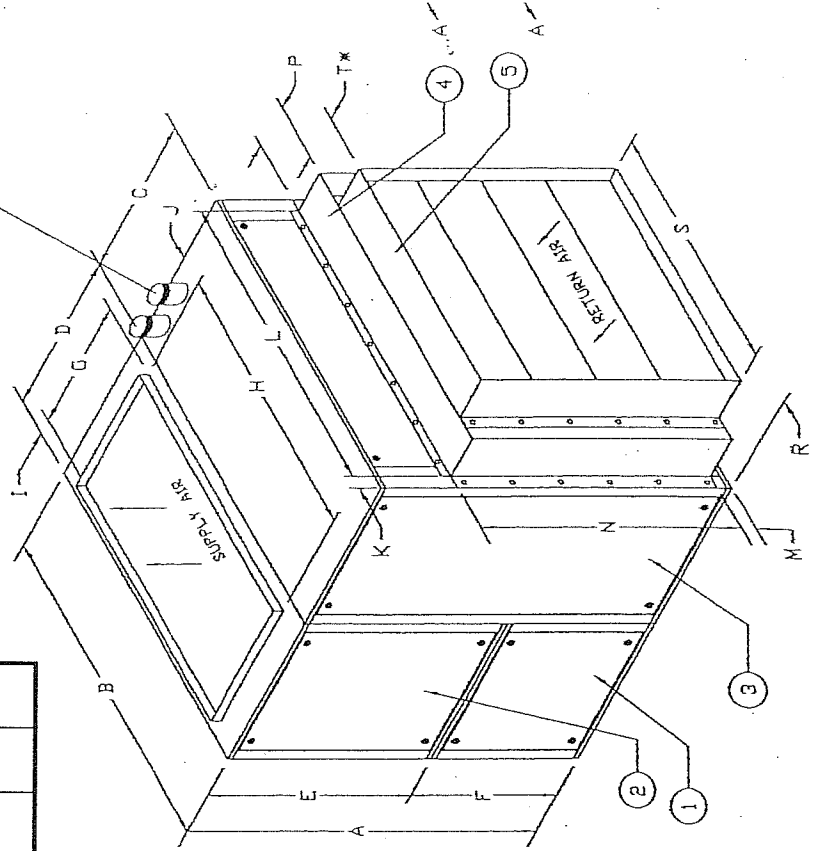
Manufacturer reserves the right to make changes without notice.

Dimensions

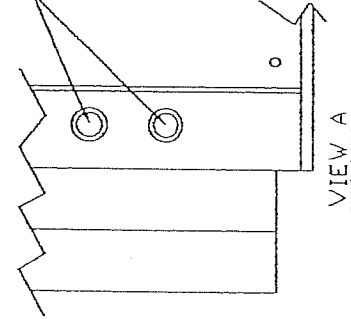
Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S	T
9							16	26	8	21				20				
11	68	68	32	32	38	30	18	32	7	18			21.5	40		5	50	
13																		
18																		
23								36	7.5	22				40				
27	80	80		35	48	32	20	44		18		21	60		5	66		
29																		
35																		
36																		7
42			35					42		29								
47																		
51	98	100		52	62	36	30		11		1.5	97	4	80	10.5	4.5	86	
54																		
57								52		24								
63																		
70																		

Item	Section
1	Compressor Section
2	Fan Section
3	Evaporator Section
4	Economizer Section (36 - 70 Only)
5	Filter Rack

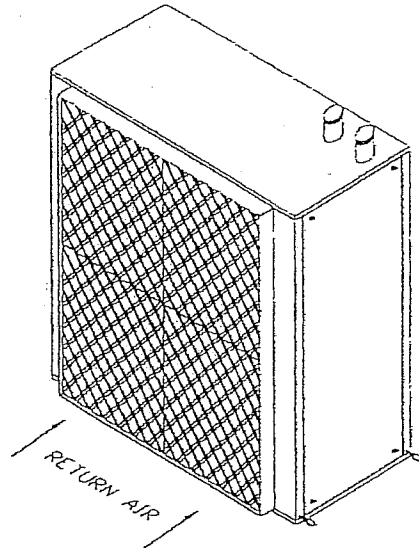
WATER CONNECTIONS
(439 - 843)



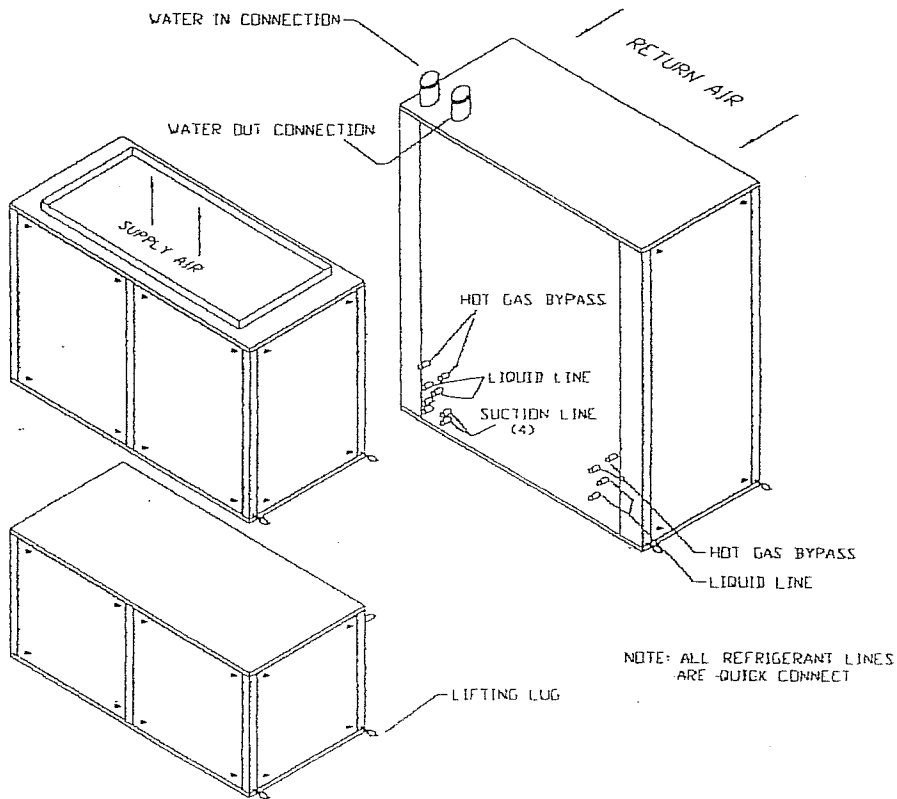
WATER CONNECTIONS
(113 - 425)



SUBJECT TO CHANGE WITHOUT NOTICE



COIL SECTION
FRONT VIEW

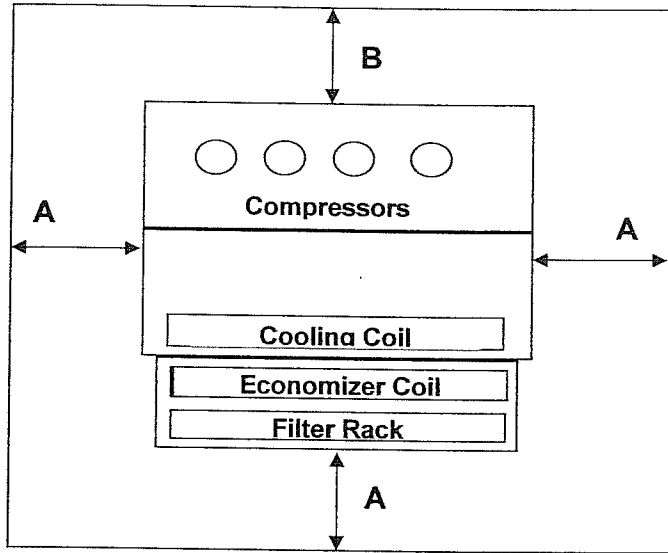


Service Clearances

Model	A	B
9 thru 18	30"	30"
23 thru 35	42"	36"
36 thru 70	50"	36"

Application Data

		Min. / Max.
Voltage Variation	208/230	187 / 253
	460	414 / 504
Water	GPM / Ton	2.5 / 3.5
	Leaving Water Temp	60 / 115



Water Connections

Model	Size (a)	GPM	Pressure Drop (PSI)	
			Co-Axial	Shell & Tube
9	1-3/8	24		4
11		30		6
13	1-5/8	36		7
18		48		8
23	2-1/8	60		6
27		72		8
29		78		10
35	2-5/8	90		14
36		96		8
42		108		10
47		120		6
51	3-1/8	132		7
54		144		8
57		162		10
63		168		12
70		180		14

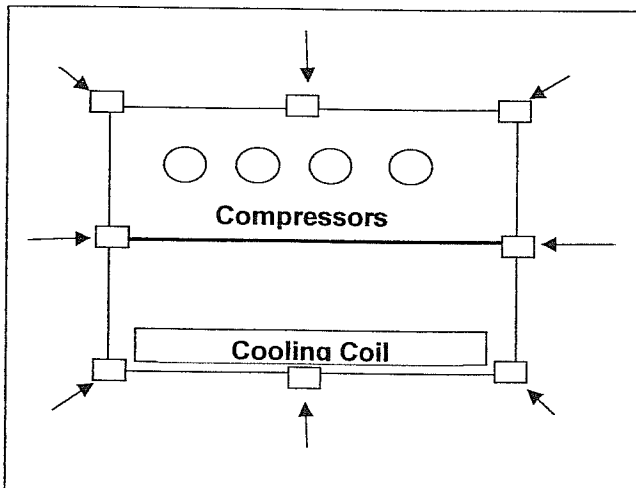
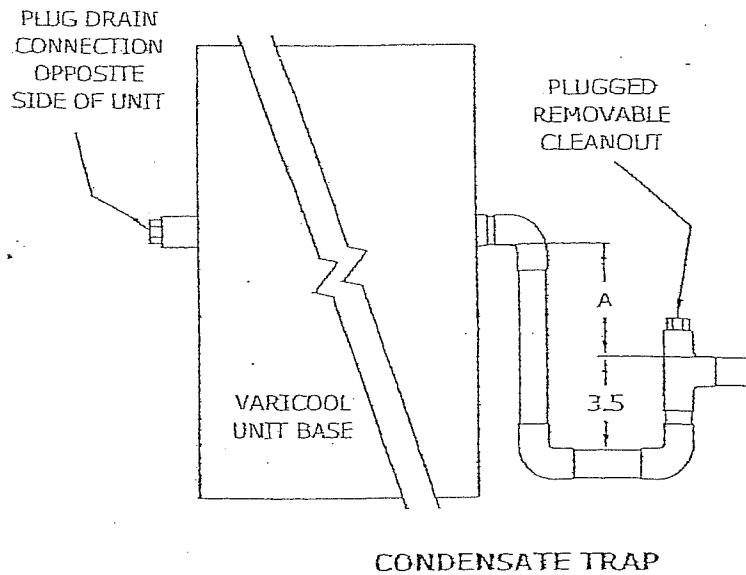
(a) Victaulic Grooved

Condensate Drain Connections

Each VariCool unit has a condensate drain connection on the cooling coil section. Systems with a water side economizer option have an additional drain connection.

Condensate drain connections are 1" male IPS.

Suitable provision must be made to have sufficient depth available for an adequate trap height for all condensate removal. Refer to Installation Manual for details.



Vibration Absorbers

When installing the VariCool on a concrete pad, support rails or other methods other than spring isolation, use of vibration absorbers (field supplied) is recommended to prevent possible transmission of vibration. It is recommended to use a minimum 1" thick Neoprene pad at each point indicated. Models 113 through 218 only require the pads under the corners.



Labeled & Listed

MEA # 278-04-E

491 East Princess Street, York, PA 17403 Toll Free 1-887-905-1111 (717) 843-4311 Fax: (717)-854-4462
Email: uca@unitedcoolair.com www.unitedcoolair.com