

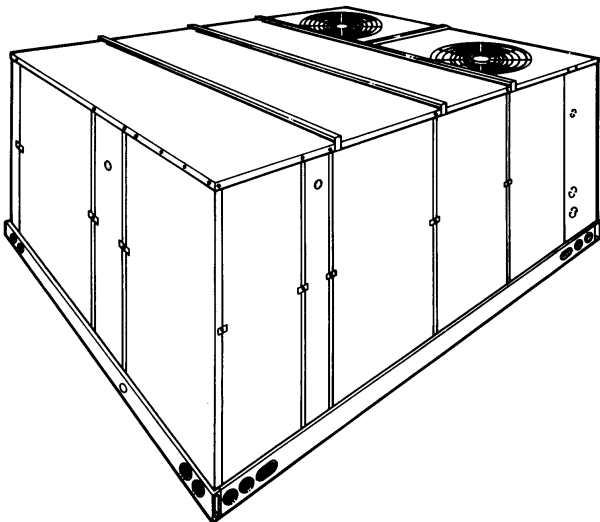
# TECHNICAL GUIDE

## SINGLE PACKAGE AIR-TO-AIR HEAT PUMPS

MODELS BBCB 180 & BACB 240

15 & 20 NOMINAL TONS

9.9 - 8.8 EER



## DESCRIPTION

These Heat Pumps are convertible single package units. All models have dual refrigerant circuits for efficient part load operation. Although the units are primarily designed for curb mounting on a roof, they can also be slab-mounted at ground level or set on steel beams above a finished roof.

These heat pumps utilize a unique ambient compensated time-temperature defrost system. The defrost module automatically increases the time interval between defrost cycles as the outdoor ambient temperature decreases. This helps to eliminate unnecessary and costly defrosts.

Units are self-contained and assembled on full perimeter base rails with holes in the four corners for overhead rigging. Every unit is completely piped, wired, charged and tested at the factory to provide for a quick and easy field installation.

All models (including those with an economizer) are suitable for either bottom or horizontal duct connections. Models with power exhaust are suitable for bottom duct connections only. For bottom duct, you remove the sheet metal panels from the supply and return air openings through the base of the unit. For horizontal duct, you replace the supply and return air panels on the rear of the unit with a side duct flange accessory.

All models are available with three different outdoor air damper options:

- Single enthalpy economizer
- Single enthalpy economizer with power exhaust
- Motorized outdoor air damper

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All supply air blowers are equipped with a belt drive that can be adjusted to meet the exact requirements of the job. A high speed drive accessory is available for applications with a higher CFM and/or static pressure requirement.

All compressors include crankcase heat and internal pressure relief. Every refrigerant circuit includes bi-directional liquid line filter-driers, high pressure switches, low pressure/loss of charge switches, suction line freezestats and high temperature switches to protect all system components. The unit control circuit includes two 75 VA transformers, two 24-volt circuit breakers and a relay board with two compressor lock-out circuits, a terminal strip for thermostat wiring, plus an additional set of pin connectors to simplify the interface of additional field controls.

All units have long lasting powder paint cabinets with 750 hour salt spray test approval under ASTM-B117 procedures.

The power supply wiring can be routed into the control box through a threaded pipe connection in the base pan of the unit or through a knockout in the wiring panel on the front of the unit.

All internal factory wiring is color coded and numbered for ease in servicing and troubleshooting

All 208/230 and 460-volt models are ETL approved. All 208/230 and 575-volt models are CGA approved.

All models include a 1-year limited warranty on the complete unit. Compressors and electric heater elements carry an additional 4-year warranty.

## **FACTORY-INSTALLED OPTIONS**

### **ECONOMIZERS**

Interlocked outdoor and return air dampers are positioned by a fully modulating, spring return damper actuator capable of introducing up to 100% outdoor air with nominal 1% leakage type dampers. As the outdoor air intake dampers open, the return air dampers close. The changeover from compressor to economizer cooling is determined by one or two solid state enthalpy controls.

On single enthalpy, an outdoor air sensor determines when the outdoor air is cool and dry enough to provide “free” cooling. Whenever the outdoor air is cooler and drier than the return air, the unit will switch to economizer operation. For this option, the #1 compressor can provide additional cooling during economizer operation if the room thermostat calls for second stage.

The dampers and controls are installed and wired at the factory. Only the rain hood needs to be assembled and installed in the field.

This economizer option can be used on all duct configurations.

### **POWER EXHAUST**

The single enthalpy economizer option is available with power exhaust. Whenever the outdoor air intake dampers are opened for free cooling, the exhaust fan will be energized to prevent the conditioned space from being over-pressurized during economizer operation.

The exhaust fan, motor and controls are installed and wired at the factory. The rain hood and the back-draft damper need to be assembled and installed in the field.

The power exhaust option can only be used on bottom duct configurations.

### **MOTORIZED OUTDOOR AIR INTAKE DAMPER**

Interlocked outdoor and return air dampers are controlled by a 2-position, spring return damper actuator. The outdoor damper will open to some pre-set position whenever the supply air blower is operating and will drive fully closed when the blower shuts down.

The damper and controls are installed and wired at the factory.

Only the rain hood needs to be assembled in the field.

This damper option can be used on all duct configurations.

## **FIELD-INSTALLED ACCESSORIES**

### **SINGLE INPUT ELECTRONIC ENTHALPY ECONOMIZERS**

Includes a slide-in / plug-in damper assembly with fully modulating spring-return motor actuator capable of introducing up to 100% outdoor air with a nominal 1% leakage type dampers.

The enthalpy system contains one sensor that monitors the outdoor air and determines when the air is cool enough and dry enough to provide “free” cooling.

The rainhood is painted to match the basic unit and must be field-assembled before installing.

On units built prior to January 1995, an accessory field harness must be installed.

Power exhaust is not available as a field installed accessory.

### **MOTORIZED OUTDOOR AIR INTAKE DAMPER**

Includes a slide-in / plug-in damper assembly with a 2-position, spring return motor actuator which opens to some pre-set position whenever the supply air blower is operating and will drive fully closed when the blower unit shuts down.

The rain hood is painted to match the basic unit and must be field assembled before installing.

On units built prior to January 1995 an accessory field harness must be installed.

Power exhaust is not available as a field installed option.

### **ROOF CURBS**

Fourteen inch high roof curbs provide a water-tight seal between the unit and the finished roof. These full perimeter curbs meet the requirements of the National Roofing Contractors Association (NRCA) and are shipped knocked-down for field assembly. They're designed to fit inside the base rails of the unit and include both a wood nailing strip and duct hanger supports.

### **ANTI-RECYCLE TIMERS**

Two solid state timers prevent the compressors from short-cycling. Once a compressor is de-energized, it will remain de-energized for approximately five minutes.

### **SIDE DUCT FLANGES**

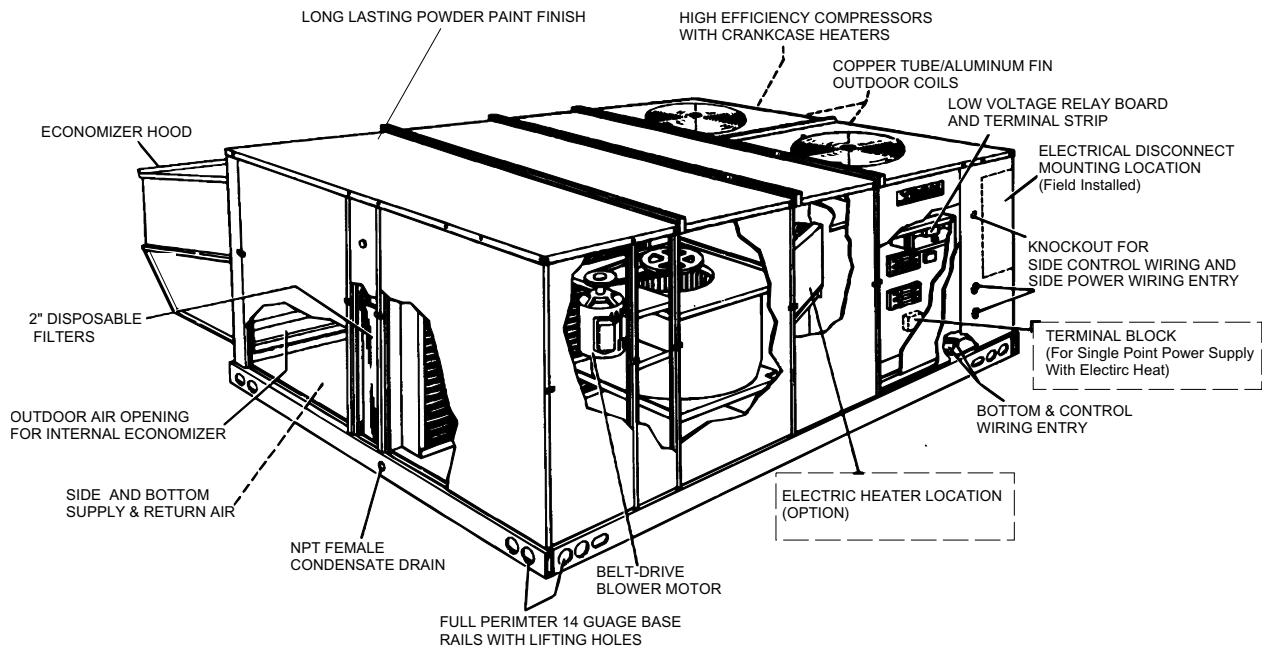
One inch flanges replace the supply and return air panels on the rear of the unit to accommodate horizontal duct connections. These flanges can also be used individually for bottom supply/horizontal return or horizontal supply/bottom return. They cannot be used on units with power exhaust.

### **BAROMETRIC RELIEF DAMPER**

This damper accessory can be used to relieve internal air pressure on units with an economizer but no power exhaust. This accessory includes a rain hood, a bird screen and a fully assembled damper. With bottom duct connections, the damper should be mounted over the opening in the return air panel. With horizontal ductwork, the accessory should be mounted on the return air duct.

### **HIGH SPEED DRIVE**

A smaller blower pulley and a shorter belt increase the speed of the supply air blower for applications with a higher CFM and/or static pressure requirement.



**FIGURE 1 : BCB HEAT PUMP**

**TABLE 1: RATINGS**

MODEL	COOLING CAPACITY <sup>1</sup> 80/67-95° F			HEATING CAPACITY <sup>1</sup>				ELECTRIC HEAT NOM. CAPACITY <sup>2</sup> (KW)
				47° F		17° F		
	MBH	EER	IPLV	MBH	COP	MBH	COP	
BBCB180	164	9.9	9.5	172	3.2	102	2.1	18,36,54,72
BACB240	222	8.5	7.5	226	3.0	120	2.0	18,36,54,72

1. Certified in accordance with the Unitary Large Equipment Certification Program which is based on ARI Standard 340/360.
2. Models with electric heat have single point power supply.

EER = Energy Efficiency Ratio at full load - the cooling capacity in BTU's per hour (Btuh) divided by the power input expressed in BTUH per watt (Btuh/watt).

COP = Coefficient of Performance - the total heating capacity provided by the refrigeration system, including circulating fan heat, but excluding supplementary resistance (Btu's per hour) divided by the total electric input (watts) x 3.412.

IPLV = Integrated part load value. The EER of the unit operating on first stage only.

HEAT PUMP WITH ELECTRIC HEAT			
MODEL	MBH	EER	IPLV
BBCB180E018	164	9.9	9.5
BBCB180E036	164	9.9	9.5
BBCB180E054	162	9.8	9.4
BBCB180E072	160	9.8	9.4
BACB240E018	222	8.5	7.5
BACB240E036	222	8.5	7.5
BACB240E054	220	8.5	7.4
BACB240E072	218	8.5	7.4

**TABLE 2: INDOOR SOUND POWER RATINGS**

Unit Size	CFM	ESP	Blower	Sound Power (db 10 <sup>-12</sup> Watts)											
				Octave B and Centerline Frequency (Hz)										SWL db(A)	db(A) @ 10 Ft. <sup>1</sup>
				IWG	RPM	BHP	63	125	250	500	1,000	2,000	4,000		
180	6,000	1.00	1,080	4.60	99	99	89	82	84	77	72	67	89	56	
240	8,000	1.00	1,020	6.65	102	102	92	85	87	80	75	70	92	59	

1. At a distance of 10 ft. from the blower.

NOTE: These values have been derived using a model of sound propagation, measuring the indoor ambient sound levels ten feet from the source. The dBA values provided are for reference only. Calculation for dBA values cover matters of system design and application. This constitutes an exception to any specification or guarantee requiring a dBA value or sound data in any other form than sound power level ratings.

**TABLE 3: COOLING CAPACITIES - 15 TON (BCB180)**

AIR ON EVAPORATOR COIL		TEMPERATURE OF AIR ON OUTDOOR COIL																			
		85°F									95°F										
		TOTAL CAP. MBH	POWER INPUT KW	SENSIBLE CAPACITY, MBH								TOTAL CAP. MBH	POWER INPUT KW	SENSIBLE CAPACITY, MBH							
				ENTERING DRY BULB °F										ENTERING DRY BULB °F							
CFM	WB °F	86	83	80	77	74	71	68	86	83	80	77	74	71	68						
4500	72	182.2	12.33	111.9	99.1	86.3	73.4	60.6	#N/A	#N/A	174.6	13.46	108.0	95.2	82.4	69.5	56.7	#N/A	#N/A		
	67	167.3	12.01	140.8	127.9	115.1	102.3	89.4	76.6	63.8	158.9	13.25	136.4	123.6	110.8	97.9	85.1	72.3	59.4		
	62	151.1	11.80	151.1	149.6	136.7	123.9	111.1	98.2	85.4	149.7	12.93	149.7	143.9	131.1	118.2	105.4	92.6	79.7		
	57	152.4	11.80	152.4	152.4	151.3	138.4	125.6	112.8	100.0	148.6	13.06	148.6	143.9	131.0	118.2	105.4	92.5	79.7		
5250	72	189.7	12.39	124.4	109.3	94.1	78.9	63.8	#N/A	#N/A	179.9	13.56	120.2	105.0	89.9	74.7	59.5	#N/A	#N/A		
	67	174.3	12.07	155.9	140.7	125.6	110.4	95.2	80.1	64.9	163.8	13.36	151.2	136.0	120.8	105.7	90.5	75.3	60.2		
	62	157.3	11.86	157.3	156.6	149.2	134.0	118.8	103.7	88.5	154.2	13.03	154.2	151.3	143.0	127.8	112.6	97.5	82.3		
	57	158.7	11.86	158.7	158.7	165.0	149.9	134.7	119.5	104.4	153.1	13.17	153.1	150.7	142.9	127.8	112.6	97.5	82.3		
6000	72	197.3	12.45	136.9	119.4	101.9	84.5	67.0	#N/A	#N/A	185.2	13.67	132.3	114.8	97.3	79.8	62.3	#N/A	#N/A		
	67	181.2	12.14	171.0	153.5	136.0	118.5	101.0	83.5	66.0	168.6	13.46	165.9	148.4	130.9	113.4	95.9	78.4	60.9		
	62	163.6	11.92	163.6	163.6	161.6	144.1	126.6	109.1	91.6	158.7	13.13	158.7	158.7	154.9	137.4	119.9	102.4	84.9		
	57	165.0	11.92	165.0	165.0	178.8	161.3	143.8	126.3	108.8	157.6	13.27	157.6	157.6	154.8	137.4	119.9	102.4	84.9		
6500	72	199.7	12.49	144.5	125.4	106.2	87.0	67.8	#N/A	#N/A	188.8	13.66	139.8	120.6	101.5	82.3	63.1	#N/A	#N/A		
	67	183.4	12.17	178.3	160.8	141.7	122.5	103.3	84.1	64.9	171.9	13.45	170.6	155.6	136.4	117.3	98.1	78.9	59.7		
	62	165.6	11.96	165.6	165.6	164.6	145.4	126.2	107.0	87.9	161.9	13.12	161.9	161.9	159.9	140.8	121.6	102.4	83.2		
	57	167.1	11.96	167.1	167.1	173.9	154.7	135.6	116.4	97.2	160.7	13.26	160.7	160.7	159.3	140.1	121.0	101.8	82.6		
7000	72	202.1	12.53	152.1	131.3	110.4	89.5	68.7	#N/A	#N/A	192.5	13.65	147.3	126.5	105.6	84.7	63.9	#N/A	#N/A		
	67	185.6	12.21	185.6	168.2	147.3	126.4	105.6	84.7	63.8	175.2	13.45	175.2	162.9	142.0	121.1	100.3	79.4	58.5		
	62	167.6	11.99	167.6	167.6	167.6	146.7	125.9	105.0	84.1	165.0	13.12	165.0	165.0	165.0	144.1	123.3	102.4	81.5		
	57	169.1	11.99	169.1	169.1	169.1	148.2	127.3	106.5	85.6	163.8	13.25	163.8	163.8	163.8	142.9	122.1	101.2	80.3		

AIR ON EVAPORATOR COIL		TEMPERATURE OF AIR ON OUTDOOR COIL																			
		105°F									115°F										
		TOTAL CAP. MBH	POWER INPUT KW	SENSIBLE CAPACITY, MBH								TOTAL CAP. MBH	POWER INPUT KW	SENSIBLE CAPACITY, MBH							
				ENTERING DRY BULB °F										ENTERING DRY BULB °F							
CFM	WB °F	86	83	80	77	74	71	68	86	83	80	77	74	71	68						
4500	72	163.0	14.99	104.2	91.3	78.5	65.7	52.8	#N/A	#N/A	151.5	16.53	100.3	87.4	74.6	61.8	49.0	#N/A	#N/A		
	67	149.4	14.84	132.6	119.8	106.9	94.1	81.3	68.4	55.6	139.9	16.42	128.8	115.9	103.1	90.3	77.4	64.6	51.8		
	62	140.2	14.58	140.2	137.3	124.8	112.0	99.2	86.3	73.5	130.8	16.23	130.8	130.8	118.6	105.8	92.9	80.1	67.3		
	57	139.8	14.61	139.8	137.2	124.4	111.6	98.8	85.9	73.1	131.1	16.16	131.1	130.6	117.8	105.0	92.1	79.3	66.5		
5250	72	168.5	15.12	116.0	100.8	85.7	70.5	55.3	#N/A	#N/A	157.2	16.68	111.8	96.7	81.5	66.3	51.2	#N/A	#N/A		
	67	154.5	14.96	145.4	131.9	116.7	101.6	86.4	71.2	56.1	145.2	16.57	139.6	127.8	112.6	97.4	82.3	67.1	51.9		
	62	145.0	14.70	145.0	143.5	136.2	121.1	105.9	90.8	75.6	135.7	16.38	135.7	135.7	129.5	114.4	99.2	84.0	68.9		
	57	144.6	14.74	144.6	143.3	135.8	120.6	105.5	90.3	75.1	136.0	16.31	136.0	135.8	128.7	113.5	98.3	83.2	68.0		
6000	72	174.0	15.25	127.8	110.4	92.9	75.4	57.9	#N/A	#N/A	162.9	16.83	123.4	105.9	88.4	70.9	53.4	#N/A	#N/A		
	67	159.5	15.09	158.2	144.0	126.5	109.0	91.5	74.0	56.5	150.5	16.71	150.5	139.6	122.1	104.6	87.1	69.6	52.1		
	62	149.7	14.83	149.7	149.7	147.7	130.2	112.7	95.2	77.7	140.7	16.52	140.7	140.7	140.5	123.0	105.5	88.0	70.5		
	57	149.3	14.86	149.3	149.3	147.2	129.7	112.2	94.7	77.2	141.0	16.45	141.0	141.0	139.5	122.0	104.5	87.0	69.5		
6500	72	176.4	15.25	135.1	115.9	96.8	77.6	58.4	#N/A	#N/A	163.9	16.85	130.4	111.2	92.0	72.9	53.7	#N/A	#N/A		
	67	161.7	15.10	161.0	150.8	131.8	112.6	93.4	74.3	55.1	151.4	16.74	151.4	146.0	127.2	108.0	88.8	69.6	50.5		
	62	151.7	14.83	151.7	151.7	150.7	131.5	112.3	93.1	74.0	141.5	16.55	141.5	141.5	141.4	122.2	103.1	83.9	64.7		
	57	151.3	14.87	151.3	151.3	150.2	131.0	111.9	92.7	73.5	141.8	16.48	141.8	141.8	141.1	121.9	102.8	83.6	64.4		
7000	72	178.7	15.26	142.4	121.5	100.7	79.8	58.9	#N/A	#N/A	164.9	16.87	137.4	116.6	95.7	74.9	54.0	#N/A	#N/A		
	67	163.8	15.10	163.8	157.6	137.1	116.3	95.4	74.5	53.7	152.3	16.76	152.3	152.3	132.2	111.4	90.5	69.7	48.8		
	62	153.7	14.84	153.7	153.7	153.7	132.8	112.0	91.1	70.2	142.4	16.57	142.4	142.4	142.4	121.5	100.7	79.8	58.9		
	57	153.3	14.88	153.3	153.3	153.3	132.4	111.5	90.7	69.8	142.7	16.50	142.7	142.7	142.7	121.9	101.0	80.1	59.3		

**TABLE 4: COOLING CAPACITIES - 20 TON (BCB240)**

AIR ON EVAPORATOR COIL		TEMPERATURE OF AIR ON OUTDOOR COIL																	
		85°F									95°F								
		TOTAL CAP. MBH	POWER INPUT KW	SENSIBLE CAPACITY, MBH								TOTAL CAP. MBH	POWER INPUT KW	SENSIBLE CAPACITY, MBH					
				ENTERING DRY BULB, °F										ENTERING DRY BULB, °F					
CFM	WB °F	86	83	80	77	74	71	68	86	83	80	77	74	71	68				
9400	72	287	21.3	216	188	159	131	103	-	-	274	22.7	211	183	155	127	99	-	-
	67	262	20.7	262	238	210	182	154	126	97	250	22.0	250	232	204	176	148	120	92
	62	257	20.3	257	257	257	229	201	173	144	245	21.6	245	245	245	217	189	161	133
	57	257	20.3	257	257	257	229	201	173	145	245	21.6	245	245	245	217	189	161	133
9000	72	280	21.2	203	177	151	125	99	-	-	267	22.6	199	173	147	121	95	-	-
	67	259	20.6	251	227	201	175	149	123	97	248	21.9	243	222	196	170	144	118	92
	62	251	20.2	251	251	248	222	196	170	144	240	21.5	240	240	240	214	188	162	136
	57	251	20.3	251	251	248	222	196	170	144	240	21.5	240	240	240	214	188	162	136
8000	72	273	21.2	190	166	143	119	95	-	-	261	22.5	187	163	139	116	92	-	-
	67	256	20.5	240	216	193	169	145	121	97	245	21.8	236	212	188	164	141	117	93
	62	245	20.1	245	245	239	215	192	168	144	234	21.4	234	234	234	210	186	162	139
	57	245	20.2	245	245	239	215	192	168	144	234	21.5	234	234	234	210	186	163	139
7000	72	271	21.0	177	156	135	114	93	-	-	259	22.3	174	153	132	110	89	-	-
	-67	251	20.4	222	201	180	159	138	117	96	240	21.6	218	197	176	154	133	112	91
	62	243	20.0	243	239	227	205	184	163	142	232	21.2	232	230	221	200	178	157	136
	57	243	20.0	243	239	227	205	184	163	142	232	21.3	232	230	221	200	179	157	136
6000	72	268	20.8	164	146	127	109	91	-	-	256	22.1	161	142	124	105	87	-	-
	67	245	20.2	205	186	168	149	131	112	94	235	21.4	200	181	163	144	126	107	89
	62	240	19.8	240	232	214	195	177	158	140	230	21.0	230	226	208	189	171	152	134
	57	240	19.8	240	232	214	195	177	158	140	230	21.0	230	226	208	189	171	152	134

AIR ON EVAPORATOR COIL		TEMPERATURE OF AIR ON OUTDOOR COIL																	
		105°F									115°F								
		TOTAL CAP. MBH	POWER INPUT KW	SENSIBLE CAPACITY, MBH								TOTAL CAP. MBH	POWER INPUT KW	SENSIBLE CAPACITY, MBH					
				ENTERING DRY BULB, °F										ENTERING DRY BULB, °F					
CFM	WB °F	86	83	80	77	74	71	68	86	83	80	77	74	71	68				
9400	72	260	24.2	207	179	151	123	95	-	-	246	25.7	203	175	147	119	90	-	-
	67	238	23.5	238	227	199	171	142	114	86	225	24.9	225	221	193	165	137	109	81
	62	233	23.0	233	233	233	205	177	149	120	221	24.5	221	221	221	192	164	136	108
	57	233	23.1	233	233	233	205	177	149	121	221	24.5	221	221	221	193	164	136	108
9000	72	254	24.1	195	169	143	117	91	-	-	241	25.5	191	165	139	113	87	-	-
	67	235	23.4	233	217	191	165	139	113	87	223	24.8	223	211	185	159	133	107	81
	62	228	22.9	228	228	230	204	178	152	126	216	24.4	216	216	221	195	169	143	117
	57	228	23.0	228	228	230	204	178	152	126	216	24.4	216	216	221	195	169	143	117
8000	72	248	24.0	183	159	135	112	88	-	-	236	25.4	179	155	131	108	84	-	-
	67	233	23.3	228	207	183	159	135	111	88	221	24.7	221	201	177	154	130	106	82
	62	223	22.8	223	223	227	203	180	156	132	211	24.2	211	211	221	197	173	149	125
	57	223	22.9	223	223	227	203	180	156	132	211	24.3	211	211	221	197	173	149	125
7000	72	246	18.8	170	149	128	106	85	-	-	233	25.2	166	145	124	102	81	-	-
	67	228	18.2	211	191	170	149	128	107	86	216	24.5	205	186	165	144	123	101	80
	62	221	17.9	221	220	214	193	172	151	129	209	24.0	209	209	207	186	165	144	123
	57	221	17.9	221	220	214	193	172	151	129	209	24.1	209	209	207	186	165	144	123
6000	72	244	13.6	157	138	120	101	83	-	-	231	24.9	153	134	116	97	79	-	-
	67	223	13.2	195	176	158	139	121	102	84	212	24.2	189	171	152	134	115	97	78
	62	218	12.9	218	217	201	182	164	145	127	207	23.8	207	207	194	175	157	139	120
	57	219	13.0	219	217	201	182	164	145	127	207	23.8	207	207	194	176	157	139	120

**TABLE 5: HEATING CAPACITIES\* (BCB 180)**

CFM	Return Air °F	CAP & KW	UNIT MODEL BCB 180							
			OUTDOOR AIR TEMPERATURE °f (72% RH)							
			-10	0	10	20	30	40	50	60
4500	55	MBH	42	64	85	107	128	150	171	192
		KW	9.1	9.6	10.1	10.6	11.1	11.7	12.2	12.7
	70	MBH	38	60	81	102	124	145	167	188
		KW	11.0	11.5	12.0	12.5	13.1	13.6	14.1	14.6
	80	MBH	42	63	85	106	128	149	171	192
		KW	13.4	13.9	14.5	15.0	15.5	16.0	16.5	17.0
5250	55	MBH	44	66	87	109	130	151	173	194
		KW	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0
	70	MBH	40	62	83	104	126	147	169	190
		KW	10.4	10.9	11.4	12.0	12.5	13.0	13.5	14.0
	80	MBH	43	64	85	107	128	150	171	193
		KW	12.4	13.0	13.5	14.0	14.5	15.0	15.5	16.0
6000	55	MBH	46	67	89	110	132	153	175	196
		KW	7.8	8.3	8.8	9.4	9.9	10.4	10.9	11.4
	70	MBH	42	64	85	106	128	149	171	192
		KW	9.8	10.3	10.9	11.4	11.9	12.4	12.9	13.4
	80	MBH	43	65	86	108	129	150	172	193
		KW	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.1
7200	55	MBH	47	68	90	111	133	154	176	197
		KW	7.7	8.2	8.7	9.2	9.7	10.2	10.8	11.3
	70	MBH	43	64	86	107	129	150	172	193
		KW	9.6	10.2	10.7	11.2	11.7	12.2	12.7	13.2
	80	MBH	45	67	88	110	131	153	174	196
		KW	11.7	12.2	12.7	13.2	13.7	14.2	14.8	15.3
7500	55	MBH	48	69	91	112	134	155	177	198
		KW	7.5	8.1	8.6	9.1	9.6	10.1	10.6	11.1
	70	MBH	44	65	87	108	130	151	172	194
		KW	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0
	80	MBH	48	69	90	112	133	155	176	198
		KW	11.9	12.4	12.9	13.4	13.9	14.4	15.0	15.5

THE MBH AND KW VALUES DO NOT INCLUDE THE SUPPLY AIR BLOWER MOTOR.  
 FOR NET CAPACITY, ADD THE SUPPLY AIR BLOWER MOTOR HEAT (MBH = 3.415 x KW)

**TABLE 6: HEATING CAPACITIES\* (BCB 240)**

CFM	Return Air °F	CAP & KW	BCB240							
			OUTDOOR AIR TEMPERATURE, °f (72% RH)							
			-10	0	10	20	30	40	50	60
6000	55	MBH	39	74	109	144	179	214	249	284
		KW	11.8	12.7	13.7	14.6	15.5	16.5	17.8	19.0
	70	MBH	37	71	105	138	172	206	240	274
		KW	12.5	13.5	14.5	15.5	16.5	17.5	18.8	20.2
	80	MBH	37	70	104	137	170	204	237	271
		KW	13.0	14.0	15.1	16.1	17.2	18.2	19.6	21.0
7000	55	MBH	43	78	113	147	182	217	254	292
		KW	11.8	12.7	13.6	14.5	15.4	16.3	17.4	18.4
	70	MBH	39	73	107	141	175	209	243	277
		KW	12.7	13.6	14.6	15.5	16.4	17.3	18.5	19.7
	80	MBH	41	74	107	140	173	206	242	278
		KW	13.0	14.0	15.0	16.0	17.0	18.0	19.2	20.3
8000	55	MBH	50	78	113	149	184	220	256	292
		KW	12.2	13.0	13.8	14.6	15.4	16.1	17.2	18.2
	70	MBH	41	75	109	143	177	211	246	281
		KW	13.0	13.8	14.6	15.5	16.3	17.1	18.2	19.3
	80	MBH	42	74	108	142	175	209	244	278
		KW	13.5	14.4	15.2	16.1	16.9	17.8	18.9	20.1
9000	55	MBH	64	96	128	159	191	223	263	302
		KW	12.0	12.8	13.6	14.4	15.2	16.1	17.0	17.9
	70	MBH	58	90	121	152	183	215	251	287
		KW	12.8	13.7	14.5	15.3	16.2	17.0	18.1	19.1
	80	MBH	61	91	121	152	182	212	250	288
		KW	13.2	14.1	15.0	15.9	16.8	17.7	18.7	19.8
9400	55	MBH	79	108	138	167	197	226	265	303
		KW	12.0	12.8	13.6	14.4	15.2	16.0	16.9	17.8
	70	MBH	76	104	133	161	190	218	255	292
		KW	12.7	13.5	14.4	15.2	16.1	16.9	17.9	18.9
	80	MBH	75	103	131	159	188	216	252	289
		KW	13.2	14.1	15.0	15.9	16.7	17.6	18.7	19.7

**TABLE 7: BLOWER PERFORMANCE - (15 TON SUPPLY AIR)  
BCB180 - BOTTOM DUCT CONNECTIONS**

Blower Speed (RPM)	Motor Pulley (Turns Open)*	CFM														
		4500			5250			6000			6750			7200		
		ESP	BHP	KW	ESP	BHP	KW	ESP	BHP	KW	ESP	BHP	KW	ESP	BHP	KW
<b>208 VOLT AND STANDARD DRIVE</b>																
850	6.0	0.9	2.4	2.2	0.7	3.0	2.7	0.5	3.2	2.9	-	-	-	-	-	-
870	5.5	1.0	2.5	2.3	0.8	3.1	2.8	0.6	3.5	3.1	0.2	4.1	3.7	-	-	-
915	4.5	1.1	2.6	2.4	0.9	3.4	3.0	0.7	3.7	3.3	0.3	4.4	3.9	0.2	4.5	4.0
965	3.5	1.2	2.9	2.6	1.0	3.6	3.2	0.8	4.0	3.6	0.5	4.7	4.2	0.4	4.9	4.4
980	3.0	1.3	3.0	2.7	1.1	3.7	3.3	0.9	4.1	3.7	0.6	4.8	4.3	0.5	5.1	4.6
1010	2.0	1.4	3.1	2.8	1.2	3.8	3.4	1.0	4.2	3.8	0.7	5.0	4.5	0.6	5.4	4.8
1040	1.0	1.5	3.2	2.9	1.3	3.9	3.5	1.1	4.5	4.0	0.9	5.2	4.7	0.7	5.7	5.1
<b>208 VOLT AND HIGH SPEED DRIVE ACCESSORY</b>																
965	6.0	1.2	2.9	2.6	1.0	3.6	3.2	0.8	4.0	3.6	0.5	4.7	4.2	0.4	5.0	4.4
980	5.5	1.3	3.0	2.7	1.1	3.7	3.3	0.9	4.1	3.7	0.6	4.8	4.3	0.5	5.1	4.6
1025	4.5	1.5	3.2	2.9	1.3	3.9	3.5	1.1	4.5	4.0	0.8	5.1	4.6	0.7	5.6	5.0
1065	3.5	1.6	3.4	3.0	1.4	4.0	3.6	1.2	4.7	4.2	1.0	5.5	4.9	-	-	-
1095	3.0	1.7	3.5	3.1	1.5	4.2	3.8	1.3	4.9	4.4	1.2	5.7	5.1	-	-	-
1130	2.0	1.9	3.7	3.3	1.7	4.5	4.0	1.5	5.1	4.6	-	-	-	-	-	-
1170	1.0	2.1	3.9	3.5	2.0	4.7	4.2	1.8	5.5	4.9	-	-	-	-	-	-
<b>208/460/575 VOLT AND STANDARD DRIVE</b>																
70	6.0**	1.0	2.4	2.2	0.8	3.1	2.8	0.6	3.5	3.1	0.2	4.1	3.7	-	-	-
915	5.0	1.1	2.6	2.4	0.9	3.3	3.0	0.7	3.7	3.3	0.3	4.4	3.9	0.2	4.5	4.0
965	4.0	1.2	2.9	2.6	1.0	3.6	3.2	0.8	4.0	3.6	0.5	4.7	4.2	0.4	5.0	4.4
980	3.5	1.3	3.0	2.7	1.1	3.7	3.3	0.9	4.1	3.7	0.6	4.8	4.3	0.5	5.1	4.6
1040	2.0	1.5	3.2	2.9	1.3	3.9	3.5	1.1	4.5	4.0	0.9	5.3	4.7	0.7	5.7	5.1
1065	1.0	1.6	3.3	3.0	1.4	4.0	3.6	1.2	4.7	4.2	1.0	5.5	4.9	-	-	-
<b>208/460/575 VOLT AND HIGH SPEED DRIVE ACCESSORY</b>																
980	6.0	1.3	2.9	2.6	1.1	3.7	3.3	0.9	4.1	3.7	0.6	4.8	4.3	0.5	5.1	4.6
1040	4.5	1.5	3.2	2.9	1.3	3.9	3.5	1.1	4.5	4.0	0.9	5.3	4.7	0.7	5.7	5.1
1065	4.0	1.6	3.4	3.0	1.4	4.0	3.6	1.2	4.7	4.2	1.0	5.5	4.9	-	-	-
1095	3.5	1.7	3.5	3.1	1.5	4.2	3.8	1.3	4.9	4.4	1.2	5.7	5.1	-	-	-
1130	2.5	1.9	3.7	3.3	1.7	4.5	4.0	1.5	5.1	4.6	-	-	-	-	-	-
1170	1.5	2.1	3.9	3.5	2.0	4.7	4.2	1.8	5.5	4.9	-	-	-	-	-	-
1190	1.0	2.2	4.0	3.6	2.1	4.8	4.3	2.0	5.7	5.1	-	-	-	-	-	-

## NOTES:

- Blower performance includes fixed outdoor air, 2" T/A filters, a dry indoor coil and no electric heat.
- Refer to Page 9 for additional static resistances.

ESP - External Static Pressure available for the supply and return air duct system. All internal unit resistances have been deducted from the total static pressure of the blower.

- \* Do NOT close the pulley below 1 turn open.  
\*\* Factory setting.

**TABLE 8: BLOWER PERFORMANCE - (20 TON SUPPLY AIR)  
BCB 240 - BOTTOM DUCT CONNECTIONS**

Blower Speed (RPM)	Motor Pulley (Turns Open)*	CFM														
		6000			7000			8000			9000			9400		
		ESP	BHP	KW	ESP	BHP	KW	ESP	BHP	KW	ESP	BHP	KW	ESP	BHP	KW
<b>208 VOLT AND STANDARD DRIVE</b>																
870	6.0**	0.4	2.1	1.8	0.1	2.3	2.0	-	-	-	-	-	-	-	-	-
900	5.0	0.8	3.2	2.7	0.5	3.5	2.9	0.2	3.8	3.2	-	-	-	-	-	-
930	4.0	1.1	4.1	3.4	0.9	4.5	3.8	0.6	4.9	4.1	0.1	5.1	4.3	-	-	-
950	3.0	1.3	4.6	3.9	1.1	5.1	4.3	0.8	5.5	4.6	0.4	5.9	5.0	-	-	-
980	2.0	1.6	5.3	4.5	1.4	5.8	4.9	1.2	6.3	5.3	0.7	6.9	5.8	0.2	7.3	6.1
1015	1.0	1.9	5.9	5.0	1.7	6.5	5.5	1.5	7.0	5.9	1.0	7.7	6.5	0.6	8.2	6.9
<b>208 VOLT AND HIGH SPEED DRIVE ACCESSORY</b>																
950	6.0	1.3	4.6	3.9	1.1	5.1	4.3	0.8	5.5	4.6	0.4	5.9	5.0	-	-	-
980	5.0	1.6	5.3	4.5	1.4	5.8	4.9	1.2	6.3	5.3	0.7	6.9	5.8	0.2	7.3	6.1
1010	4.0	1.8	5.8	4.9	1.7	6.3	5.3	1.5	6.9	5.8	1.0	7.5	6.3	0.5	7.9	6.7
1020	3.5	1.9	6.1	5.1	1.8	6.5	5.5	1.6	7.1	6.0	1.1	7.8	6.6	0.6	8.3	7.0
1035	3.0	2.0	6.2	5.2	1.9	6.8	5.7	1.7	7.4	6.2	1.2	8.1	6.8	0.7	8.6	7.3
1050	2.5	2.1	6.4	5.4	2.0	7.0	5.9	1.8	7.6	6.4	1.3	8.3	7.0	-	-	-
1075	2.0	2.3	6.6	5.5	2.1	7.2	6.0	1.9	7.8	6.6	1.5	8.6	7.2	-	-	-
1100	1.0	2.4	6.7	5.6	2.2	7.3	6.1	2.1	7.9	6.7	-	-	-	-	-	-
<b>230/460/575 VOLT AND STANDARD DRIVE</b>																
870	6.0**	0.4	2.1	1.8	0.1	2.3	2.0	-	-	-	-	-	-	-	-	-
900	5.0	0.8	3.2	2.7	0.5	3.5	2.9	0.2	3.8	3.2	-	-	-	-	-	-
930	4.0	1.1	4.1	3.4	0.9	4.5	3.8	0.6	4.9	4.1	0.1	5.1	4.3	-	-	-
950	3.5	1.3	4.6	3.9	1.1	5.1	4.3	0.8	5.5	4.6	0.4	5.9	5.0	-	-	-
980	2.5	1.6	5.3	4.5	1.4	5.8	4.9	1.2	6.3	5.3	0.7	6.9	5.8	0.2	7.3	6.1
1015	1.5	1.9	5.9	5.0	1.7	6.5	5.5	1.5	7.0	5.9	1.0	7.7	6.5	0.6	8.2	6.9
1025	1.0	2.0	6.1	5.1	1.8	6.6	5.6	1.6	7.3	6.1	1.1	7.9	6.7	0.7	8.6	7.3
<b>230/460/575 VOLT AND HIGH SPEED DRIVE ACCESSORY</b>																
950	6.0	1.3	4.6	3.9	1.1	5.1	4.3	0.8	5.5	4.6	0.4	5.9	5.0	-	-	-
980	5.0	1.6	5.3	4.5	1.4	5.8	4.9	1.2	6.3	5.3	0.7	6.9	5.8	0.2	7.3	6.1
1015	4.0	1.9	5.9	5.0	1.7	6.5	5.5	1.5	7.0	5.9	1.0	7.7	6.5	0.6	8.2	6.9
1035	3.5	2.0	6.2	5.2	1.9	6.8	5.7	1.7	7.4	6.2	1.2	8.1	6.8	0.7	8.6	7.3
1050	3.0	2.1	6.4	5.4	2.0	7.0	5.9	1.8	7.6	6.4	1.3	8.3	7.0	-	-	-
1080	2.0	2.3	6.6	5.5	2.1	7.2	6.0	1.9	7.8	6.6	1.5	8.6	7.2	-	-	-
1100	1.5	2.4	6.7	5.6	2.2	7.3	6.1	2.1	7.9	6.7	-	-	-	-	-	-
1120	1.0	2.5	6.8	5.7	2.3	7.4	6.2	2.2	8.1	6.8	-	-	-	-	-	-

## NOTES:

- Blower performance includes fixed outdoor air, 2" T/A filters, a dry indoor coil and no electric heat.
- Refer to Page 9 for additional static resistances.

ESP - External Static Pressure available for the supply and return air duct system. All internal unit resistances have been deducted from the total static pressure of the blower.

\* Do **NOT** close the pulley below 1 turn open.

\*\* Factory setting.

**TABLE 9: BLOWER MOTOR AND DRIVE DATA**

MODEL SIZE	Drive	Blower Range (RPM)	Motor <sup>1</sup>			Adjustable Motor Pulley				Fixed Blower Pulley				Belt (Notched)		
			HP	Frame	EFF. %	Designation	Outside Diameter	Pitch Dia. (In.)	Bore (In.)		Outside Diameter	Pitch Dia. (In.)	Bore (In.)		Outside Diameter	Pitch Dia. (In.)
BBCB180	Standard	850/1065	5	184T	83	1VP56	5.35	4.3-5.3 <sup>2</sup>	1-1/8	BK90	8.75	8.4	1	BX70	71.8	1
	High Speed Access	965/1190								BK80	7.75	7.4	1	BX68	69.8	1
BACB240	Standard	870/1025	7.5	213T	89	1VP68	6.75	5.5 6.5	1-3/8	BK120	11.75	11.4	1-3/16	BX83	84.8	1
	High Speed Access	950/1120								BK110	10.75	10.4	1-3/16	BX80	81.8	1

- All motors have a nominal speed of 1800 RPM, at 1.5 service factor and a solid base. They can operate to the limit of their service factor because they are located in the moving air, upstream of any heating device.
- Do **NOT** close this pulley below 1 turn open.

**TABLE 10: STATIC RESISTANCES<sup>1</sup>****EXTERNAL STATIC PRESSURE DROP**

DESCRIPTION	RESISTANCE, IWG					
	CFM					
	BBCB180			BACB240		
	4500	6000	7200	6000	8000	9400
WET COIL	0.1	0.1	0.1	0.1	0.1	0.1
ELECTRIC HEAT OPTIONS	18 KW	0.1	0.1	0.1	0.1	0.1
	36 KW	0.1	0.2	0.3	0.1	0.2
	54 KW	0.2	0.3	0.4	0.2	0.3
	72 KW	0.2	0.4	0.6	0.2	0.4
ECONOMIZER OPTION	0.1	0.1	0.1	0.1	0.1	0.1
HORIZONTAL DUCT CONNECTIONS <sup>2</sup>	0.2	0.3	0.5	0.2	0.3	0.5

- Deduct these resistance values from the available external static pressures shown in the respective Blower Performance Table. (See Note 2 for exception).
- Since the resistance to airflow will be less for horizontal duct connections than for bottom duct connections, add these pressures to the ESP values listed in the respective units' blower performance table.

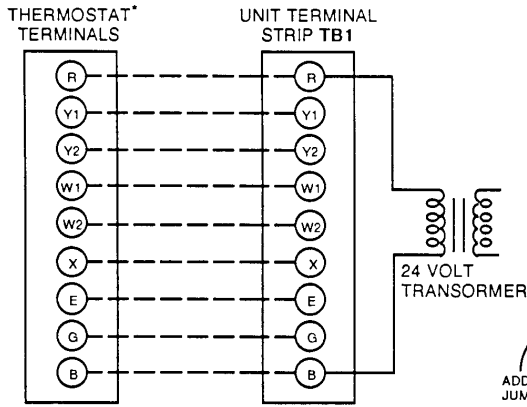
**TABLE 11: POWER EXHAUST PERFORMANCE**

MOTOR SPEED	STATIC RESISTANCE OF RETURN DUCTWORK, IWG									
	0.2		0.3		0.4		0.5		0.6	
	CFM	KW	CFM	KW	CFM	KW	CFM	KW	CFM	KW
HIGH <sup>1</sup>	5250	0.83	4500	0.85	4200	0.88	3750	0.93	3000	0.99
MEDIUM	4900	0.77	3900	0.79	3500	0.82	2900	0.85	-	-
LOW	4400	0.72	3700	0.74	3000	0.78	-	-	-	-

- Factory Setting  
Power Exhaust motor is a 3/4 HP, PSC type with sleeve bearings, a 48 frame and inherent protection.

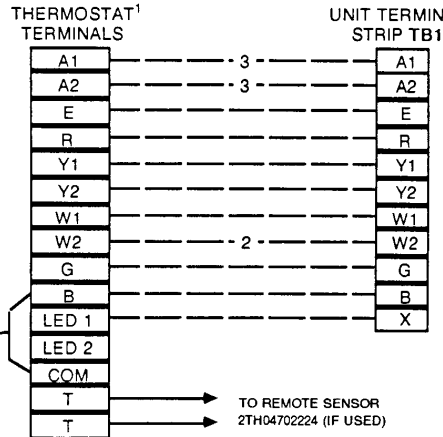
**CONTROL WIRING**

**LOW VOLTAGE WIRING (24 VOLT THERMOSTAT)**



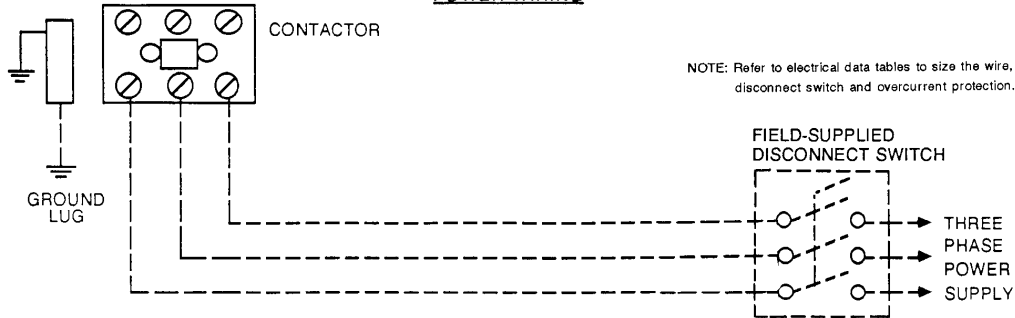
\*24 Volt Thermostat 2TH11704224 with emergency heat switch.

**LOW VOLTAGE WIRING (ELECTRONIC THERMOSTAT)**



- <sup>1</sup> Electronic programmable Thermostat 2ET04700424 (includes subbase).
- <sup>2</sup> Second stage heating only required on units with supplemental resistance heat.
- <sup>3</sup> Terminals A1 and A2 provide a relay output to close the outdoor economizer dampers when the thermostat switches to the set-back position.

**POWER WIRING**



**FIGURE 2 : FIELD WIRING**

**TABLE 12: ELECTRICAL DATA - BASIC UNITS**

MODEL	POWER SUPPLY	COMPRESSORS				OUTDOOR FAN MOTORS (#1 & #2)		SUPPLY AIR BLOWER MOTOR		MINIMUM CIRCUIT AMPACITY (AMPS)	MAXIMUM TIME DELAY <sup>1</sup> FUSE SIZE/ BRKR (AMPS)
		#1		#2		HP EACH	FLA EACH	HP	FLA		
		RLA	LRA	RLA	LRA						
BBCB180	208/230-3-60	21.8	184	21.8	184	1	4.1/4.2	5	14.4/15.4	71.7/72.9	90
	460-3-60	11.0	90	11.0	90	1	2.1	5	7.2	36.2	45
	575-3-60	9.0	73	9.0	73	1	2.0	5	5.9	31.5	40
BACB240	208/230-3-60	33.3	300	33.3	300	1	4.1/4.2	7.5	19.4/21.0	102.6/104.4	125
	460-3-60	19.2	146	19.2	146	1	2.1	7.5	9.7	57.2	70
	575-3-60	12.8	124	12.8	124	1	2.0	7.5	7.8	40.6	50

1. Max. Breaker, HACR Type Per NEC

VOLTAGE LIMITATIONS <sup>1</sup>	POWER SUPPLY	VOLTAGE	
		MIN.	MAX.
		208/230-3-60	187
	460-3-60	414	506
	575-3-60	518	630

1. Rated in accordance with ARI Standard 110, utilization range "A".

**TABLE 13: ELECTRICAL DATA -UNITS WITH SUPPLEMENTAL ELECTRIC HEAT**

MODEL	POWER SUPPLY	HEATER OPTION				MINIMUM CIRCUIT AMPACITY (AMPS)	MAXIMUM TIME DELAY FUSE SIZE/BRKR <sup>1</sup> (AMPS)
		MODEL	KW	STAGES	AMPS		
BBCB 180A25	208-3-60	E018	13.5	1	37.5	118.6	125
		E036	27.0	2	75.1	118.6	125
		E054	40.6	2	112.6	158.7	175
		E072	54.1	2	150.1	168.1	200
	230-3-60	E018	18.0	1	43.3	127.0	150
		E036	36.0	2	86.6	127.5	150
		E054	54.0	2	129.9	149.2	175
		E072	72.0	2	173.2	192.5	200
180A46	460-3-60	E018	18.0	1	21.7	63.2	70
		E036	36.0	2	43.3	63.2	70
		E054	54.0	2	65.0	74.0	80
		E072	72.0	2	86.6	95.6	110
180A58	575-3-60	E018	18.0	1	17.3	53.2	60
		E036	36.0	2	34.6	53.2	60
		E054	54.0	2	52.0	59.3	70
		E072	72.0	2	69.3	76.7	80
BACB 240A25	208-3-60	E018	13.5	1	37.5	149.5	150
		E036	27.0	2	75.1	149.5	150
		E054	40.6	2	112.6	196.4	200
		E072	54.1	2	150.1	212.7	225
	230-3-60	E018	18.0	1	43.3	158.5	175
		E036	36.0	2	86.6	158.5	175
		E054	54.0	2	129.9	196.4	200
		E072	72.0	2	173.2	212.7	225
240A46	460-3-60	E018	18.0	1	21.7	84.2	90
		E036	36.0	2	43.3	84.2	90
		E054	54.0	2	65.0	111.3	125
		E072	72.0	2	86.6	111.3	125
240A58	575-3-60	E018	18.0	1	17.3	62.3	70
		E036	36.0	2	34.6	62.3	70
		E054	54.0	2	52.0	83.9	90
		E072	72.0	2	69.3	83.9	90

1. Max. Breaker, HACR Type per NEC.

**ELECTRIC HEAT CORRECTION FACTORS**

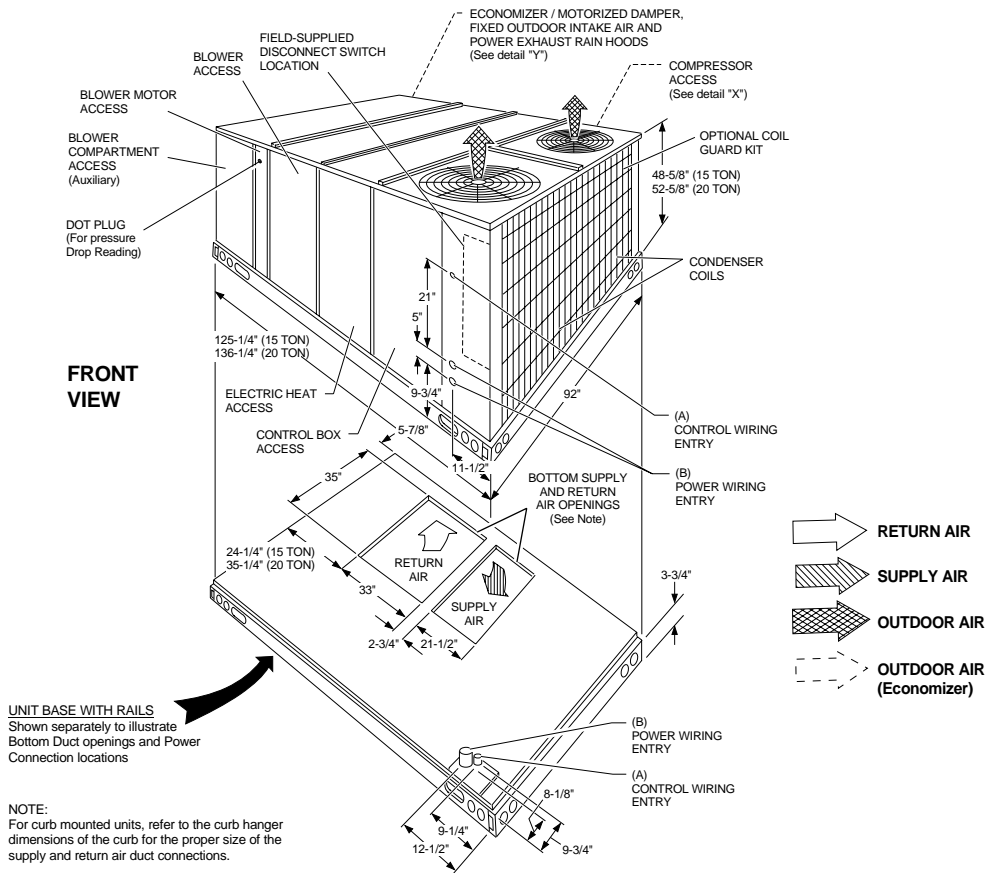
NOMINAL VOLTAGE	VOLTAGE	KWCAP.MULTIPLIER
208	208	1.00
240	230	0.92
480	460	0.92
600	575	0.92

**TABLE 14: PHYSICAL DATA - BASIC UNITS**

MODELS		BCB	
		180	240
SUPPLY AIR BLOWER	CENTRIFUGAL BLOWER (Dia. x Wd. in.)	15 x 15	18 x 15
	FAN MOTOR HP	5	7.5
INDOOR COIL	ROWS DEEP	4	4
	FINS PER INCH	13	13
	FACE AREA (Sq. Ft.)	15.5	20.5
OUTDOOR FAN (Two Per Unit)	PROPELLER DIA. (in.) (Each)	30	30
	FAN MOTOR HP (Each)	1	1
	NOM. CFM TOTAL (Each)	6500	7200
OUTDOOR COIL	ROWS DEEP	3	3
	FINS PER INCH	15	15
	FACE AREA (Sq. Ft.)	36.0	43.3
COMPRESSOR (Qty. Per Unit)	7-1/2 TON SCROLL	2	-
	10 TON TANDEM	-	2
AIR FILTERS	QUANTITY PER UNIT (16" X 20" X 2")	-	4
	QUANTITY PER UNIT (16" X 25" X 2")	-	4
	QUANTITY PER UNIT (18" X 24" X 2")	5	-
	TOTAL FACE AREA (sq. ft.)	15.0	20.0
CHARGE	REFRIGERANT 22 (lbs./oz.)	SYSTEM NO. 1	22/8 24/0
		SYSTEM NO. 2	22/8 25/0

**TABLE 15: OPERATING WEIGHTS (LBS.)**

MODEL SIZE		180	240	
Basic Unit	BCB (Heat Pump)	1900	2200	
Options	Economizer	160		
	Economizer with Power Exhaust	245		
	Motorized Damper	150		
	Electric Heater	18 KW	25	
		36 KW	30	
		54 KW	35	
Accessories	72 KW	40		
	Roof Curb	175	185	
	Barometric Damper	45	45	
	Wood Skid	200	220	



**FIGURE 3 : UNIT DIMENSIONS - (BCB-15 & 20 TON)**

**CLEARANCES**

Front	36"
Back	24" (Less Economizer) 49" (With Economizer)
Left Side (Filter Access)	24" (Less Economizer) 36" (With Economizer)
Right Side (Cond. Coil)	36"
Below Unit <sup>1</sup>	0"
Above Unit <sup>2</sup>	72" With 36" Maximum Horizontal Overhang (For Outdoor Air Discharge)

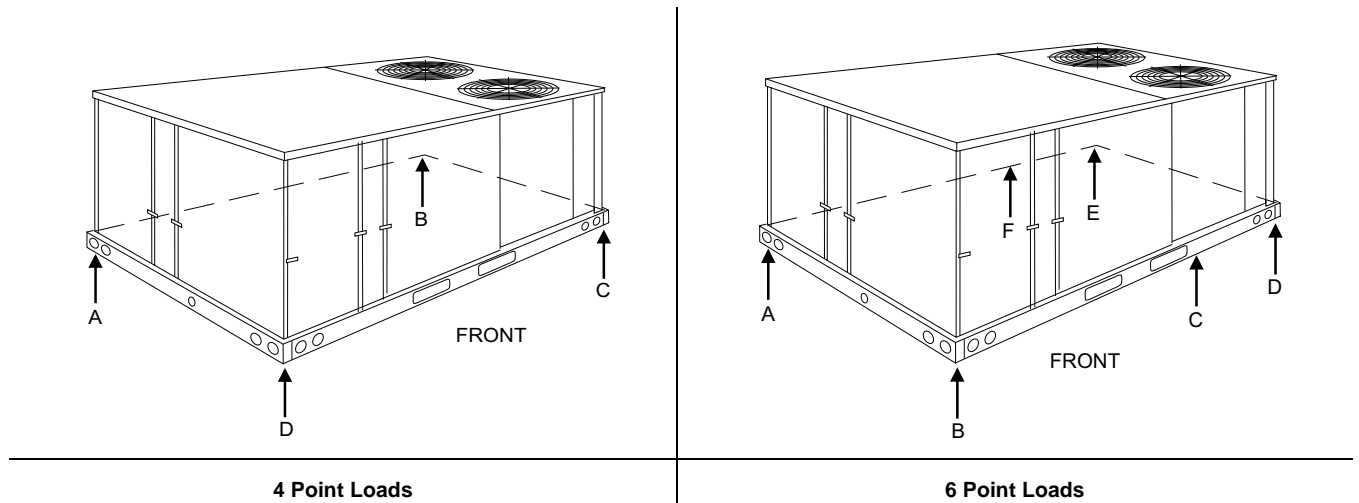
- Units (applicable in U.S.A. only) may be installed on combustible floors made from wood or class A, B or C roof covering material.
- Units must be installed outdoors. Overhanging structures or shrubs should not obstruct outdoor air discharge outlet.

NOTE: Units and ductwork are approved for zero clearance to combustible materials when equipped with electric heaters

All dimensions are in inches. They are subject to change without notice. Certified dimensions will be provided upon request.

**UTILITIES ENTRY DATA**

HOLE	OPENING SIZE (DIA.)	USED FOR	
A	1-1/8" KO	Control Wiring	Front
	3/4" NPS (Fem.)		Bottom
B	3-5/8" KO	Power Wiring	Front
	3" NPS (Fem.)		Bottom



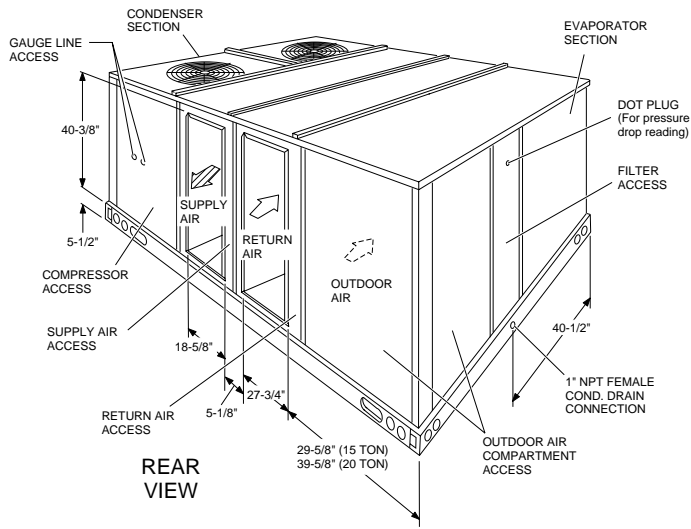
**FIGURE 4 : UNIT DIMENSIONS - CONT'D. (BCB - 15 & 20 TON)**

UNIT	4 - POINT LOADS (LBS)				
	TOTAL	A	B	C	D
180	2090	513	510	558	559
240	2390	514	538	684	654

NOTE: These weights are with economizer high heat.

UNIT	6 - POINT LOADS (LBS)						
	TOTAL	A	B	C	D	E	F
180	2190	342	358	357	372	356	341
240	2390	343	359	407	456	436	389

NOTE: These weights are with economizer high heat.



DUCT COVERS - Units are shipped with the bottom duct openings covered. An accessory flange kit is available for connecting side ducts.

**For bottom duct applications:**

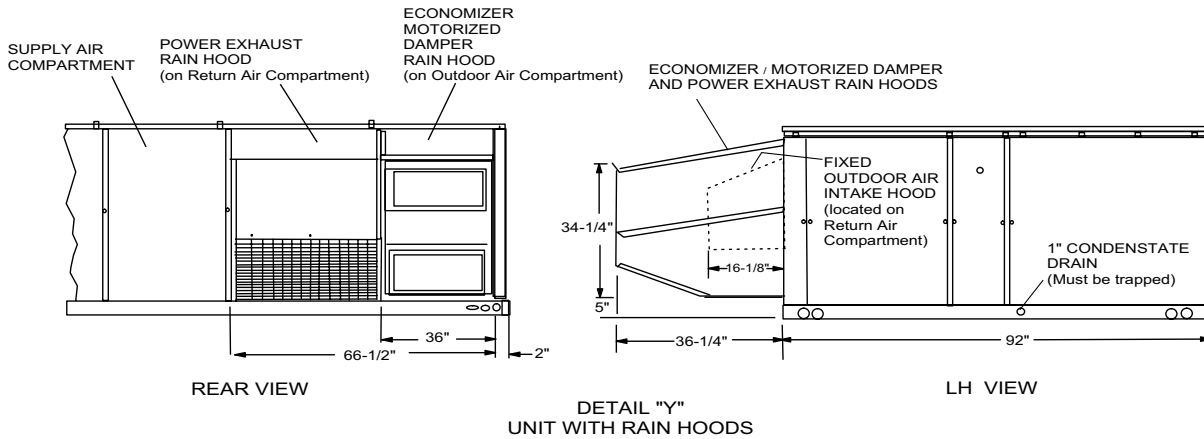
1. Remove the side panels from the supply and return air compartments to gain access to the bottom supply and return air duct covers.
2. Remove and discard the bottom duct covers. (Duct openings are closed with sheet metal covers except when the unit includes a power exhaust option. The covering consists of a heavy black paper composition.)
3. Replace the side supply and return air compartment panels.

**For side duct applications:**

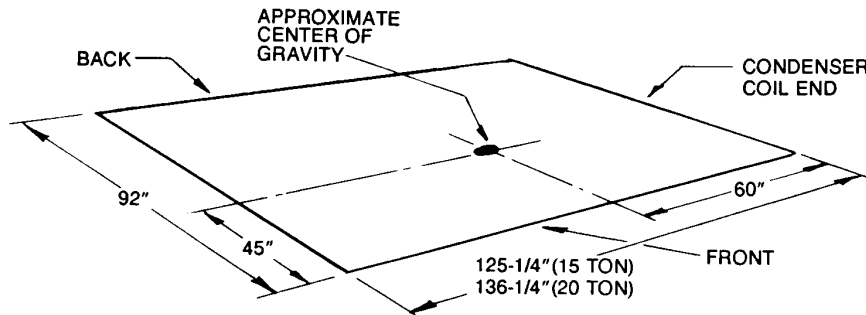
1. Replace the side panels on the supply and return air compartments with the accessory flange kit panels.
2. Connect ductwork to the duct flanges on the rear of the unit.

**OUTDOOR AIR PANEL SIZES**  
 15 TON UNITS 21-1/2" X 43"  
 20 TON UNITS 32-1/2" X 43"

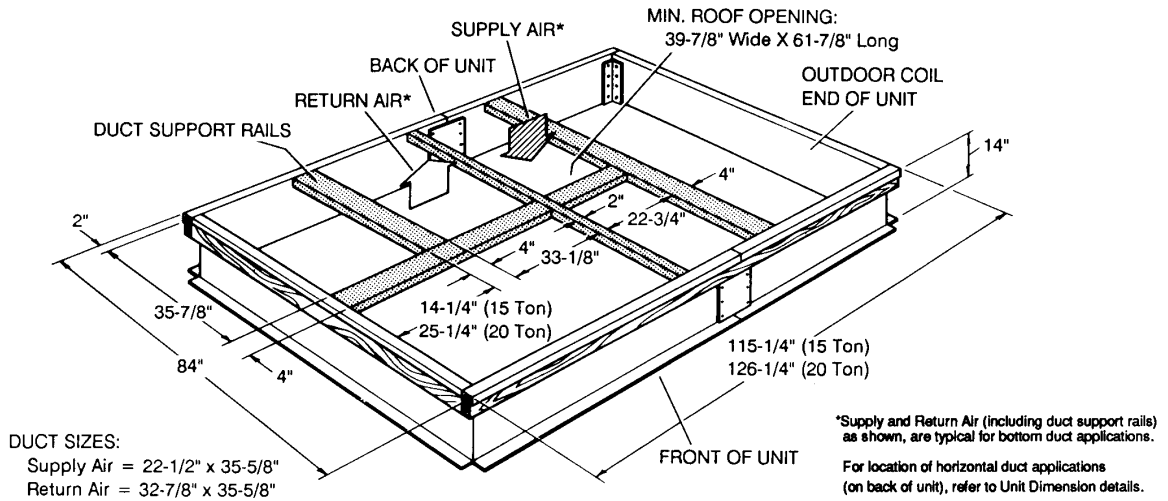
**FIGURE 5 : UNIT DIMENSIONS - (BCB - 15 & 20 TON) DETAIL "X" ACCY. SIDE SUPPLY & RETURN AIR OPENINGS**



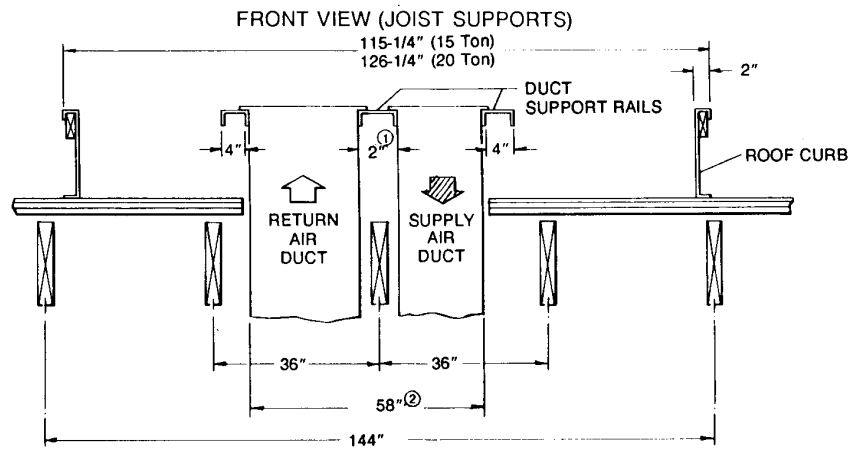
**FIGURE 6 : DETAIL "Y" UNIT WITH RAIN HOODS**



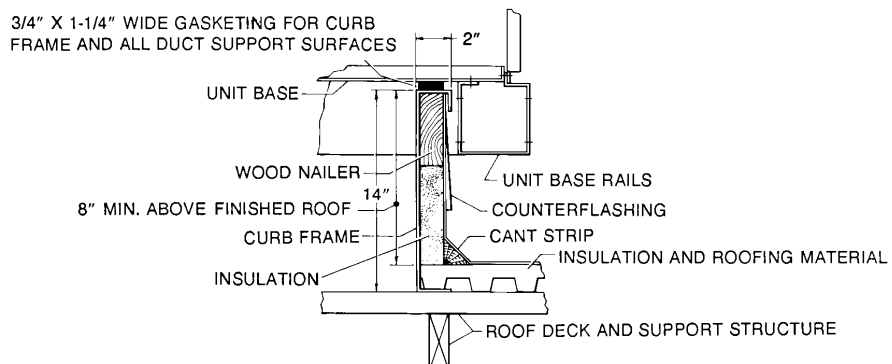
**FIGURE 7 : CENTER OF GRAVITY**



**FIGURE 8 : ROOF CURB DIMENSIONS - (BCB-15 & 20 TON)**



**FIGURE 9 : ROOF CURB BENEFITS**



**FIGURE 10 : UNIT AND CURB APPLICATIONS**

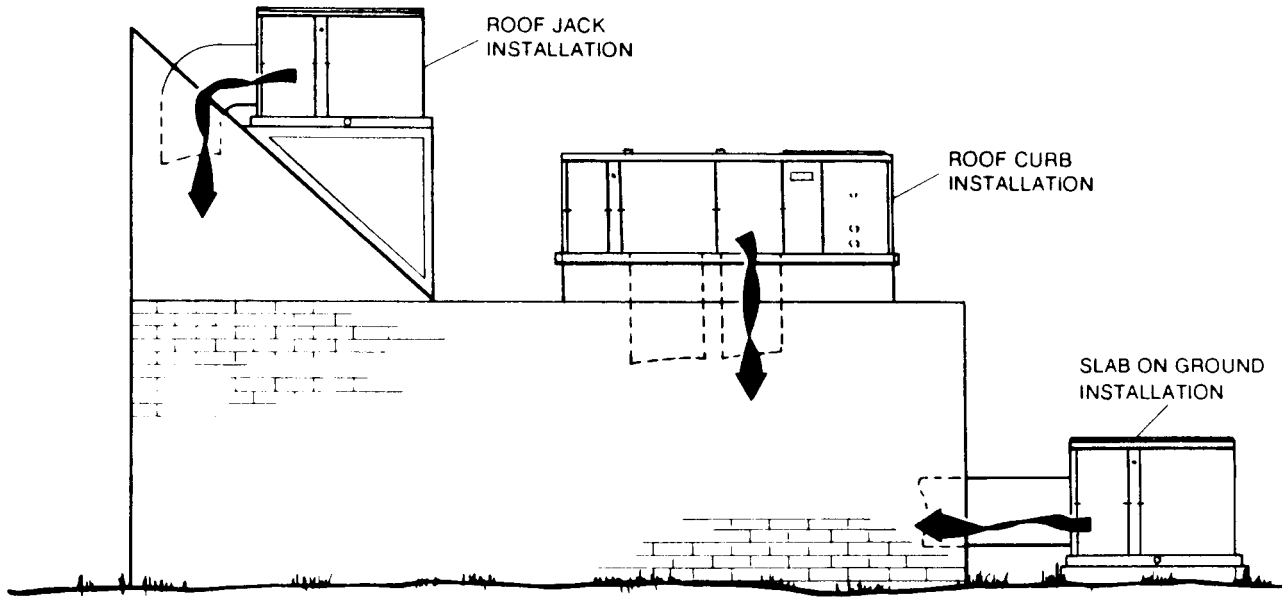


FIGURE 11 : TYPICAL APPLICATIONS

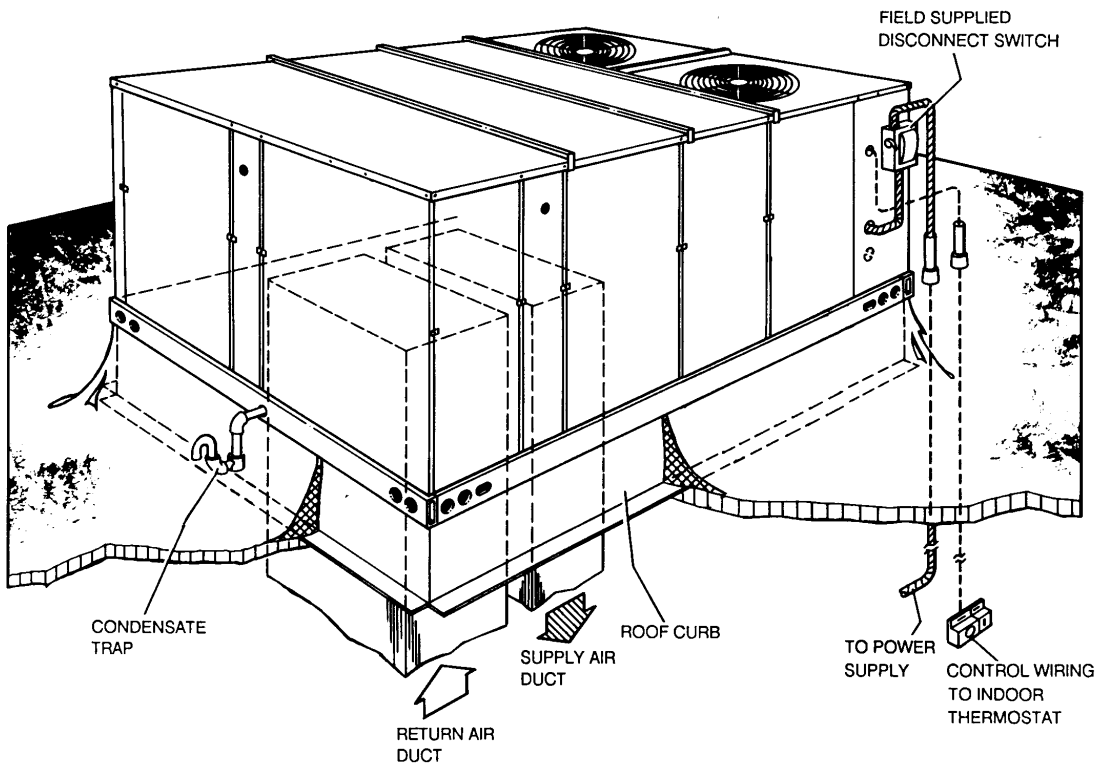


FIGURE 12 : TYPICAL ROOF-TOP INSTALLATION







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