



Comfort Where It Counts.

T2HA, T3HA, and T4HA with CAHB SYSTEMS
Limited Range Multi-Zone Heat Pumps

Rev. 1.1 [07/07]

JOB NAME: _____ LOCATION: _____
 PURCHASER: _____
 ENGINEER: _____
 SUBMITTED TO: _____ FOR: REFERENCE [] APPROVAL [] CONSTRUCTION []
 SUBMITTED BY: _____ DATE: _____
 UNIT DESIGNATION: SCHEDULE #: _____ MODEL #: _____



CAHB

Additional electrical specifications are located in the Owners Manual and Specifications Sheet.



T2HA, T3HA, and T4HA Top Discharge

EMI ENGINEERING SUBMITTAL

▲ **Indoor Design Temp °F (°C) DB/WB**

Cooling	80/67 (26.6/19.4)
Heating	70/60 (21.1/15.6)

▲ **Outdoor Design Temp °F (°C) DB/WB**

Cooling	95/75 (35/23.9)
Heating	47/43 (8.3/6.1)

▲ **STANDARD FEATURES:**

- Evaporator** – Cassette, In-Ceiling Mounted:
- Connections for 24V remote wall thermostat
 - Custom control board with anti-short cycle timer
 - Universal Controller (*External Thermostat or IR Remote Control*)
 - Relays and connectors to condensing unit
 - Condensate Pump with 36" (0.9 m) lift – from base of unit
 - 24V Transformer
 - Fan purge for improved efficiency
 - Freeze protection
 - Fans are backward curved impeller centrifugal design
 - CAHB12 & 24 Single fan w/fire retardant aluminum or plastic impeller
 - Motors are multispeed, enclosed type w/thermal protection and sealed lifetime bearings
 - Permanent, washable filter (user accessible)
 - Branch duct knockouts on two sides for remote discharge locations (Use up to 2 non-adjacent)
 - Fresh air intake capability on three sides of cabinet (2 on CAHB12)
 - Four plastic air vanes; motor driven w/auto sweep or fixed position stop setting on models CAHB24 (models CAHB12 equipped w/manually adjusted air vanes)
 - Condensate pan overflow protection

Condenser Standard Features following on page.

ELECTRICAL SPECIFICATIONS Top Discharge Multizone Heat Pumps 208/230V - 60 HERTZ 1 - PHASE							
Model	Capacity*	Fan Motor		Total Amps	MCA	HACR BRKR	Min Volt
		Amps	HP				
T2HA	8800	1.8	0.33	12.6	14.0	15	197
	8400	1.8	0.33	16.0	18.2	25	197
	4400	1.8	0.33	19.4	21.6	30	197
	2400	1.8	0.33	14.9	17.1	25	197
	9800	1.8	0.33	10.6	12.0	15	197
T3HA	9990	1.8	0.33	12.0	12.9	15	197
	9920	1.8	0.33	12.9	14.0	15	197
	9980	1.8	0.33	14.0	15.4	20	197
	9940	1.8	0.33	17.4	19.6	25	197
	9220	1.8	0.33	13.8	14.9	15	197
	9280	1.8	0.33	14.9	16.3	20	197
	9240	1.8	0.33	18.3	20.5	25	197
	2280	1.8	0.33	15.8	17.2	20	197
	2240	1.8	0.33	19.2	21.4	30	197
	2220	1.8	0.33	14.7	15.8	20	197
T4HA	9999	1.8	0.33	15.4	16.3	20	197
	9992	1.8	0.33	16.3	17.4	20	197
	9922	1.8	0.33	17.2	18.3	20	197
	9222	1.8	0.33	18.1	19.2	20	197
	2222	1.8	0.33	19.0	20.1	25	197

* 9 - 9000 Btuh circuit 2 - 12000 Btuh circuit
 8 - 18000 Btuh circuit 4 - 24000 Btuh circuit

CAHB ELECTRICAL SPECIFICATIONS								
Model	Volts/Hz/PH	RLA	Heat K.W.	Amps	Total Amps	Min Volt	M.C.A.	HACR BRKR
CAHB12	208/230/60/1	0.35	-	-	0.4	197	0.5	15
	208/230/60/1	0.35	1.5	6.52	6.9	197	8.6	15
CAHB24	208/230/60/1	0.55	-	-	0.6	197	0.7	15
	208/230/60/1	0.55	3	13.04	13.6	197	17.0	20



EMI ENGINEERING SUBMITTAL T2HA, T3HA, AND T4HA WITH CAHB SYSTEMS

STANDARD FEATURES:

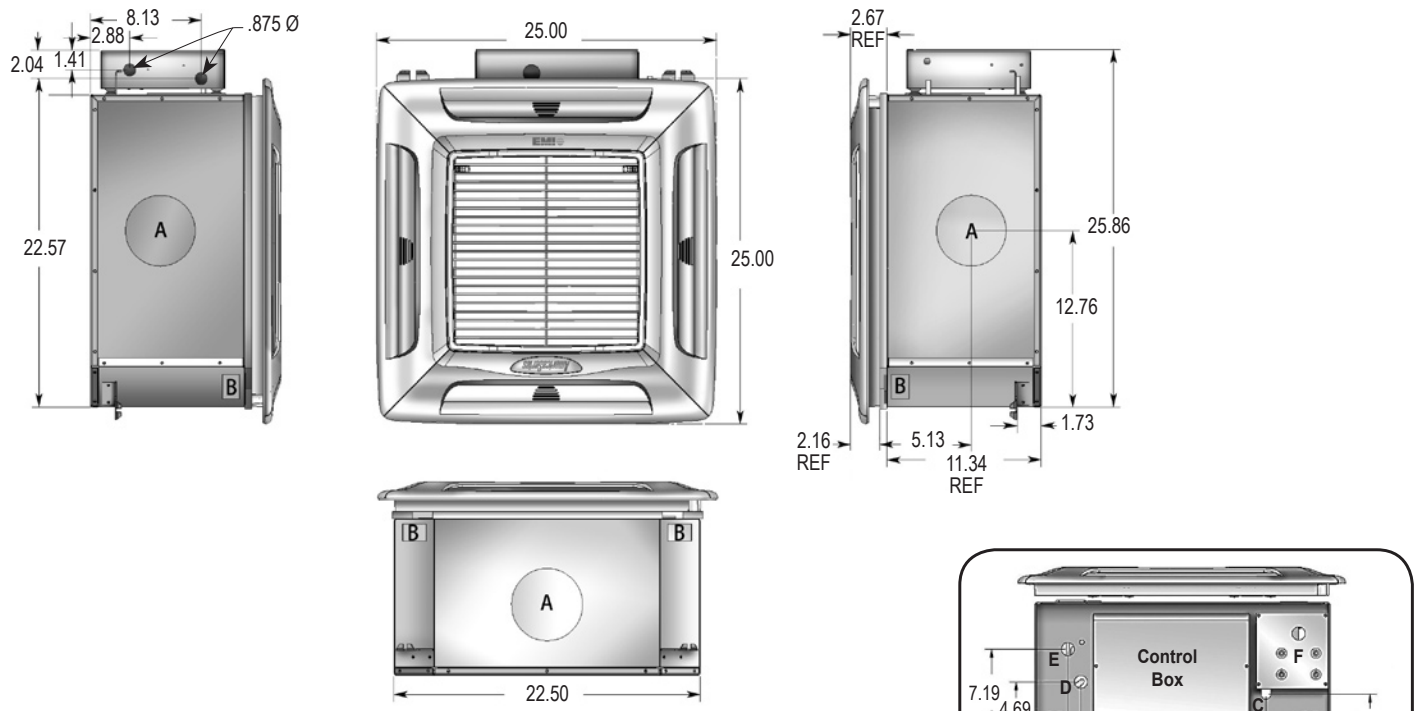
Condenser – Top Discharge:

- Compressor and fan motor contactor
- Capacitors (compressor and motor)
- Duratec compressor protection package also includes; (9,000 and 12,000 Btuh zones)
 - Loss of charge switch
 - Crankcase Heater

- Low Voltage (24V) terminal connections
- High pressure control (18,000 and 24,000 Btuh zones)
- Large capacity suction accumulator (9,000 12,000 and 18,000 Btuh zones)
- Factory installed solid core filter driers
- Coated wire guard for coil and fan
- Common suction pressure access point
- Hard start assist
- R22 refrigerant

CAHB DIMENSIONS AND SPECIFICATIONS

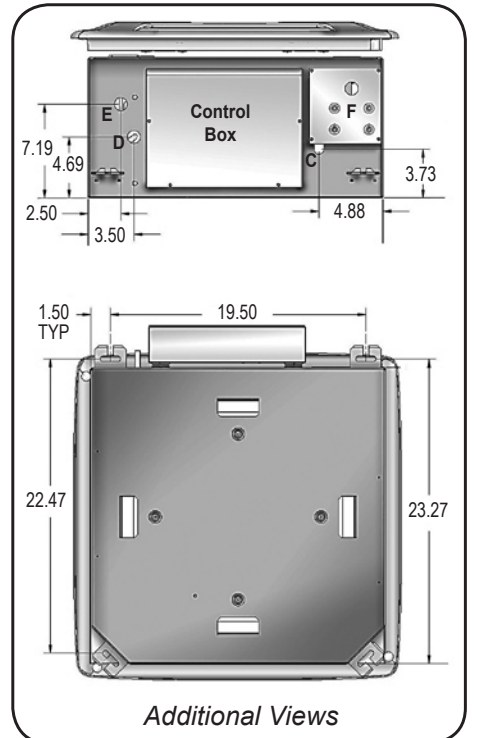
CAHB12



Note: All dimensions in inches.

CAHB12

	FEATURE	QTY.	SIZE
A	Optional Discharge Knockout	3	5/4" Ø
B	Fresh Air Inlet Knockout	2	1 1/4" x 2 1/2"
C	Condensate Discharge	1	1/2" Ø
D	Suction	1	1/2" Ø
E	Liquid	1	1/4" Ø
F	Condensate Pump Access	1	-



EMI ENGINEERING SUBMITTAL T2HA, T3HA, AND T4HA WITH CAHB SYSTEMS

Due to ongoing development programs, design and specifications may change without notice.

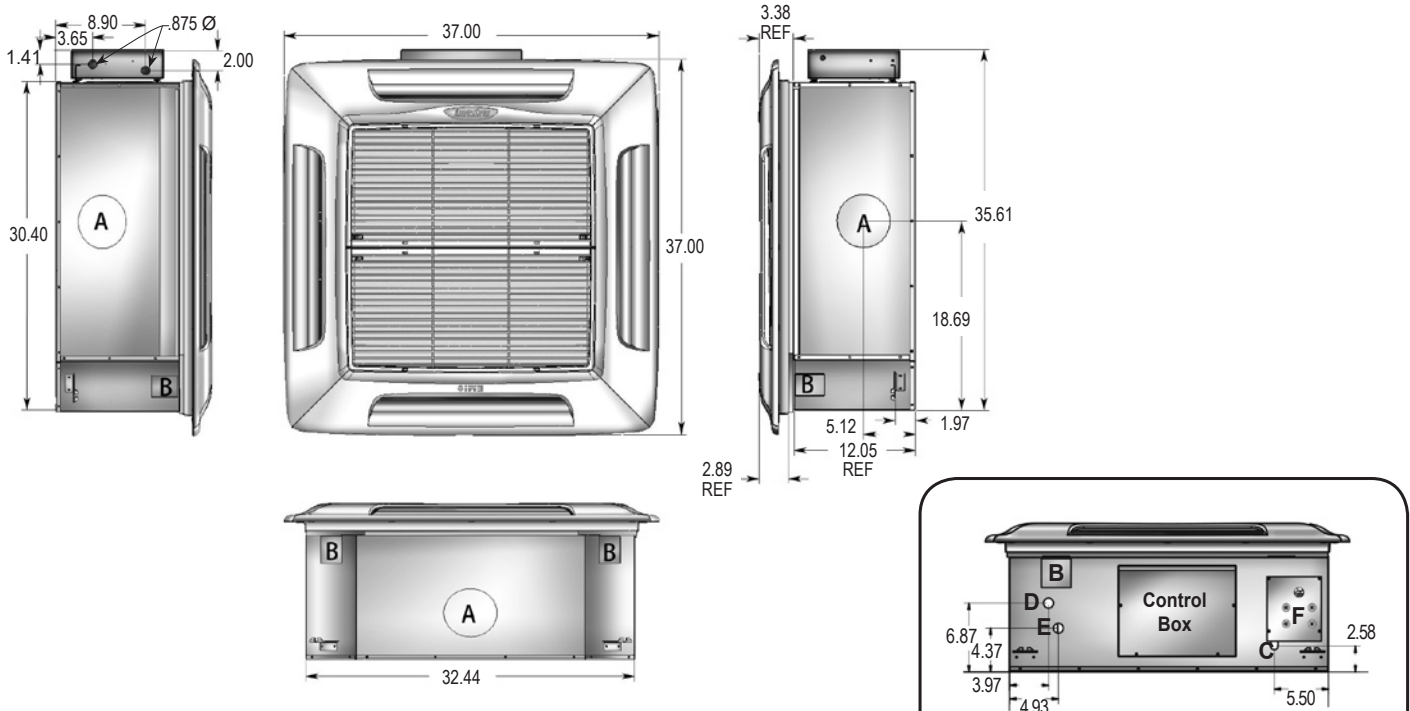
CAHB DIMENSIONS AND SPECIFICATIONS

CAHB INTERCONNECTING LINE SIZE IN O.D.		
Capacity Btuh (k)	Liquid	Suction
09/12	1/4"	1/2"
18	3/8"	5/8"*
24	3/8"	3/4"

* Connection is 3/4" O.D. at CAHB and must be bushed down to interconnect at the CAHB unit.

Model Size	Indoor Sound Levels dBA		Discharge Air Volume "Dry Coil" CFM		Shipping Weight Lbs.
	High Speed	Low Speed	High Speed	Low Speed	
12	41	39	380	335	70 (1.8 kg 3)
24	44	39	700	620	108 (49.1 kg)

CAHB24

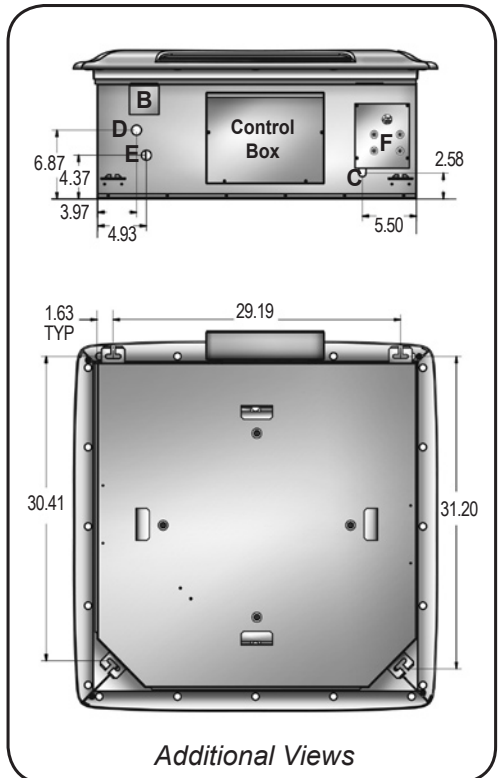


Note: All dimensions in inches.

CAHB24

FEATURE	QTY.	SIZE
A Optional Discharge Knockout	3	5/4" Ø
B Fresh Air Inlet Knockout	3	3" x 3"
C Condensate Discharge	1	1/2" Ø
D Suction	1	3/4" Ø*
E Liquid	1	3/8" Ø
F Condensate Pump Access	1	-

*18,000 Btuh must be bushed down to 5/8"



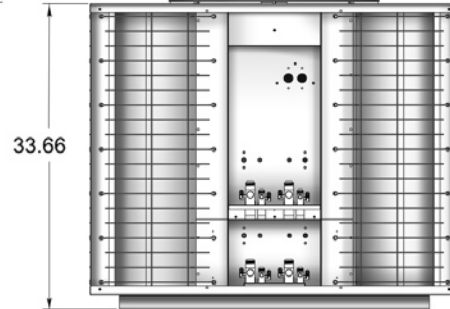
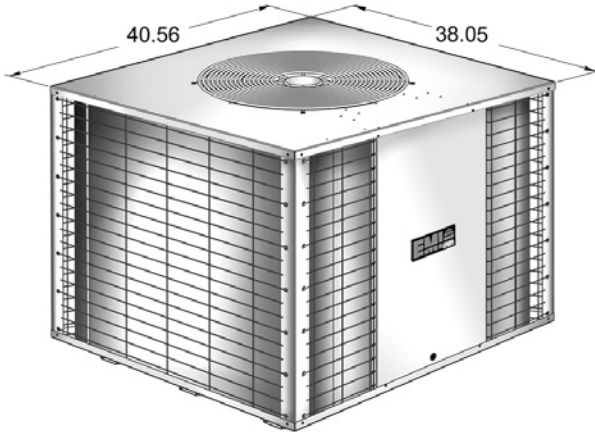
Additional Views

EMI ENGINEERING SUBMITTAL T2HA, T3HA, AND T4HA WITH CAHB SYSTEMS

T2HA, T3HA, AND T4HA SPECIFICATIONS AND DIMENSIONS

Due to ongoing development programs, design and specifications may change without notice.

Note: All dimensions in inches



▲ PART ONE "GENERAL"

The heat pump systems shall be an EMI America Series multi-zone split system per the equipment schedule. The system shall consist of two to four indoor air handler models per the handler equipment schedule and matching America Series multi-zone heat pump condenser per the condenser equipment schedule. The units shall be made within North America. The units shall be listed by Intertek Testing Service (ITS) and bear the ETL label. All wiring shall be in accordance with the National Electrical Code (N.E.C.). The units shall be rated in accordance with ARI Standard 210/240 and bear the ARI label. The units shall be manufactured in a facility certified to ISO 9001, which is an international standard used to provide guidance in the development and implementation of an effective Quality Management System. The condensing unit shall contain R-22 refrigerant charge for the evaporator section and condenser section. The system efficiency shall meet or exceed 2006 Federal Standards.

▲ PART TWO "WARRANTY"

The units shall have a manufacturer's warranty for a period of (1) year from date of installation. The compressors shall have a warranty of (5) years from date of installation. If, during this period, any part should fail to function properly due to defects in workmanship or material, it shall be replaced or repaired at the discretion of Enviromaster International LLC. This warranty does not include labor. Manufacturer shall have twenty years experience in the U.S. market.

▲ PART THREE "PERFORMANCE"

COOLING - Each indoor unit, specified by the air handler - equipment schedule, shall provide a total minimum capacity, SEER, and EER at ARI standard conditions per the chart below. The system net minimum total cooling capacity and circulating air rate at 80°F (DB)/67°F (WB) (22.6°C/19.4°C) entering the indoor coil and 95°F (DB) (35°C) air entering the outdoor coil for the circuit combinations on the equipment schedule shall be rated per the chart below. Cooling mode will operate down to 35°F (1.6°C) and then shut down the compressor.

HEATING - The system shall provide a heating capacity and COP per the "System Performance" chart at ARI conditions, which are 70°F (DB) (21.1°C) entering the indoor coil, and 47°F (DB)/ 43°F (WB) (8.3/6.1°C) air entering the outdoor coil. The T2HA, T3HA, and T4HA are limited range heat pumps that will operate in heating mode down to 35°F (1.6°C) and turn off the compressor. At that time the optional electric heater in the EMI indoor unit (if option purchased) will operate to meet the heating need.

T2HA, T3HA, & T4HA SOUND & WEIGHT DATA				
Model	Line Set Diameters		Sound	Weight
	Liquid	Suction	dBA	Lbs.
T2HA8800	3/8"	5/8"	70	325
T2HA8400	3/8"	5/8" & 3/4"	70	325
T2HA4400	3/8"	3/4"	70	325
T2HA2400	1/4" & 3/8"	1/2" & 3/4"	70	325
T2HA9800	1/4" & 3/8"	1/2" & 5/8"	70	325
T3HA9990	1/4"	1/2"	70	325
T3HA9920	1/4"	1/2"	70	325
T3HA9980	1/4" & 3/8"	1/2" & 5/8"	70	325
T3HA9940	1/4" & 3/8"	1/2" & 3/4"	70	325
T3HA9220	1/4"	1/2"	70	325
T3HA9280	1/4" & 3/8"	1/2" & 5/8"	70	325
T3HA9240	1/4" & 3/8"	1/2" & 3/4"	70	325
T3HA2280	1/4" & 3/8"	1/2" & 5/8"	70	325
T3HA2240	1/4" & 3/8"	1/2" & 3/4"	70	325
T3HA2220	1/4"	1/2"	70	325
T4HA9999	1/4"	1/2"	70	325
T4HA9992	1/4"	1/2"	70	325
T4HA9922	1/4"	1/2"	70	325
T4HA9222	1/4"	1/2"	70	325
T4HA2222	1/4"	1/2"	70	325

EMI ENGINEERING SUBMITTAL T2HA, T3HA, AND T4HA WITH CAHB SYSTEMS

CAHB / T2HA, T3HA, OR T4HA SYSTEM PERFORMANCE DATA							
Model		Cooling				Heating	
Outdoor	Indoor Air Handler	Btuh	SEER	SHR	EER	Btuh	COP
T2HA8800	(2) CAHB24	36000	13	0.75	12.6	26400	3.1
T2HA8400	(2) CAHB24	42000	13	0.71	12.4	32600	3.1
T2HA4400	(2) CAHB24	48000	13	0.67	12.0	40000	3.1
T2HA2400	(1) CAHB12 + (1) CAHB24	35000	13	0.69	11.8	30000	3.1
T2HA9800	(1) CAHB12 + (1) CAHB24	27200	13	0.76	12.2	21200	3.1
T3HA9990	(3) CAHB12	27800	13	0.80	11.9	23800	3.2
T3HA9920	(3) CAHB12	29800	13	0.78	11.7	25800	3.1
T3HA9980	(2) CAHB12 + (1) CAHB24	36400	13	0.77	12.2	29000	3.1
T3HA9940	(2) CAHB12 + (1) CAHB24	42500	13	0.72	11.9	35800	3.1
T3HA9220	(3) CAHB12	31800	13	0.76	11.6	27800	3.1
T3HA9280	(2) CAHB12 + (1) CAHB24	38500	13	0.75	12.1	31000	3.1
T3HA9240	(2) CAHB12 + (1) CAHB24	44500	13	0.71	11.8	37800	3.1
T3HA2280	(2) CAHB12 + (1) CAHB24	40500	13	0.75	12.0	33200	3.1
T3HA2240	(2) CAHB12 + (1) CAHB24	46500	13	0.71	11.8	40000	3.1
T3HA2220	(3) CAHB12	34000	13	0.75	11.6	30000	3.1
T4HA9999	(4) CAHB12	37200	13	0.80	11.9	31800	3.2
T4HA9992	(4) CAHB12	39000	13	0.78	11.8	33800	3.1
T4HA9922	(4) CAHB12	41000	13	0.77	11.8	35800	3.1
T4HA9222	(4) CAHB12	43000	13	0.75	11.5	37800	3.1
T4HA2222	(4) CAHB12	45000	13	0.75	11.6	40000	3.1

Circuit Designators: 9 = 9000 Btuh 2 = 12000 Btuh 8 = 18000 Btuh 4 = 24000 Btuh (ex. - 8400 consists of one 18000 Btuh compressor and one 24000 Btuh compressor)

▲ PART FOUR "INDOOR UNIT"

The indoor unit shall be factory assembled wired and contain a low voltage transformer. The unit shall fit in the ceiling and have the capability of accepting a branch supply duct as well as a fresh air duct. The cabinet shall consist of a galvanized steel sub chassis with fire-resistant thermal and acoustic foam insulation, light grey high-impact polystyrene fascia and manually adjustable discharge louvers that can be placed in a fixed position for CAHB12 and motorized louvers on CAHB24. Return air shall be filtered by means of an easily removable filter. The evaporator fan shall be backward curved impeller centrifugal design, dynamically and statically balanced, and mounted on integral mounting rails. The evaporator motor shall be multispeed, enclosed type with thermal protection and sealed lifetime bearings. The evaporator coil shall be of nonferrous construction with louvered fins bonded to rifled-copper tubing. The tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed with phosphor or silver alloy. The coil shall be pressure tested at the factory. A condensate pan and drain shall be provided under the coil. An integral condensate pump capable of lifting 36 inches (0.9 m) shall be provided. System refrigerant flow shall be controlled by means of an orifice piston in the indoor unit. The unit electrical power shall be 208/230 Volts, 1 phase, 60 Hertz. The system shall be capable of satisfactory operation within voltage limits of 208/230 +/- 10% Volts. (197 min/240 max Volts.)

▲ PART FIVE "CONTROL SYSTEM"

The control system shall consist of a universal unit mounted controller, an infrared compatible control package, configurable to either unit mount or optional wall thermostat operation. The controller shall feature anti-short cycle compressor protection; fan purge, fan remains on for 60 seconds after heat/cool call is dropped for improved efficiency; integral heating relay ensures that the fan operates whenever electric heat is energized. Wiring shall run from outdoor unit to the 24V wall thermostat and to indoor unit. **NO SPLICES.** When running low Voltage wiring a double insulated 18 AWG wire should be used. The control voltage between the indoor unit and the outdoor unit shall be 24 Volts A.C. The 24 Volts shall be generated from the indoor unit's 24 Volt 40VA transformer.

▲▼ **PART SIX "OUTDOOR UNIT"**

The outdoor unit shall be completely factory assembled, piped and wired. The cabinet shall be fabricated of G90U galvaneal steel, finished with corrosion inhibiting, polyester, powder coated paint (2,000 hr. salt spray tested), finished in light gray with a black vinyl coated fan guard. The unit shall be furnished with (1) large diameter, direct drive, high efficiency propeller type fan. The motor shall be PSC type with internal overload protection and shall be permanently lubricated and resiliently mounted for quiet operation. The fan shall be provided with a guard to prevent contact with moving parts. The 9,000 and 12,000 Btuh nominal compressors shall be of the high performance rotary type with Duratec package consisting of an oversized accumulators, factory installed solid core filter driers and thermal overloads. The 18,000 and 24,000 Btuh nominal compressors shall be high performance reciprocating or scroll type. The compressors shall be mounted as to avoid the transmission of vibration. The condenser shall have easy access service port connections at 45° from valve body. The refrigeration system shall be equipped with loss of charge switch or manual reset high pressure switch and have the capability to operate with a maximum height difference of 35 feet (10.6 m) and overall refrigerant tubing length of 100 equivalent feet (30 m) between indoor and outdoor sections without the need for line size changes or additional oil. Refrigerant circuits shall be independent and contain its own compressor, refrigerant piping, service valve, expansion device and evaporator. The condenser coil shall be U-shaped and protected by a wire coil guard. Coil construction is seamless copper tubing with enhanced aluminum fins. The tubes are mechanically expanded for secure bonding to the fin. The unit electrical power shall be 208/230V, 1 phase, 60 Hertz. The system shall be capable of operation within voltage limits of 208/230V +/- 10%. (197 min/240 max Volts.)

▲▼ **PART SEVEN "OPTIONAL EQUIPMENT"**

- **24 Volt remote wall thermostat**
- **1.5 kW or 3 kW electric heat** with automatic reset high temperature cutout and redundant high temperature fuse link
- **Handheld infra-red remote controller**
- **Wind baffle kit** – field installed, consists of a set of louvered panels for the condenser surface areas, which can be left on year round:
 - Wind baffles also provide an attractive protective covering for the condenser coil surface as well as serving as a hail guard
- **Copper-copper condenser coils** – for protection against galvanic corrosion
- **Sea coast coated coils**