

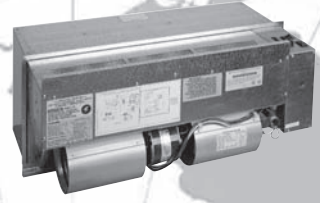
# DUAL MOTOR PACKAGED TERMINAL AIR CONDITIONERS

RC 11, 12 & 21

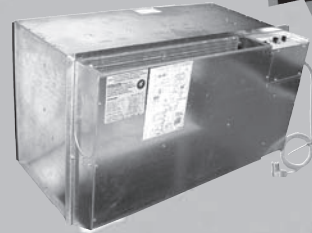
RC/RH 10, 20, 35, 45, 80, 90



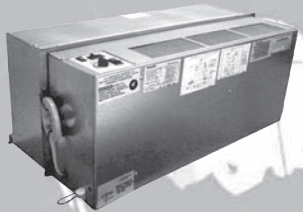
RC11



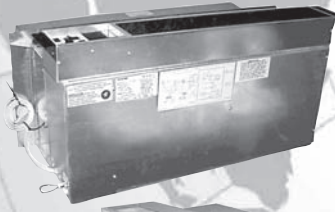
RC/RH10



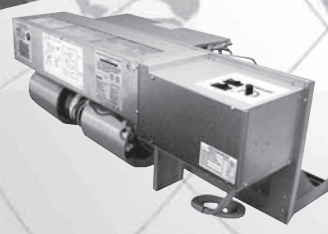
RC12



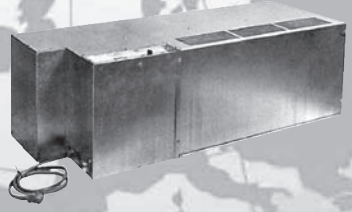
RC/RH20



RC21



RC/RH35



RC/RH80

An **ECR** International Brand  
An ISO 9001-2000 Certified Company



# DUAL MOTOR PACKAGED TERMINAL AIR CONDITIONERS

## INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

**Shipping Damage MUST be Reported to the Carrier IMMEDIATELY!!!**  
*Examine the exterior. Remove cover and examine compressor and piping for signs of damage.*

**TO THE INSTALLER**

### SAFETY INSTRUCTIONS



*[Save These Instructions]*

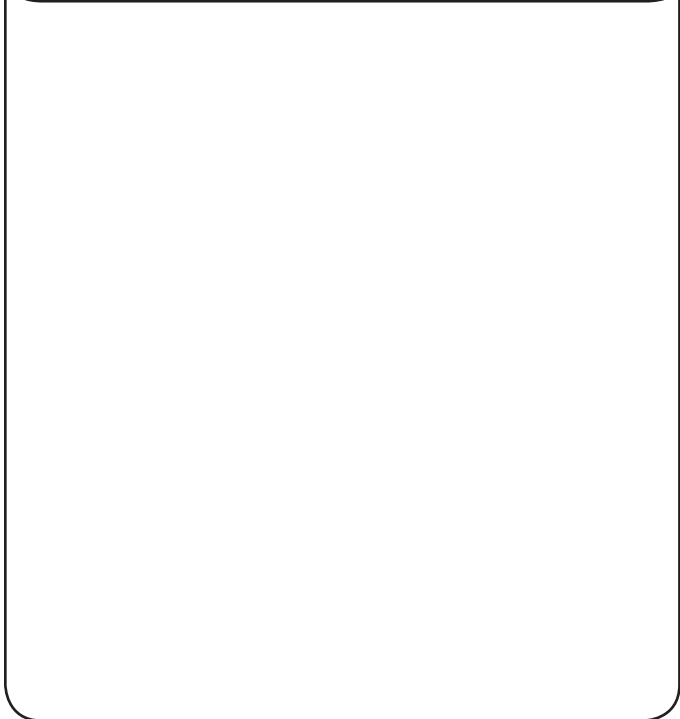
[www.retroaire.com](http://www.retroaire.com)



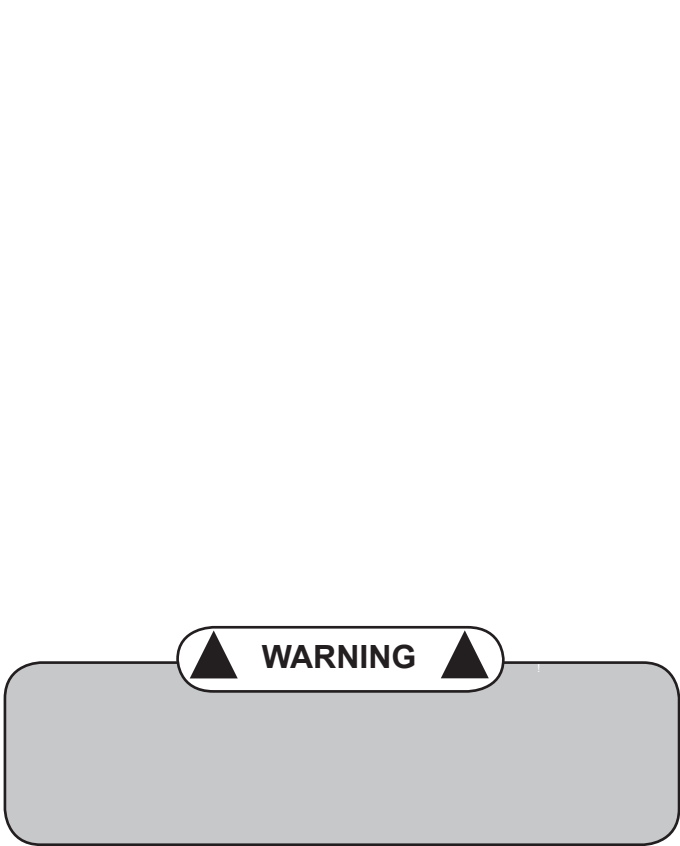
**Recognize this symbol as an indication  
of important safety information**



**TABLE OF CONTENTS**



**INSTALLER RESPONSIBILITIES**



**▲ WARNING ▲**

**MODIFICATION AND TAMPERING**

**▲ DANGER ▲**



**IMPORTANT SAFETY FEATURE**

*Power Cord With Integral Safety Protection*

**WARNING - A DAMAGED POWER SUPPLY CORD MUST BE REPLACED WITH A NEW CORD FROM THE MANUFACTURER, AND NOT REPAIRED.**

**WARNING - DO NOT USE THE PRODUCT IF THE UNIT FAILS THE TEST.**

**▲ DANGER ▲**

**Do not use the RetroAire Dual Motor PTAC with any electrical supply voltage other than the one listed on the rating plate.**

**▲ CAUTION ▲**

**PTAC Chasses are heavy. To avoid injury, use assistance when lifting.**

*Note: Unit uses R22 refrigerant.*

## THE DUAL MOTOR PTAC FAMILY

\* The RC12 PTAC, however, is only available in nominal sizes of 12,000 Btuh and 15,000 Btuh.

### PRE-INSTALLATION

### CONTROLS AND COMPONENTS

#### Standard Unit Features

▲▼ RC/RH10:

▲▼ RC11: \_\_\_\_\_

▲▼ RC12: \_\_\_\_\_

▲▼ RC/RH20:

▲▼ RC21: \_\_\_\_\_

▲▼ RC/RH35:

▲▼ RC/RH45:

▲▼ RC/RH80:

▲▼ RC/RH90:

#### Optional Controls and Accessories

**▲ WARNING ▲**

Moving parts can cause personal injury. Exercise all due caution when test running the chassis.

**PREPARATION FOR INSTALLATION**

**IMPORTANT:**

**▲ WARNING ▲**

The correct condenser air baffles must be properly installed or performance will be impaired and/or the warranty will be voided!!

See individual unit installation instructions for more information.

**ELECTRICAL WIRING**

**▲ WARNING ▲**

To avoid possible injury or death due to electrical shock, open the power supply disconnect switch and secure it in an open position during installation. On a plug and receptacle connection, keep the unit unplugged until installation is complete.

Use only HACR type breakers

**IMPORTANT:** *Dispose of old chassis per present state and federal regulations.*

Use of extension

cords is prohibited.

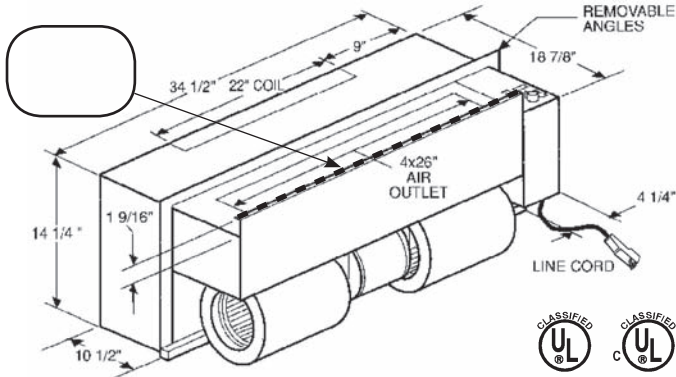
**▲ DANGER ▲**



The use of extension cords is prohibited.

# INSTALLATION INSTRUCTIONS

## RC/RH10 REPLACEMENT PTAC

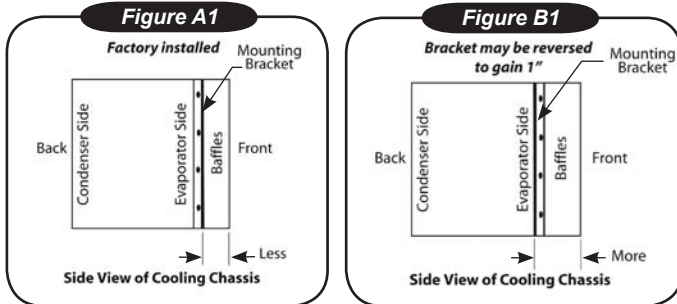


(Figure C1).

### RC/RH10 BAFFLE INSTALLATION KIT

HYDRONIC ONLY

figures A & B)



Two sets of baffles are provided in your kit to accommodate mounting brackets in either position A or B.

### Baffle Installation -

Figures A1, B1 & C1)

**IMPORTANT: The correct condenser air baffles must be installed or performances may be impaired and/or the warranty will be voided.**

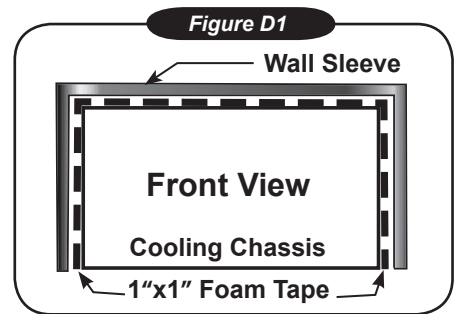
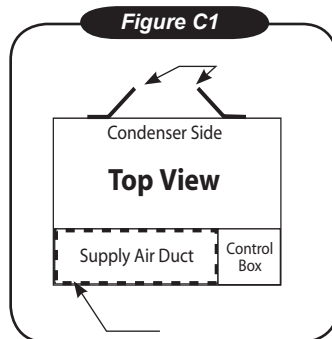


Figure D1

Hydronic Only:

To Connect Aquastat:

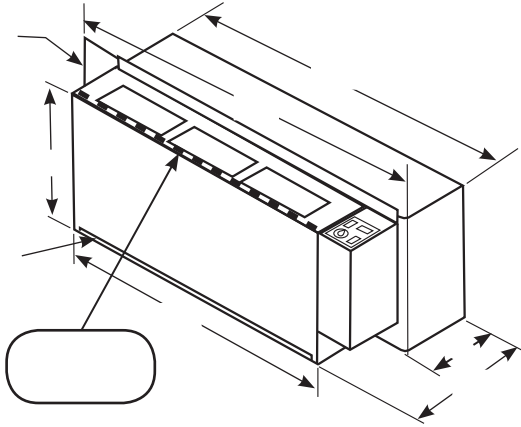
- A.
- B.
- C.

RC/RH 10 PERFORMANCE DATA*					
Unit Size	Cooling Btuh	EERs	Heat Pump Btuh	COP	Fresh Air CFM

\*Refer to the charts on page 23 for electrical and optional electric heat specifications.

# INSTALLATION INSTRUCTIONS

## RC11 REPLACEMENT PTAC



### RC11 BAFFLE INSTALLATION KIT

HYDRONIC ONLY

Two sets of baffles are provided in your kit to accommodate varying wall sleeve depth.

(Figure A2).

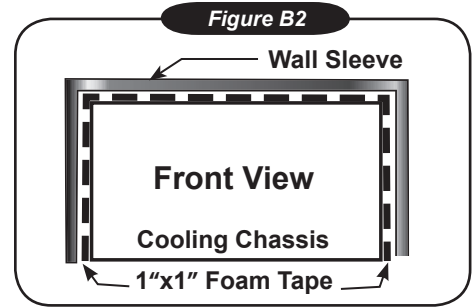
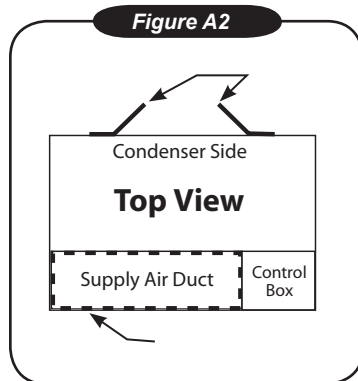


Figure B2

**IMPORTANT:** The correct condenser air baffles must be installed or performances may be impaired and/or the warranty will be voided.

### Baffle Installation -



Hydronic Only:

To Connect Aquastat:

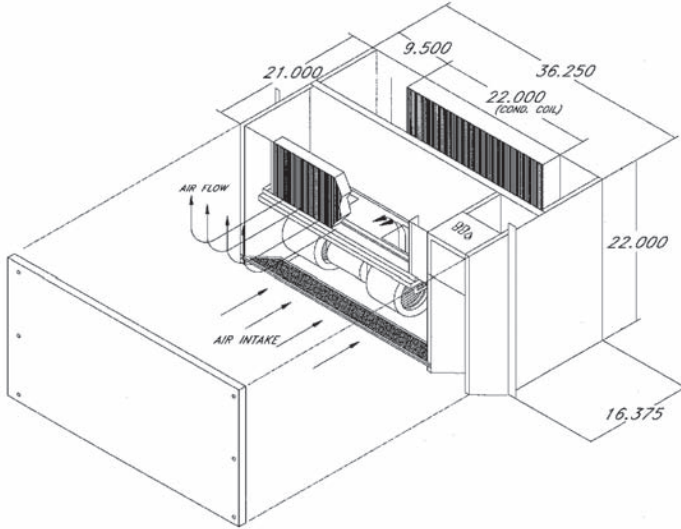
- A.
- B.
- C.

RC11 PERFORMANCE DATA*			
UNIT SIZE	COOLING BTUH	EER	FRESH AIR CFM

\*Refer to the charts on page 23 for electrical and optional electric heat specifications.

# INSTALLATION INSTRUCTIONS

## RC12 REPLACEMENT PTAC

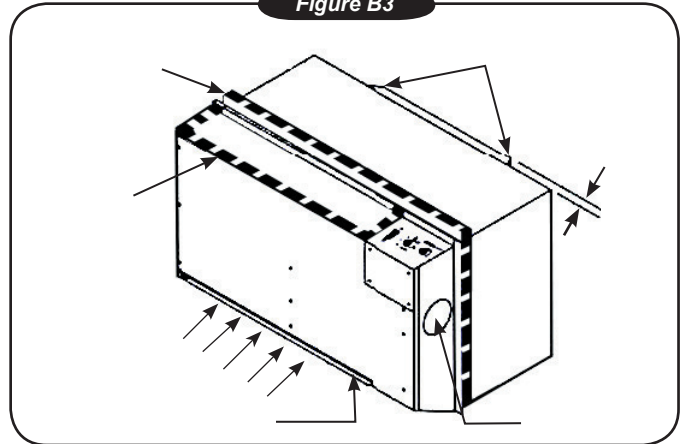


### RC12 INSTALLATION KIT

HYDRONIC ONLY

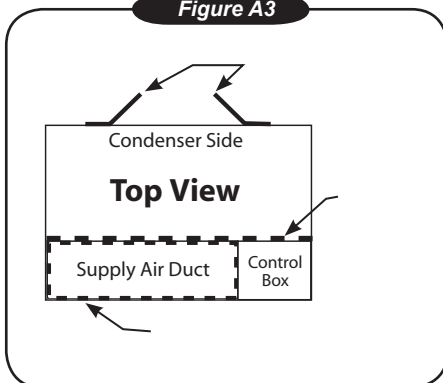
**IMPORTANT:** If adjoining room conditioning is required, the RC12 is able to discharge to the right and left by utilizing the four-inch knockouts (Figure B3) on either side of the evaporator compartment using 4" flex duct.

Figure B3



**IMPORTANT:** Baffles and open cellfoam tape seals are factory installed on the RC12. Baffles fill the gap between the rear of the chassis and the outdoor louver and prevent the air from recirculating. Consult the factory if baffles supplied are not deep enough to accommodate wall sleeve application as system efficiency and reliability are dependent on proper air flow. (Figure A3)

Figure A3



Hydronic Only:

To Connect Aquastat:

- A.
- B.
- C.

### RC12 PERFORMANCE DATA\*

UNIT SIZE	COOLING BTUH	EER	EVAP CFM HIGH/LOW	FRESH AIR CFM

\*Refer to the charts on page 23 for electrical and optional electric heat specifications.



# INSTALLATION INSTRUCTIONS

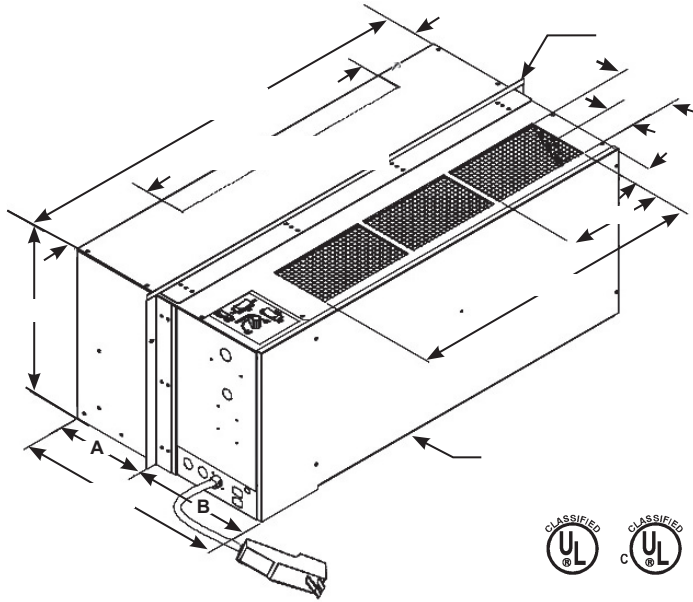
## RC/RH20 REPLACEMENT PTAC

### ADJUSTABLE WEATHER SEAL ANGLE POSITIONS


**NOTE:** Dimensions calculated without foam gaskets

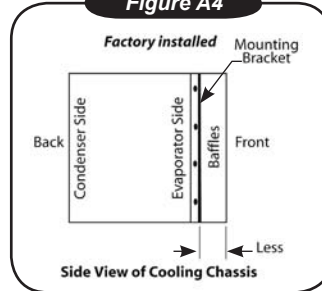
(1) Standard position-Factory installed

(2) Position for Climate Master 702 and 703.

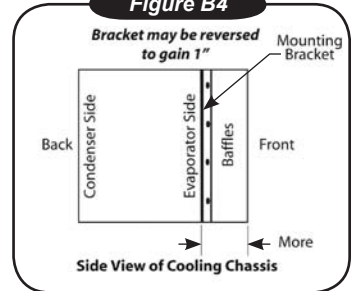


Two sets of baffles are provided in your kit to accommodate mounting brackets in either position A or B.

**Figure A4**



**Figure B4**



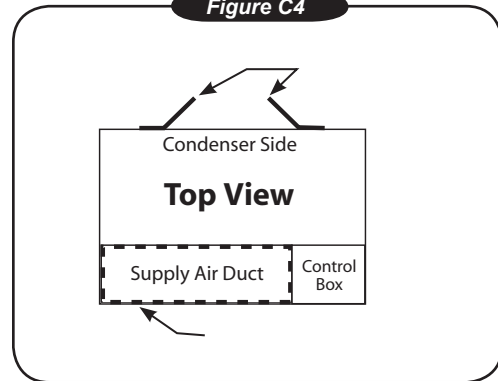
### Baffle Installation -

(Figures A4, B4 & C4)

### RC/RH20 BAFFLE INSTALLATION KIT

HYDRONIC ONLY

**Figure C4**



figures A4 & B4)

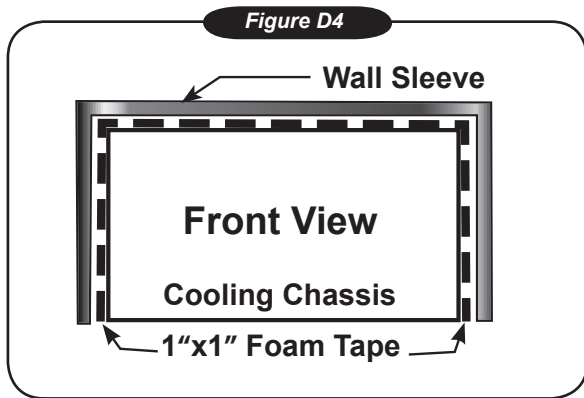
**IMPORTANT:** The correct condenser air baffles must be installed or performances may be impaired and/or the warranty will be voided.

(Figure C4).

Hydronic Only:

To Connect Aquastat:

- A.
- B.
- C.



**RC/RH 20 PERFORMANCE DATA\***

Unit Size	Cooling Btuh	EERs	Heat Pump Btuh	COP	Fresh Air CFM

**RC/RH20 Hydronic Heat \***

**Performance 104-101 (Single Row Coil)**

GPM	EWT (°F)	Capacities Btuh	P.D.

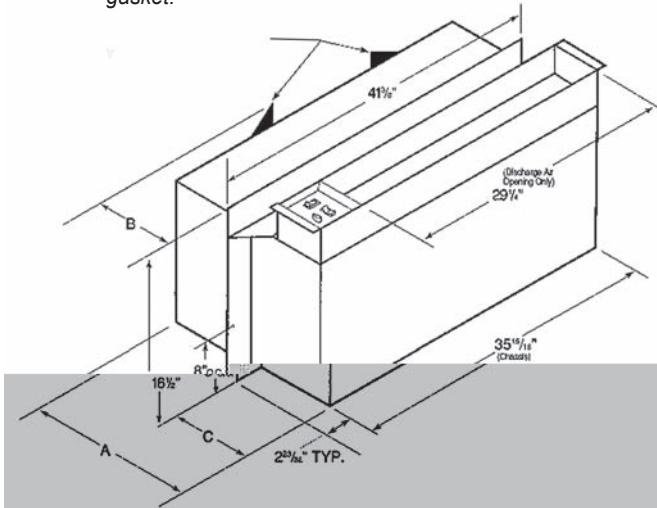
\*Refer to the charts on page 23 for electrical and optional electric heat specifications.

# INSTALLATION INSTRUCTIONS

## RC21 REPLACEMENT PTAC

DIMENSIONS			
MODEL	A	B	C

NOTE: Dimensions "A" and "B" are with condenser recirculation baffles and without weather seal gasket.



**IMPORTANT:** The correct condenser air baffles must be installed or performances may be impaired and/or the warranty will be voided.

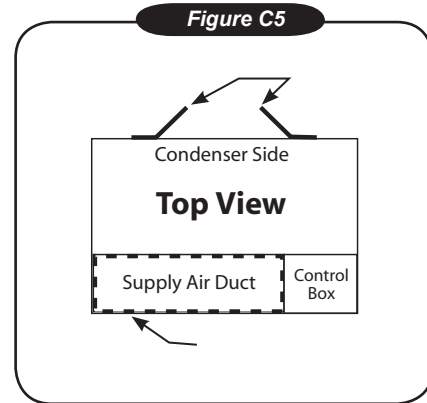
### Baffle Installation -

Figures A5, B5 & C5 )

### RC21 BAFFLE INSTALLATION KIT

HYDRONIC ONLY

Figure C5



Figures A5 & B5)

Figure A5

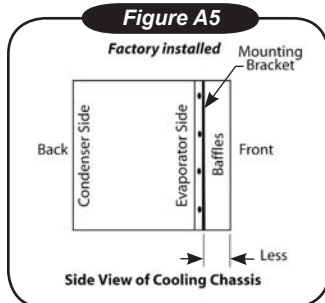
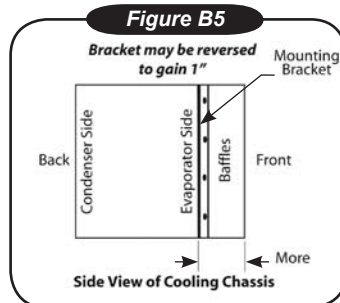
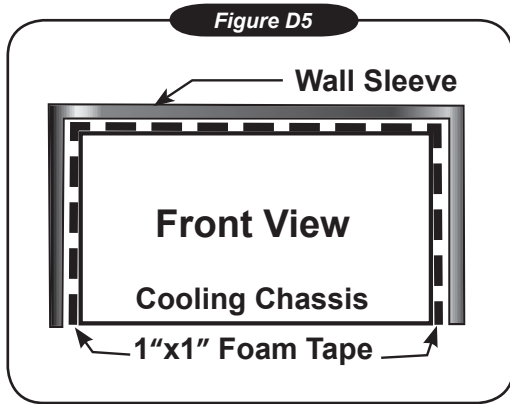


Figure B5



(Figure C5).

Two sets of baffles are provided in your kit to accommodate mounting brackets in either position A or B.



Hydronic Only:

To Connect Aquastat:

- A.
- B.
- C.

Figure D5

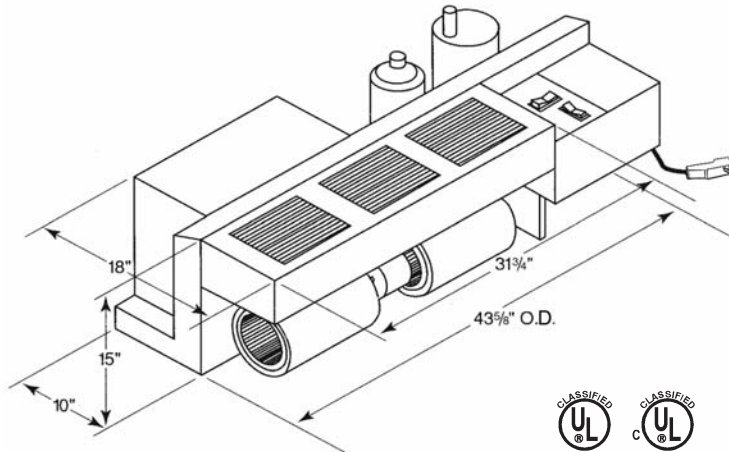
RC21 PERFORMANCE DATA*			
Unit Size	Cooling Btuh	EERs	Fresh Air CFM

RC21 Hydronic Heat *			
Performance 104-101 (Single Row Coil)			
GPM	EWT (°F)	Capacities Btuh	P.D.

*\*Refer to the charts on page 23 for electrical and optional electric heat specifications.*

# INSTALLATION INSTRUCTIONS

## RC/RH35 REPLACEMENT PTAC



### RC/RH35 INSTALLATION KIT

HYDRONIC ONLY

Hydronic Only:

To Connect Aquastat:

- A.
- B.
- C.

**IMPORTANT: The correct condenser air baffles must be installed or performances may be impaired and/or the warranty will be voided.**

### Baffle Installation -

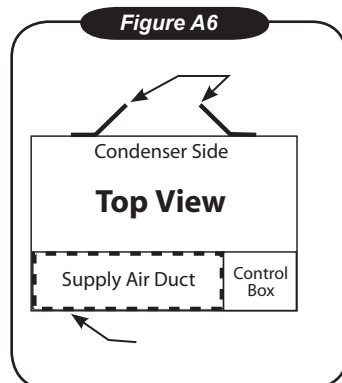
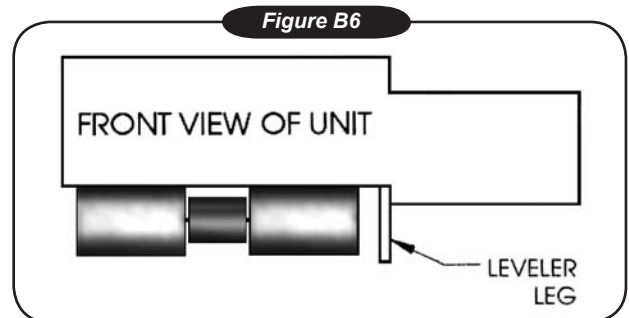


Figure A6)



**IMPORTANT:** The RC/RH35 is equipped with a bracket that allows the unit to be adjusted up and down in the chassis of unlevelled wall sleeves. Adjust leveler leg (Shown below Figure B6) to desired height and tighten down using bolts supplied on bracket.

### RC/RH35 PERFORMANCE DATA\*

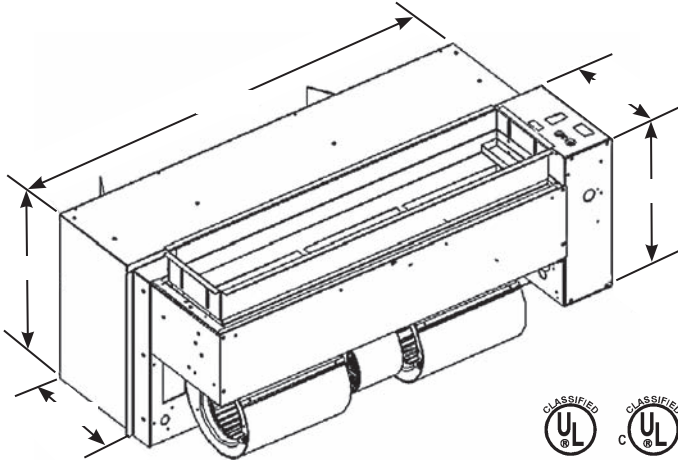
MODEL	COOLING Btuh	EER	HEAT PUMP Btuh	COP	FRESH AIR CFM

\*Refer to the charts on page 23 for electrical and optional electric heat specifications.

(Figure A6).

# INSTALLATION INSTRUCTIONS

## RC/RH45 REPLACEMENT PTAC



**IMPORTANT: The correct condenser air baffles must be installed or performances may be impaired and/or the warranty will be voided.**

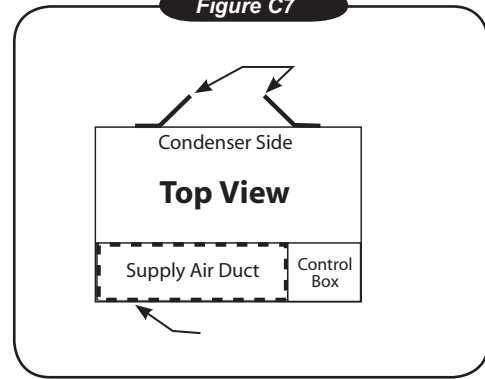
### Baffle Installation -

### RC/RH45 INSTALLATION KIT

HYDRONIC  
ONLY

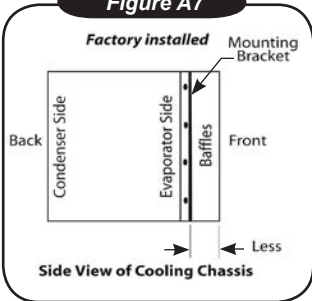
Figures A7, B7 & C7 )

### Figure C7

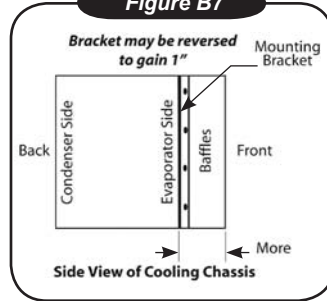


Figures A7 & B7)

### Figure A7



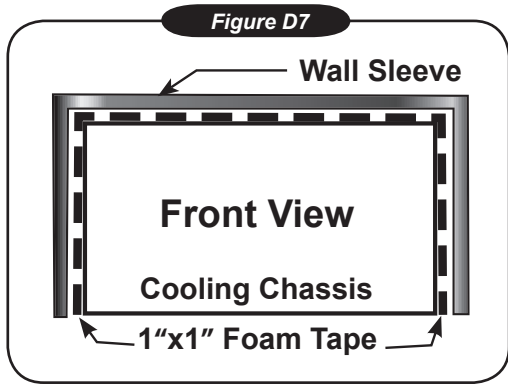
### Figure B7



Two sets of baffles are provided in your kit to accommodate mounting brackets in either position A or B.

(Figure C7)

(Figure D7).



Hydronic Only:

To Connect Aquastat:

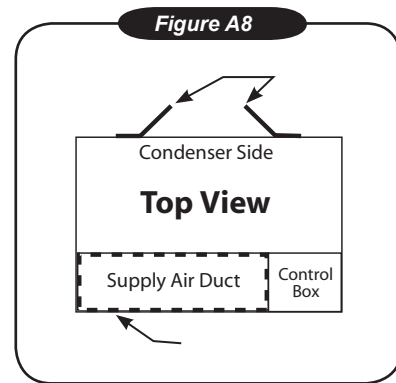
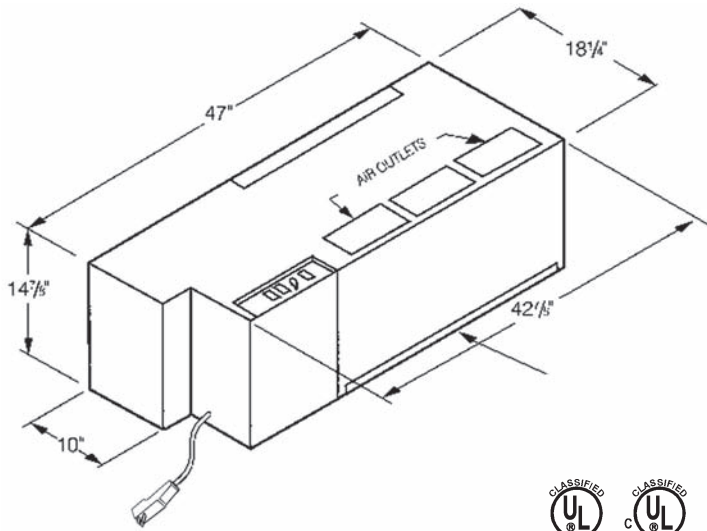
- A.
- B.
- C.

RC/RH45 PERFORMANCE DATA*					
Unit Size	Cooling Btuh	EERs	Heat Pump Btuh	COP	Fresh Air CFM

\*Refer to the charts on page 23 for electrical and optional electric heat specifications.

# INSTALLATION INSTRUCTIONS

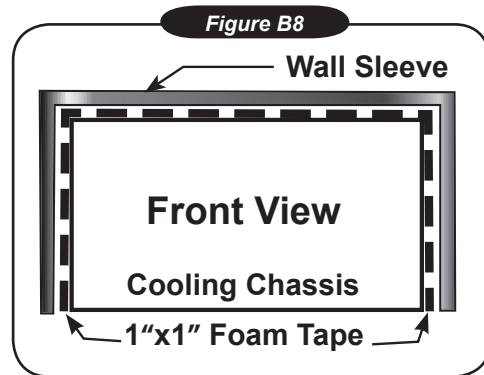
## RC/RH80 REPLACEMENT PTAC



(Figure A8).

### RC/RH80 BAFFLE INSTALLATION KIT

HYDRONIC  
ONLY



**IMPORTANT: The correct condenser air baffles must be installed or performances may be impaired and/or the warranty will be voided.**

**Baffle Installation -**

Figure B8)

Figure A8)



Hydronic Only:

To Connect Aquastat:

- A.
- B.
- C.

RC/RH80 Performance Data\*

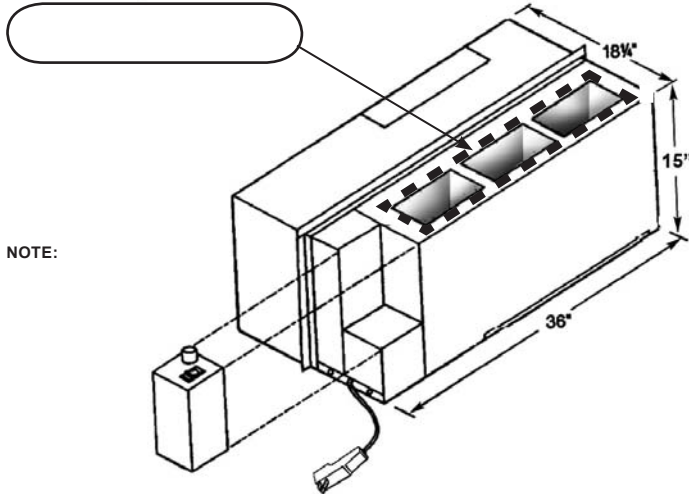
UNIT SIZE	COOLING BTUH	EER	HEAT PUMP BTUH	COP	FRESH AIR CFM

*\*Refer to the charts on page 23 for electrical and optional electric heat specifications.*

# INSTALLATION INSTRUCTIONS

## RC/RH90 REPLACEMENT PTAC

### Baffle Installation -

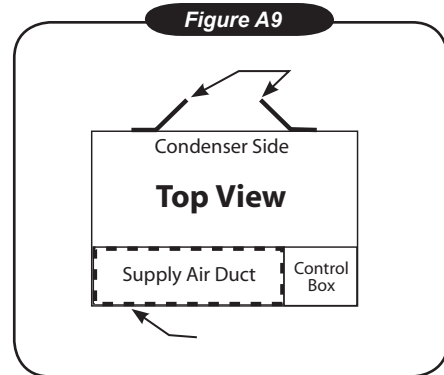


NOTE:

#### RC/RH90 BAFFLE INSTALLATION KIT

HYDRONIC  
ONLY

(Figure A9)

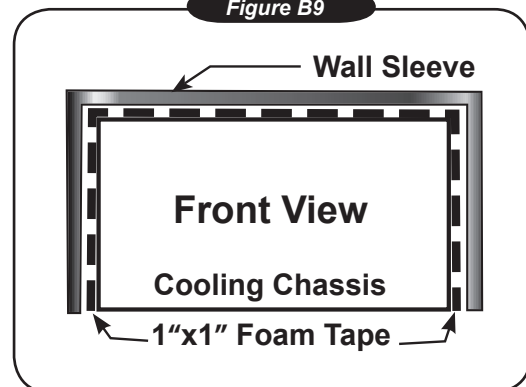


**IMPORTANT:** The RC/RH90 chassis is 18 1/4" deep for the 9,000, 12,000, and 15,000 Btuh models. The standard depth for the 18,000 Btuh is 24". However, EMI can supply it for an 18 1/4" chassis on demand.

Figure A9.

#### Duct Collar and Slide-Duct Installation

Figure B9



(Figure B9)

**IMPORTANT:** The correct condenser air baffles must be installed or performances may be impaired and/or the warranty will be voided.

**RC/RH90 FINAL INSPECTION AND START-UP**

(All other units see "Final Inspection and Startup" page 20)

Hydronic Only:

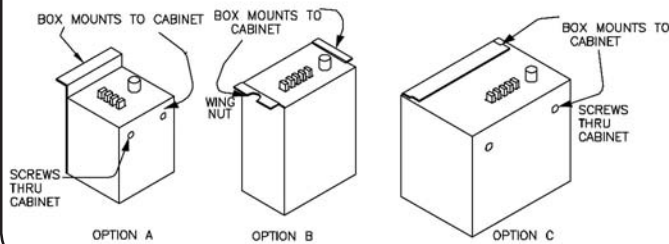
To Connect Aquastat:

- A.
- B.
- C.

**IMPORTANT:** Follow the information provided on the rating plate for voltage and amperage/fuse size for proper supply.

**RC 90 CONTROL BOX OPTIONS**

Select one of the following which properly matches the control box of your unit.



*no*

**RC/RH 90 Performance Data\***

UNIT SIZE	COOLING BTUH	EER	HEAT PUMP BTUH	COP	FRESH AIR CFM

\*Refer to the charts on page 23 for electrical and optional electric heat specifications.

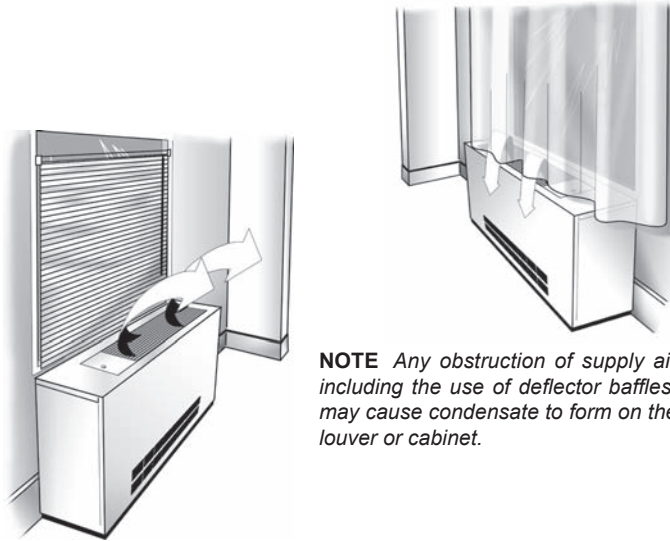
## FINAL INSPECTION AND STARTUP

### ▲ CAUTION ▲

When the unit is first powered up, high humidity conditions can cause condensation to form on the discharge grill. Keep doors and windows closed to reduce humidity and condensation will evaporate.

(see below)

**IMPORTANT:** Follow the information provided on the rating plate for voltage and amperage/fuse size for proper supply.



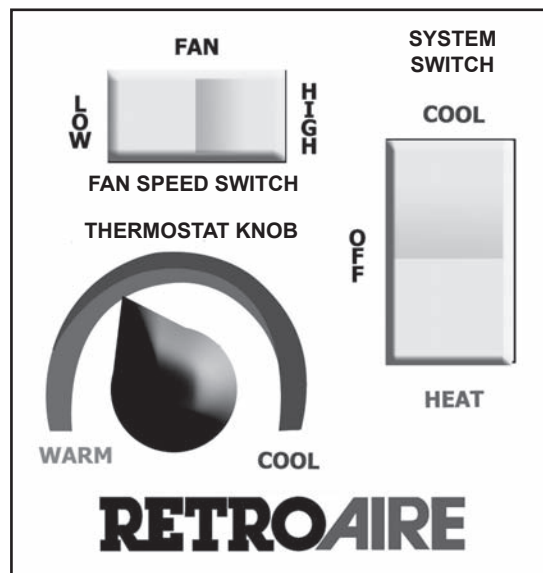
**NOTE** Any obstruction of supply air including the use of deflector baffles, may cause condensate to form on the louver or cabinet.

## SEQUENCE OF OPERATION

**NOTE:** RetroAire units can be equipped with Unit Mounted or Remote Controlled Thermostats.

### Typical Representation Of A Unit Mount Control

### UNIT MOUNTED THERMOSTAT OPERATIONAL INSTRUCTIONS



#### RC12 SAFETY NOTE:

**“SEATED”**  
(clicks into position) Do not mistakenly place between two positions.

#### COOLING CYCLE:

(below)

### ▲ CAUTION ▲

Avoid rotating the thermostat knob back and forth from heating to cooling. This causes the compressor to cycle on and off rapidly and **WILL** cause damage to the compressor. Allow the compressor to remain off for at least three minutes prior to restarting the unit.

## SEQUENCE OF OPERATION *(Continued)*

### UNIT MOUNTED THERMOSTAT OPERATIONAL INSTRUCTIONS *(Continued)*

**IMPORTANT:** *The room temperature must be above 65° F for the compressor to operate.*

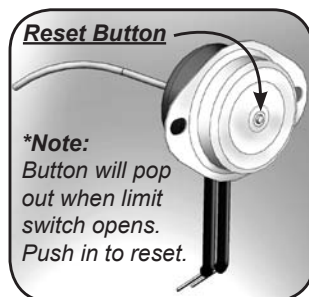
*controls will power a normally closed valve that is the same voltage as the unit (ex: a unit rated 208/230V will power a 208/230V normally closed valve). Be sure to check the wiring diagram (located on the unit) and voltage application for the specific unit. Other valve configurations and voltage options are available. Consult Technical Service if the unit voltage does not match your valve application.*

#### HEATING CYCLE - *Electric:*

**IMPORTANT:** *Room temperature must be below 85° F to energize the heater.*

#### MOTORIZED FRESH AIR DAMPER *(Optional):*

#### **Manual Reset Limit Switch** *(5 Kw heat models only)*



*(Refer to illustration above)*

#### CHANGEOVER T-STATS *(Heat Pump Only):*

#### FAN CYCLE SWITCH:

#### HYDRONIC COIL:

#### CONDENSATE REMOVAL:

#### HEATING CYCLE - *Hydronic:*

#### AQUASTAT CONNECTION *(Optional):*

**IMPORTANT:** *Make sure the motor valve is rated for the correct voltage. Most RetroAire units with unit mount*

## SEQUENCE OF OPERATION *(CONTINUED)*

### REMOTE THERMOSTAT OPERATIONAL INSTRUCTIONS

**CHOOSING A THERMOSTAT:**

**NOTE:** *The start of the compressor will not take place until the anti-short/random start time period has elapsed.*

**ELECTRIC HEAT OPERATION:**

**SELECTING A THERMOSTAT “By Others”:**

**HYDRONIC HEAT OPERATION *(Optional)*:**

**NOT**

**COOLING ONLY WITH ELECTRIC HEAT OR HYDRONIC HEAT *(RC - PTAC’s)*:**

**HEAT PUMP *(Cooling Mode)*:**

**HEAT PUMP WITH ELECTRIC HEAT *(RH - PTHP’S)*:**

**HEAT PUMP *(Heating Mode)*:**

**FAN OPERATION:**

**FAN PURGE *(Optional)*:**

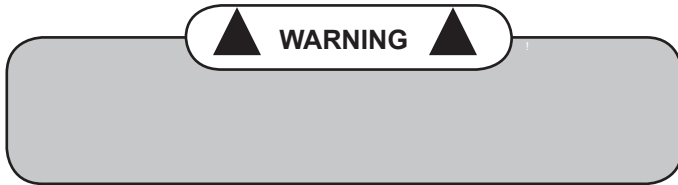
**NOT**

**COOLING OPERATION:**

## SEQUENCE OF OPERATION (CONTINUED)

**NOTE:** The start of the compressor will not take place until the anti-short/random start time period has elapsed.

**HEAT PUMP (Emergency Heat)**



**AJ4004 CONTROL BOARD:**

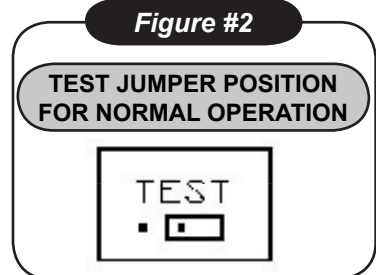
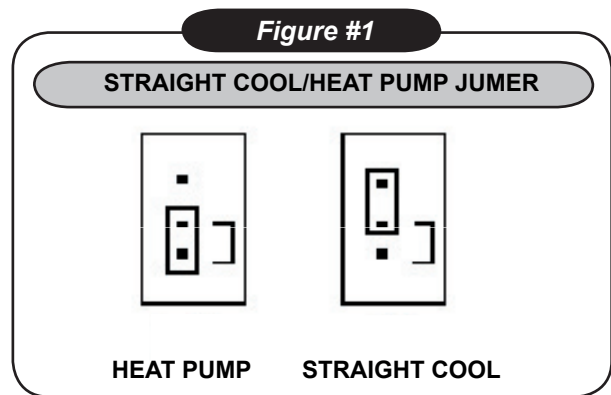
Figure #1

**HEAT PUMP (Thermostatic Drain Pan Valve):**

**ANTI-SHORT CYCLE TIMER Random Start Feature:**

**INDOOR COIL FREEZE PROTECTION:**

Figure #2)



## CLEANING AND MAINTENANCE

### CLEANING THE INTERIOR OF THE UNIT



#### DANGER

Before servicing the RetroAire Dual Motor PTAC, be sure to turn off electrical power to the unit. Failure to do so can result in a fire, explosion or electrical shock causing property damage, personal injury or death.

### CLEANING THE EXTERIOR

— —

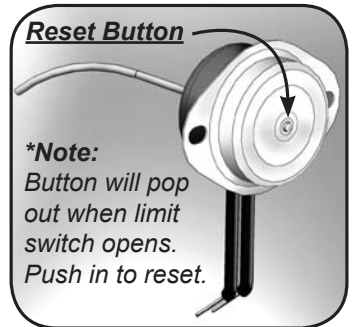
**IMPORTANT:** If a new air filter is needed for your RetroAire Dual Motor PTAC, consult factory for availability and/or proper sizing.

## TROUBLESHOOTING

### NO HEAT OR COOLING:

—

**Check The Manual Reset Limit Switch**  
(5 Kw heat models only)



(Refer to illustration above)

**IMPORTANT:** Do not use a solvent-based cleaner on the indoor or outdoor coils. Some solvents can produce a noxious odor when starting the fan or electric heat.



#### WARNING

It is illegal to discharge refrigerant into the atmosphere. Use proper reclaiming methods and equipment when servicing a RetroAire Dual Motor PTAC.



# SPECIFICATIONS FOR THE RC/RH10/20/35/45/80/90 & RC11/12/21

















*Due to EMI's ongoing development programs, design, specifications, and performance data may change without notice.*

RC/RH10/20/35/45/80/90 & RC11/21 Electrical Specifications*												
Model Number	Voltage/hz/ph	Evap Motor		Cond Motor		Compressor		Total Amps	MCA	Max Fuse	Min Voltage	Line Cord
		FLA	Hp	FLA	Hp	RLA	LRA					

*Note: 18,000 not available in heat pump application.*

RC/RH10/20/35/45/80/90 & RC11/12/21 Optional Electric Heat Specifications*								
Heater No.	Voltage	Watts	Btuh	Amps	Total Heat Amps	MCA	Max Fuse	Line Cord

RC12 Electrical Specifications*												
Model Number	Voltage/hz/ph	Evap Motor		Cond Motor		Compressor		Total Amps	MCA	Max Fuse	Min Voltage	Line Cord
		FLA	Hp	FLA	Hp	RLA	LRA					

NEMA Specifications Non-Locking/Receptacles								
VOLTAGE	125V		250V			265V		
	15(A)	20(A)	15(A)	20(A)	30(A)	15(A)	20(A)	30(A)
PLUG								
	5-15 P	5-20 P	6-15 P	6-20 P	6-30 P	7-15 P	7-20 P	7-30 P
RECEPTACLE								
	5-15 R	5-20 R	6-15 R	6-20 R	6-30 R	7-15 R	7-20 R	7-30 R

*\* Note: Data will vary if alternate components (including compressor or motor) are used to meet production needs. Consult factory for current electrical specifications.*

# ALL PRODUCT LIMITED WARRANTY

## WHAT WE WILL COVER

### WHAT WE DON'T COVER

THIS WARRANTY DOES NOT INCLUDE LABOR

EMI IS NOT RESPONSIBLE FOR:

## LIMITATION OF WARRANTIES

FOR SERVICE OR REPAIR:

An  **ECR** International Brand  
ENVIROMASTER INTERNATIONAL LLC