

DUAL MOTOR PACKAGED TERMINAL AIR CONDITIONERS

RC 11, 12 & 21

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

RETROAIRE

The Right Fit for Comfort



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An ISO 9001-2000 Certified Company



P/N# 240004146, Rev. 1.7 [02/07]

DUAL MOTOR PACKAGED TERMINAL AIR CONDITIONERS

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

P/N# 240004146, Rev. 1.7 [02/07]

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

This manual is intended as an aid to qualified service personnel for proper installation, operation, and maintenance of the RetroAire Dual Motor Packaged Terminal Air Conditioner (PTAC). Read these instructions thoroughly and carefully before attempting installation or operation. Failure to follow these instructions may result in improper installation, operation, service or maintenance, possibly resulting in fire, electrical shock, property damage, personal injury, or death.

TO THE INSTALLER

- (1) Retain this manual and warranty for future reference.
- (2) Before leaving the premises, review this manual to be sure the unit has been installed correctly and run the unit for one complete cycle to make sure it functions properly.

To obtain technical service or warranty assistance during or after the installation of this unit, contact your local representative. Visit our website www.retroaire.com for a local representative listing. For further assistance call 1-800-228-9364.

When calling for assistance, please have the following information ready:

- Model Number _____
- Serial Number _____
- Date of Installation _____

SAFETY INSTRUCTIONS

- ▲ Read all instructions before using the RetroAire PTAC. Install or locate this unit only in accordance with these instructions. Use this unit only for its intended use as described in this manual.
- ▲ Check the rating plate on the RetroAire PTAC before installation to make certain the voltage shown is the same as the electric supply to the unit.
- ▲ The RetroAire PTAC must be connected only to a properly grounded electrical supply. Do not fail to properly ground this unit.
- ▲ Turn off the electrical supply before servicing the RetroAire PTAC.
- ▲ Do not use the RetroAire PTAC if it has damaged wiring, is not working properly, or has been damaged or dropped.

[Save These Instructions]



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



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INSTALLER RESPONSIBILITIES

This manual has been prepared to acquaint you with the installation, operation and maintenance of RetroAire Dual Motor PTACs and to provide important safety information in these areas.

We urge you to read all of these instructions thoroughly before attempting the installation or operation of your unit. This manual should be kept for future reference.

The manufacturer of this unit will not be liable for any damages caused by failure to comply with the installation and operating instructions outlined in this manual.

A rating plate identifying your RetroAire Dual Motor PTAC can be found on the unit. When referring to your unit, always have the information listed on the rating plate readily available.

WARNING

Completely read all instructions prior to assembling, installing, operating, or repairing this product. Inspect all parts for damage prior to installation and start-up.

MODIFICATION AND TAMPERING

DANGER

Tampering with the RetroAire Dual Motor PTAC is dangerous and may result in serious injury or death. Tampering voids all warranties. Do not attempt to modify or change this unit in any way.

IMPORTANT SAFETY FEATURE

Power Cord With Integral Safety Protection

All PTACs rated 250V or less that are cord connected to the power supply are equipped with a power cord with integral safety protection as standard. Providing personal shock protection as well as arcing and fire prevention, the device is designed to sense any damage in the line cord and disconnect power before a fire can occur. Tested in accordance with Underwriters Laboratories, the cord set also offers a unique "passive" operation, meaning the unit does not require resetting if main power is interrupted.

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

Each power cord should be checked before every use. Follow the instructions in the order listed on the device.

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 RetroAire Dual Motor PTAC is available as a cooling-only model or, for those who wish to up-grade to a heat pump, the RH10, 20, 35, 45, 80, and 90 heat pump chassis will fit the existing wall sleeve. The heat pump version will reduce energy costs during periods of outdoor temperature ranging down to as low as 40° F.

The Dual Motor PTAC uses a high-efficiency rotary compressor protected under a 5-year warranty and an enhanced high-efficiency heat exchanger to make the replacement of worn out and inefficient units a very attractive option.

The RetroAire Dual Motor PTAC offers two fan speeds – three in the RC12 – and has an optional motorized fresh air feature with a positive pressure seal, override switch, and positive condensate re-evaporation to improve efficiency.

Whisper quiet operation improves the room ambience and the 20 gauge galvanized steel construction of the chassis ensures long service life.

The RetroAire Dual Motor Packaged Terminal Air Conditioner family consists of:

- ▲ **RC/RH10:** A straight cool/heat pump replacement for the American Air Filter 16 Series, American Standard 45, Carteret 45, Remington Type 45, McQuay 45, Singer 45, and Nelson Aire 16.
- ▲ **RC11:** A straight cool only replacement for the Westinghouse RB Series.
- ▲ **RC12:** A straight cool only replacement for the Lennox PTEIA Series.
- ▲ **RC/RH20:** A straight cool/heat pump replacement for the Climate Master (Friedrich) 702 & 703, Cool Heat RM Series, TPI Ra-Matic, Weather Twin, and ZoneAire S, SC & RM.
- ▲ **RC21:** A straight cool only replacement for the Climate Master 701.
- ▲ **RC/RH35:** A straight cool/heat pump replacement for the Singer/Remington/McQuay EA, ES & RS.
- ▲ **RC/RH45:** A straight cool/heat pump replacement for the American Standard Type 40.
- ▲ **RC/RH80:** A straight cool/heat pump replacement for Fedders CME0 “Unizone,” and Mueller/Worthington “Climatrol.”
- ▲ **RC/RH90:** A straight cool/heat pump replacement for Cool Heat AD & 700 and Friedrich Climate Master AD & 700.

The RetroAire Dual Motor PTAC is available in nominal sizes of 9,000 Btuh, 12,000 Btuh, 15,000 Btuh, and 18,000 Btuh.* With energy efficiency ratings as high as 10, the replacement of worn out and inefficient units is a very attractive option.

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

All Retroaire products are backed by Enviromaster International LLC and are rated in accordance with ARI Standards 310 and 380 and UL Standard 484.

PRE-INSTALLATION

Test run the Dual Motor PTAC prior to installation. Connect the line cord to a proper power supply (such as the one the old unit is plugged into) and check all controls for proper operation. Disconnect the chassis before installing.

Review baffle and foam tape installation to ensure proper air seal and unit operation.

CONTROLS AND COMPONENTS

Standard Unit Features

1. Unit mounted operating controls
 - Thermostat
 - Fan speed control
 - Heat/cool switch
 - Fan cycle switch
2. Low ambient protection
3. Foam strip seal for supply air duct
4. Weather strip insulation
5. Baffle kit bag
6. Condenser baffles to accommodate extended wall sleeve applications (consult factory)
7. Sea coast coated drainpan
8. Normally/open normally/closed motor valve-switch, (hydronic heat only)

Optional Controls and Accessories

1. Remote thermostat
2. Motorized fresh air damper
3. Electric/hydronic heat
4. Disconnect switch
5. Sea coast coated coils
6. Wall sleeves, louvers, and cabinets (consult factory)



WARNING

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

PREPARATION FOR INSTALLATION

IMPORTANT: RetroAire Dual Motor PTACs are to be used with metal wallsleeves. The sleeves must employ front panels secured by screws that prevent contact with all parts with minor dimensions of openings not exceeding 1/2". The final assembly must employ an indoor air discharge grill having dimensions not less than 26" x 4", separating the top surface of the chassis from the top surface of the discharge grill by a minimum of 1". For all models, the outdoor openings must prevent contact of all moving parts by means of louvers or grills with minor dimension not exceeding 1". All cord connected 265 Volt units must be plugged into receptacles within the unit subbase or chassis.

1. Remove the front of the existing room enclosure. This will expose the old chassis.
2. Disconnect the power supply. If a line cord and plug were used, remove it from the receptacle. If the chassis is hard wired, locate the circuit breaker, place it in the "OFF" position, and tag it, announcing work is being done. **DO NOT TURN ON.**
3. Loosen any tie down bolts or screws and remove the old chassis.

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

4. Inspect the wall sleeve/cabinet for rust, holes, and damage. Clean the wall sleeve of any dirt, repair any damage, and ensure proper drainage of condensate or rainwater to exterior of building.
5. Remove or repair old weather seals and note location for installation of any new seals.
6. Check the wall sleeve/cabinet to assure all drain holes are open and that (A) the unit is level left to right and (B) the back is pitched to the outside by 1/2" maximum.
7. Check the present voltage to verify the new chassis is a matching voltage and that the line cord and receptacle match.
8. Before installing the new chassis, inspect the outdoor louver for a minimum free area of 70% and remove any obstructions. Any variation will restrict air flow over the condenser coil and cause serious damage to the chassis. It will also void the warranty.



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

All wiring should be in accordance with the National Electric Code (NEC) and the local building codes.



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.

1. Inspect the existing wiring for any deficiencies such as cut or frayed wires. Replace such wiring if found.
2. Check the unit rating plate for circuit ampacity and breaker or fuse size. **Use only HACR type breakers.** Select the proper wire for the ampacity rating.
3. If plug and receptacle are used, check the compatibility. The chassis can be hard wired or direct connected as well.
4. Each unit must have a separate branch circuit protected by a fuse or breaker. Refer to the unit rating plate for the proper wire and breaker or fuse size. **Use of extension cords is prohibited.**



DANGER

The RetroAire Dual Motor PTAC must:

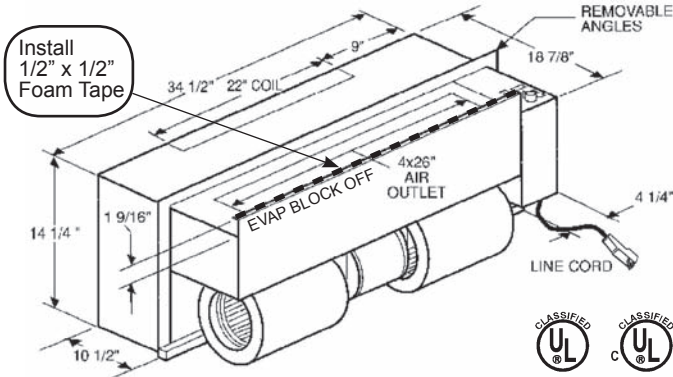
- ▲ Be connected to a properly grounded electrical supply with the proper voltage as stated on the rating plate.
- ▲ Use the proper maximum over current protection device stated on the rating plate.

The use of extension cords is prohibited.

Failure to follow these instructions can result in a fire, explosion or electrical shock causing property damage, personal injury or death.

INSTALLATION INSTRUCTIONS

RC/RH10 REPLACEMENT PTAC



RC/RH10 Baffle Installation Kit

- 1 Installation Manual
- 1 Top Baffle
- 2 Sets of Lt.&Rt. Baffles
- Screws
- 1/2" x 1/2" Open Cell Foam Tape
- 1" x 1" Open Cell Foam Tape
- 2" x 1 1/2" Open Cell Foam Tape
- 1ea. 2-Position Connector & Pin Mate
- 14AWG Yellow Wire

HYDRONIC ONLY

1. Take unit out of packaging.
2. Slide unit into wall sleeve. If supply duct on cooling chassis does not line up with supply vent on room cabinet it is possible that factory installed angle brackets on the top and sides will have to be reversed. This will allow approximately 1" in or out of the wall sleeve (see figures A & B) below.

Figure A1

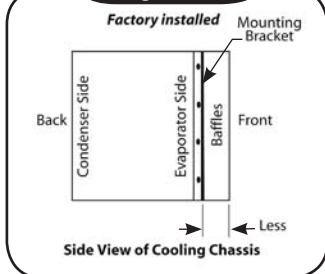
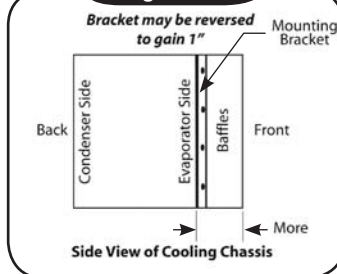


Figure B1



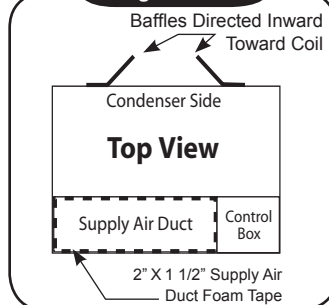
Two sets of baffles are provided in your kit to accommodate mounting brackets in either position A or B.

3. Slide unit out of wallsleeve.
4. **Baffle Installation** - Remove baffles from kit bag supplied with unit. Install left and right side baffles on the condenser coil in existing holes:
 - Choose the proper fitting baffles for your application.
 - Baffles must come in contact with the outdoor louver.
 - Make sure baffles are directed inward toward the center of coil.
 - Secure baffles tightly to the condenser coil using the screws provided.

(Figures A1, B1 & C1).

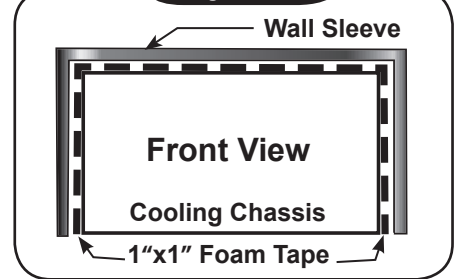
IMPORTANT: The correct condenser air baffles must be installed or performances may be impaired and/or the warranty will be voided.

Figure C1



5. Apply one piece of 1/2" x 1/2" open cell polyfoam to top flange of evaporator block off (See illustration at left).
6. Apply 2" x 1 1/2" open cell foam strips around supply air duct to ensure that all the conditioned air is delivered into the room. Failure to do so results in recirculation of the conditioned air around the wall sleeve and through the unit causing the unit to short cycle and coils to freeze, thus raising operating costs through improper heating and cooling (Figure C1).
7. 1" x 1" Open cell foam strips are provided to prevent outside air from entering around the chassis to the room from the sides and top of the cabinet. Install between wall sleeve and cooling chassis. It is imperative to have a solid air seal between wall sleeve and chassis. Failure to do so will result in air leakage from outdoor to indoor causing system problems i.e. coils freezing, short cycling, and constant running of unit. If installer is in need of more foam than supplied in kit, consult factory (Figure D1).

Figure D1



8. Once confident that all seals are the correct size and in the proper location, and the correct baffles are attached to the condenser coil in the proper orientation, slide unit into final position and tighten any tie down bolts or screws as necessary.

Hydronic Only: Remove the 2-position connector assembly from kit bag supplied with unit (this will have 2 yellow wires attached). Connect this 2-position connector to the 2-position connection located on the bottom of the control box panel.

To Connect Aquastat:

- A. Remove the black jumper wire located on the bottom panel of the control box (this is also terminated with a 2-position connector).
- B. Cut the jumper wire in the middle and splice the aquastat to the jumper.
- C. Place the connector back into original location. Refer to wire diagram on the unit for details.

9. Connect line cord.
10. See Final Inspection and Startup on page 20.

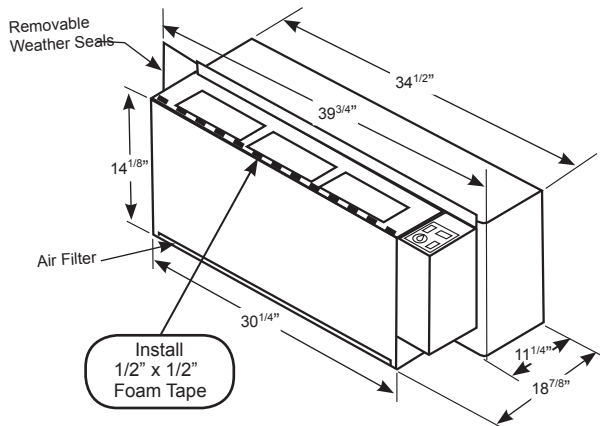
RC/RH 10 PERFORMANCE DATA*

Unit Size	Cooling Btuh	EERs	Heat Pump Btuh	COP	Fresh Air CFM
9	9,500	10.0	8,500	2.8	40/35
12	11,900	10.0	11,400	2.9	40/35
15	14,700	9.2	13,800	2.8	40/35
18	16,900	9.1	N/A	N/A	40/35

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

INSTALLATION INSTRUCTIONS

RC11 REPLACEMENT PTAC



RC11 BAFFLE INSTALLATION KIT

- 1 Installation Manual
- 1 Top Baffle
- 2 Sets of Lt.&Rt. Baffles
- Screws
- 1/2" x 1/2" Open Cell Foam Tape
- 1" x 1" Open Cell Foam Tape
- 2" x 1 1/2" Open Cell Foam Tape
- 1 ea. 2-Position Connector & Pin Mate
- 14AWG Yellow Wire

HYDRONIC ONLY

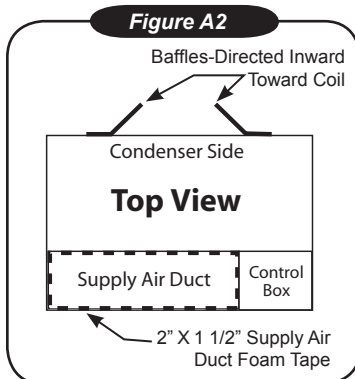
Two sets of baffles are provided in your kit to accommodate varying wall sleeve depth.

1. Take unit out of packaging.
2. Slide unit into wall sleeve. The supply duct on the cooling chassis should line up with the supply vent on the room cabinet. The weather angles should require no adjustment.
3. Slide unit out of wall sleeve.

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

4. **Baffle Installation** - Remove baffles from kit bag supplied with unit. Install left and right side baffles on the condenser coil in existing holes:

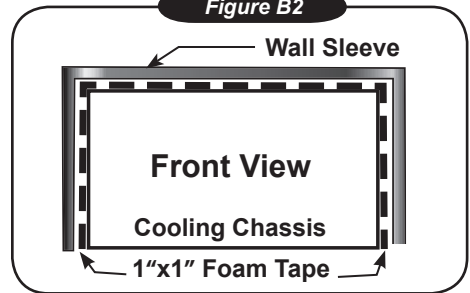
- Choose the proper fitting baffles for your application.
- Baffles must come in contact with the outdoor louver.
- Make sure baffles are directed inward toward the center of coil.
- Secure baffles tightly to the condenser coil using the screws provided.



5. Apply one piece of 1/2" x 1/2" open cell polyfoam to top flange of evaporator block off (See illustration: top of this page).

6. Apply 2" x 1 1/2" open cell foam strips around supply air duct to ensure that all the conditioned air is delivered into the room. Failure to do so results in recirculation of the conditioned air around the wall sleeve and through the unit causing the unit to short cycle, thus raising operating costs through improper heating and cooling (Figure A2).

Figure B2



7. 1" x 1" Open cell foam strips are provided to prevent outside air from entering around the chassis to the room from the sides and top

of the cabinet. Install between wall sleeve and cooling chassis. It is imperative to have a solid air seal between wall sleeve and chassis. Failure to do so will result in air leakage from outdoor to indoor causing system problems i.e. Coils freezing, short cycling, and constant running of unit. If installer is in need of more foam than supplied in kit, consult factory (Figure B2).

8. Once confident that all seals are the correct size and in the proper location, and the correct baffles are attached to the condenser coil in the proper orientation, slide unit into final position and tighten any tie down bolts or screws as necessary.

Hydronic Only: Remove the 2-position connector assembly from kit bag supplied with unit (this will have 2 yellow wires attached). Connect this 2-position connector to the 2-position connection located on the bottom of the control box panel.

To Connect Aquastat:

- A. Remove the black jumper wire located on the bottom panel of the control box (this is also terminated with a 2-position connector).
- B. Cut the jumper wire in the middle and splice the aquastat to the jumper.
- C. Place the connector back into original location. Refer to wire diagram on the unit for details.

9. Connect line cord.
10. See Final Inspection and Startup on page 20.

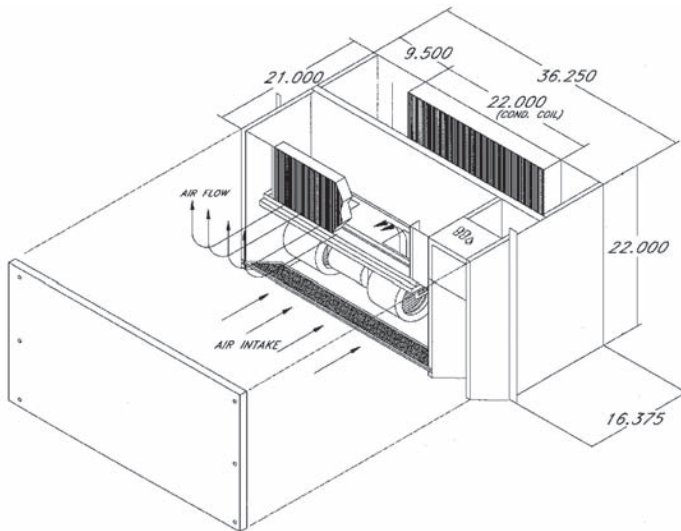
RC11 PERFORMANCE DATA*

UNIT SIZE	COOLING BTUH	EER	FRESH AIR CFM
9	9500	10	40/35
12	11,900	10	40/35
15	14,700	9.2	40/35
18	16,900	9.1	40/35

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

INSTALLATION INSTRUCTIONS

RC12 REPLACEMENT PTAC



RC12 INSTALLATION KIT

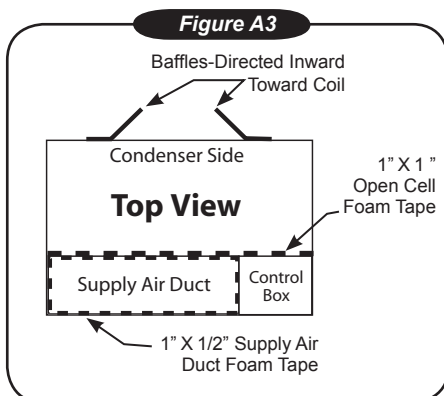
- 1 Installation Manual

HYDRONIC ONLY

- 1ea. 2-Position Connector & Pin Mate
- 14AWG Black Wire

1. Take unit out of packaging.
2. Slide unit into wall sleeve. The supply duct on the cooling chassis should line up with the supply vent on the room cabinet. The weather angles should require no adjustment.
3. Make sure baffles come in contact with the outdoor louver.

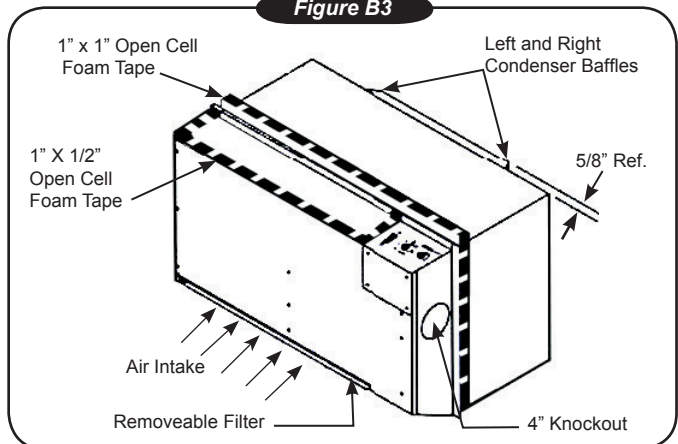
IMPORTANT: Baffles and open cellfoam tape seals are factory installed on the RC12. Baffles fill the gap between the rear of the chassis and the outdoor louver and prevent the air from recirculating. Consult the factory if baffles supplied are not deep enough to accommodate wall sleeve application as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



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.

3. Once confident that all seals are the correct size and in the proper location and the correct baffles are attached to the condenser coil and in the proper orientation, slide unit into final position and tighten any tie down bolts or screws as necessary.

Figure B3



Hydronic Only: Remove the 2-position connector assembly from kit bag supplied with unit (this will have 2 yellow wires attached). Connect this 2-position connector to the 2-position connection located on the bottom of the control box panel.

To Connect Aquastat:

- A. Remove the black jumper wire located on the bottom panel of the control box (this is also terminated with a 2-position connector).
- B. Cut the jumper wire in the middle and splice the aquastat to the jumper.
- C. Place the connector back into original location. Refer to wire diagram on the unit for details.

4. Connect line cord.
5. See Final Inspection and Startup on page 20.

RC12 PERFORMANCE DATA*

UNIT SIZE	COOLING BTUH	EER	EVAP CFM HIGH/LOW	FRESH AIR CFM
12	12,200	10	390/340	40/35
15	15,500	9	440/390	40/35

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

INSTALLATION INSTRUCTIONS

RC/RH20 REPLACEMENT PTAC

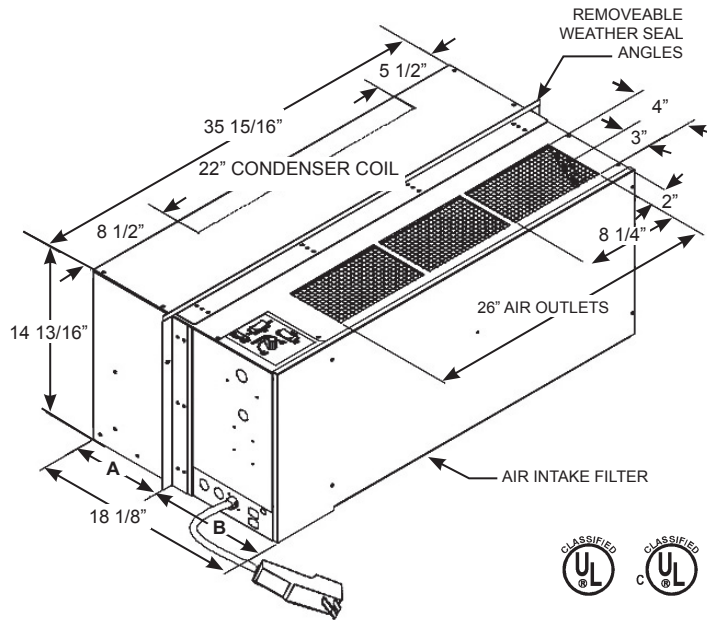
ADJUSTABLE WEATHER SEAL ANGLE POSITIONS

A	8 5/8"	7 7/8"	9 11/16" ⁽¹⁾	8" ⁽²⁾
B	9 1/2"	10 1/4"	8 7/16" ⁽¹⁾	10 1/8" ⁽²⁾

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

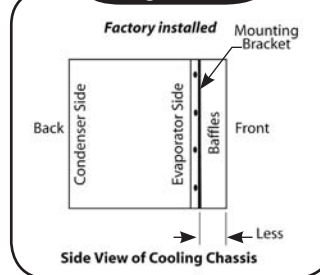
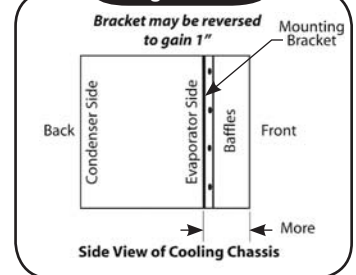


Figure B4



4. **Baffle Installation** - Remove baffles from kit bag supplied with unit. Install left and right side baffles on the condenser coil in existing holes:

- Choose the proper fitting baffles for your application.
- Baffles must come in contact with the outdoor louver.
- Make sure baffles are directed inward toward the center of coil.
- Secure baffles tightly to the condenser coil using the screws provided. (Figures A4, B4 & C4)

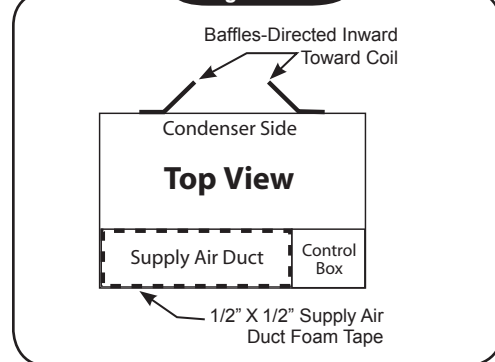
RC/RH20 BAFFLE INSTALLATION KIT

- 1 Installation Manual
- 1 Lt. & Rt. Baffles (size 1)
- 1 Lt. & Rt. Baffles (size 2)
- Screws
- 1" x 1" Open Cell Foam Tape
- 1/2" x 1/2" Open Cell Foam Tape
- HYDRONIC ONLY**
 - 1ea. 2-Position Connector & Pin Mate
 - 14AWG Black Wire

1. Take unit out of packaging.
2. Slide unit into wall sleeve. If supply duct on cooling chassis does not line up with supply vent on room cabinet it is possible that factory installed angle brackets on the top and sides will have to be reversed. This will allow approximately 1" in or out of the wall sleeve (See figures A4 & B4).
3. Slide unit out of wallsleeve.

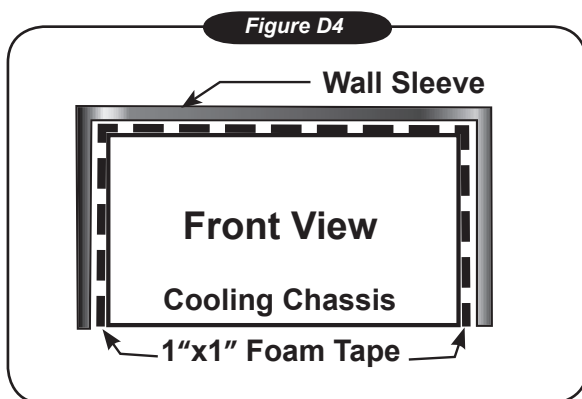
IMPORTANT: The correct condenser air baffles must be installed or performances may be impaired and/or the warranty will be voided.

Figure C4



5. Apply 1/2" x 1/2" open cell foam strips around supply air duct to ensure that all the conditioned air is delivered into the room. Failure to do so results in recirculation of the conditioned air around the wall sleeve and through the unit causing the unit to short cycle, thus raising operating costs through improper heating and cooling (Figure C4).

6. 1" x 1" Open cell foam strips are provided to prevent outside air from entering around the chassis to the room from the sides and top of the cabinet. Install between wall sleeve and cooling chassis. It is imperative to have a solid air seal between wall sleeve and chassis. Failure to do so will result in air leakage from outdoor to indoor causing system problems i.e. coils freezing, short cycling, and constant running of unit. If installer is in need of more foam than supplied in kit, consult factory.



7. Once confident that all seals are the correct size and in the proper location and the correct baffles are attached to the condenser coil in the proper orientation, slide unit into final position and tighten any tie down bolts or screws as necessary.

Hydronic Only: Remove the 2-position connector assembly from kit bag supplied with unit (this will have 2 yellow wires attached). Connect this 2-position connector to the 2-position connection located on the bottom of the control box panel.

To Connect Aquastat:

- A. Remove the black jumper wire located on the bottom panel of the control box (this is also terminated with a 2-position connector).
- B. Cut the jumper wire in the middle and splice the aquastat to the jumper.
- C. Place the connector back into original location. Refer to wire diagram on the unit for details.

8. Connect line cord.
9. See Final Inspection and Startup on page 20.

RC/RH 20 PERFORMANCE DATA*

Unit Size	Cooling Btuh	EERs	Heat Pump Btuh	COP	Fresh Air CFM
9	9,500	10	8500	2.8	40/35
12	11,900	10	11400	2.9	40/35
15	14,700	9.2	13800	2.8	40/35
18	16,900	9.1	N/A	N/A	40/35

**RC/RH20 Hydronic Heat *
Performance 104-101 (Single Row Coil)**

GPM	EWT (°F)	Capacities Btuh	P.D.
3.0	180°F Hi	16,400	4.4
	180°F Lo	15,400	4.4
	140°F Hi	10,300	4.6
	140°F Lo	9,700	4.6

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

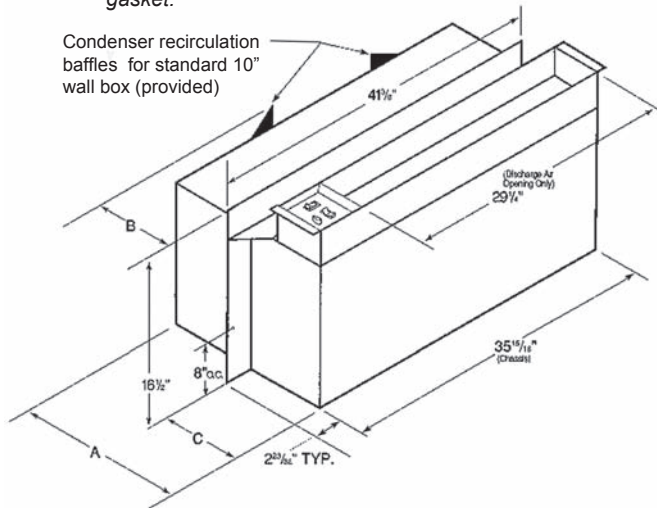
INSTALLATION INSTRUCTIONS

RC21 REPLACEMENT PTAC

DIMENSIONS			
MODEL	A	B	C
9-12	20 14"	9 7/8"	10 3/8"
15-18	25 1/4"	10 1/8"	15 3/8"

A - OVERALL CHASSIS DEPTH
B - CONDENSER SECTION DEPTH
C - EVAPORATOR SECTION DEPTH

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



RC21 BAFFLE INSTALLATION KIT

- 1 Installation Manual
- 1 Lt. & Rt. Baffles (size 1)
- 1 Lt. & Rt. Baffles (size 2)
- Screws
- 1" x 1" Open Cell Foam Tape
- 1/2" x 1/2" Open Cell Foam Tape

HYDRONIC ONLY

- 1ea. 2-Position Connector & Pin Mate
- 14AWG Black Wire

1. Take unit out of packaging.
2. Slide unit into wall sleeve. If supply duct on cooling chassis does not line up with supply vent on room cabinet it is possible that factory installed angle brackets on the top and sides will have to be reversed. This will allow approximately 1" in or out of the wall sleeve (See Figures A5 & B5).

Figure A5

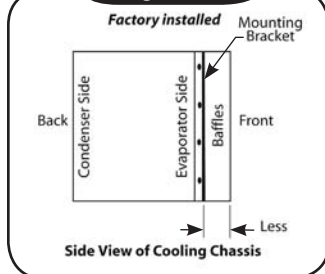
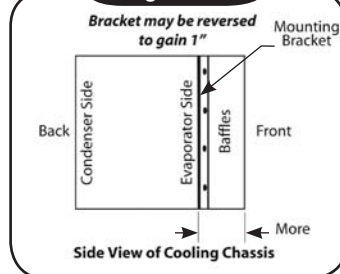


Figure B5



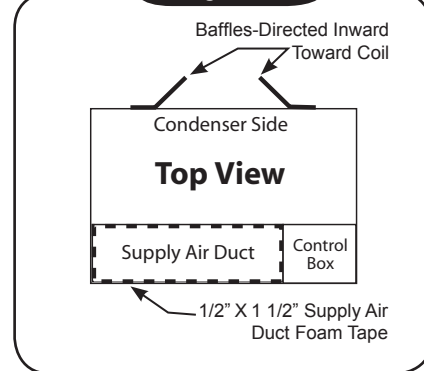
Two sets of baffles are provided in your kit to accommodate mounting brackets in either position A or B.

2. Slide unit out of wallsleeve.
3. Remove baffles from kit bag supplied with unit.

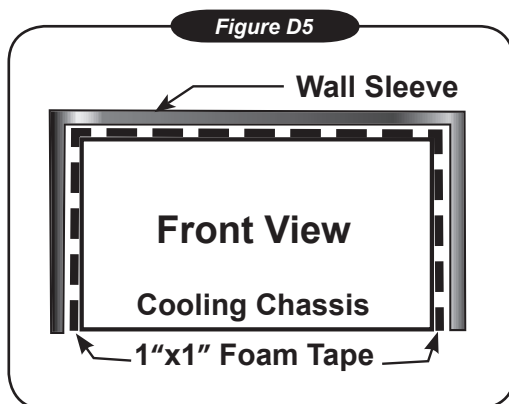
IMPORTANT: The correct condenser air baffles must be installed or performances may be impaired and/or the warranty will be voided.

4. **Baffle Installation** - Install left and right side baffles on the condenser coil in existing holes:
 - Choose the proper fitting baffles for your application.
 - Baffles must come in contact with the outdoor louver.
 - Make sure baffles are directed inward toward the center of coil.
 - Secure baffles tightly to the condenser coil using the screws provided. (Figures A5, B5 & C5)

Figure C5



5. Apply 1/2" x 1/2" open cell foam strips around supply air duct to ensure that all the conditioned air is delivered into the room. Failure to do so results in recirculation of the conditioned air around the wall sleeve and through the unit causing costs through improper heating and cooling (Figure C5).



6. 1" x 1" Open cell foam strips are provided to prevent outside air from entering around the chassis to the room from the sides and top of the cabinet. Install between wall sleeve and cooling chassis. It is imperative to have a solid air seal between wall sleeve and chassis. Failure to do so will result in air leakage from outdoor to indoor causing system problems i.e. coils freezing, short cycling, and constant running of unit. If installer is in need of more foam than supplied in kit, consult factory (See Figure D5).

7. Once confident that all seals are the correct size and in the proper location and the correct baffles are attached to the condenser coil in the proper orientation, slide unit into final position and tighten any tie down bolts or screws as necessary.

Hydronic Only: Remove the 2-position connector assembly from kit bag supplied with unit (this will have 2 yellow wires attached). Connect this 2-position connector to the 2-position connection located on the bottom of the control box panel.

To Connect Aquastat:

- A. Remove the black jumper wire located on the bottom panel of the control box (this is also terminated with a 2-position connector).
- B. Cut the jumper wire in the middle and splice the aquastat to the jumper.
- C. Place the connector back into original location. Refer to wire diagram on the unit for details.

8. Connect line cord.

9. See Final Inspection and Startup on page 20.

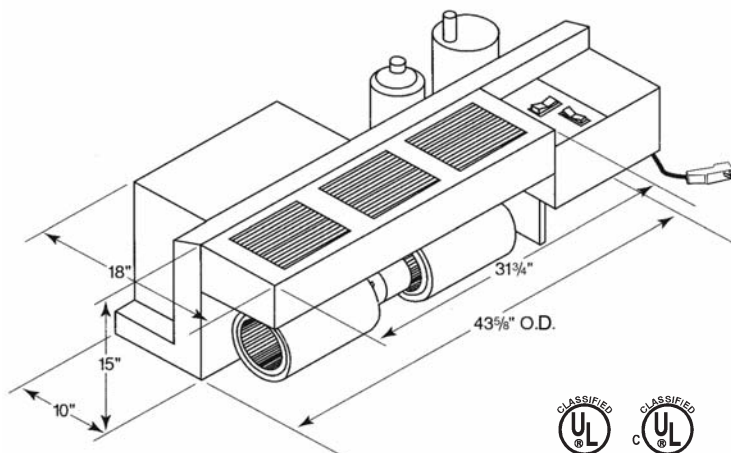
RC21 PERFORMANCE DATA*			
Unit Size	Cooling Btuh	EERs	Fresh Air CFM
9	9,500	10	40/35
12	11,900	10	40/35
15	14,700	9.2	40/35
18	16,900	9.1	40/35

RC21 Hydronic Heat *			
Performance 104-101 (Single Row Coil)			
GPM	EWT (°F)	Capacities Btuh	P.D.
3.0	180°F Hi	16,400	4.4
	180°F Lo	15,400	4.4
	140°F Hi	10,300	4.6
	140°F Lo	9,700	4.6

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

INSTALLATION INSTRUCTIONS

RC/RH35 REPLACEMENT PTAC



RC/RH35 INSTALLATION KIT

- 1 Installation Manual
- 1 Lt. & Rt. Baffles
- Screws
- 1" x 1" Open Cell Foam Tape

HYDRONIC ONLY

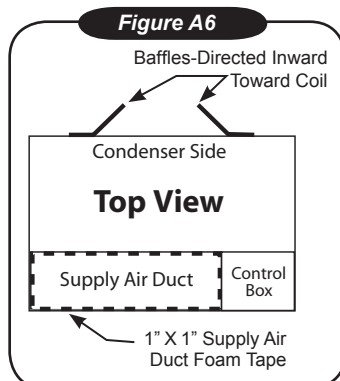
- 1ea. 2-Position Connector & Pin Mate
- 14AWG Black Wire

1. Take unit out of packaging.
2. Slide unit into wall-sleeve. The supply duct on the cooling chassis should line up with the supply vent on the room cabinet.
3. Slide unit out of wall-sleeve

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

4. **Baffle Installation** - Remove baffles from kit bag supplied with unit. Install left and right side baffles on the condenser coil in existing holes:

- Baffles must come in contact with the outdoor louver.
- Make sure baffles are directed inward toward the center of coil.
- Secure baffles tightly to the condenser coil using the screws provided. (Figure A6)



5. Apply 1" x 1" open cell foam strips around supply air duct to ensure that all the conditioned air is delivered into the room. Failure to do so results in recirculation of the conditioned air around the wall sleeve and through the unit causing the unit to short cycle, thus raising operating costs through improper heating and cooling (Figure A6).

6. Once confident that all seals are the correct size and in the proper location and the correct baffles are attached to the condenser coil and in the proper orientation, slide unit into final position and tighten any tie down bolts or screws as necessary.

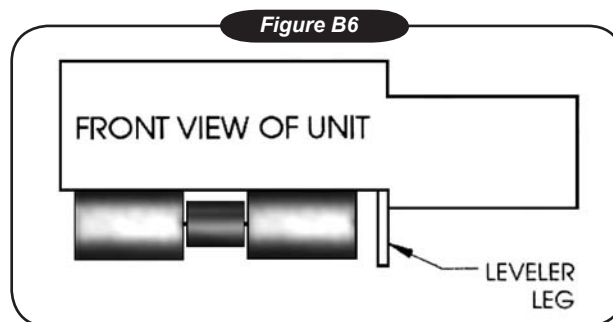
Hydronic Only: Remove the 2-position connector assembly from kit bag supplied with unit (this will have 2 yellow wires attached). Connect this 2-position connector to the 2-position connection located on the bottom of the control box panel.

To Connect Aquastat:

- A. Remove the black jumper wire located on the bottom panel of the control box (this is also terminated with a 2-position connector).
- B. Cut the jumper wire in the middle and splice the aquastat to the jumper.
- C. Place the connector back into original location. Refer to wire diagram on the unit for details.

7. Connect line cord.
8. See Final Inspection and Startup on page 20.

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.



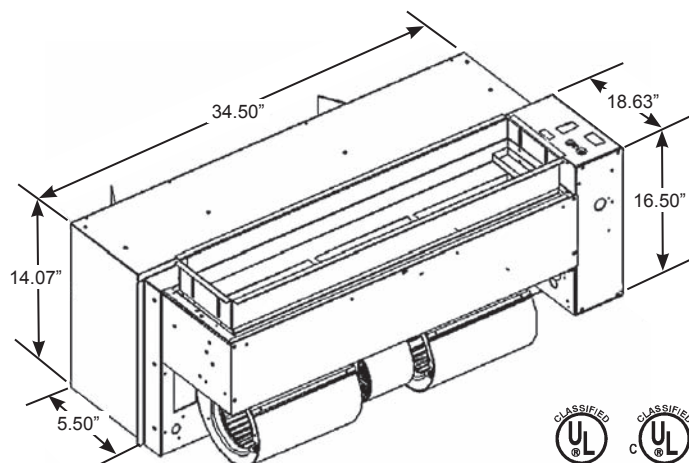
RC/RH35 PERFORMANCE DATA*

MODEL	COOLING Btuh	EER	HEAT PUMP Btuh	COP	FRESH AIR CFM
9	9,500	10	8,500	2.8	40/35
12	11,900	10	11,400	2.9	40/35
15	14,700	9.2	13,800	2.8	40/35
18	16,900	9.1	N/A	N/A	40/35

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

INSTALLATION INSTRUCTIONS

RC/RH45 REPLACEMENT PTAC



RC/RH45 INSTALLATION KIT

- 1 Installation Manual
- 1 Lt. & Rt. Baffles (size 1)
- 1 Lt. & Rt. Baffles (size 2)
- Screws
- 1" x 1" Open Cell Foam Tape
- 1/2" x 1/2" Open Cell Foam Tape

HYDRONIC ONLY

- 1ea. 2-Position Connector & Pin Mate
- 14AWG Black Wire

1. Take unit out of packaging.
2. Slide unit into wall sleeve. If supply duct on cooling chassis does not line up with supply vent on room cabinet it is possible that factory installed angle brackets on the top and sides will have to be reversed. This will allow approximately 1" in or out of the wall sleeve. (See Figures A7 & B7)

Figure A7

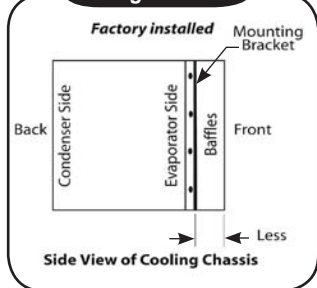
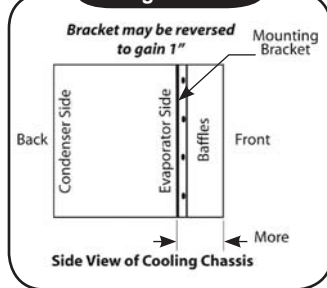


Figure B7



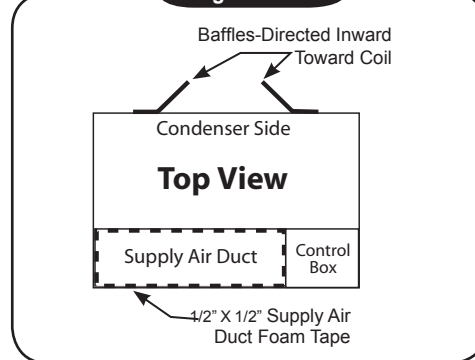
Two sets of baffles are provided in your kit to accommodate mounting brackets in either position A or B.

3. Slide unit out of wallsleeve and install baffles on the condenser side.
4. Remove baffles from kit bag supplied with unit.

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

5. **Baffle Installation** - Install left and right side baffles on the condenser coil in existing holes:
 - Choose the proper fitting baffles for your application.
 - Baffles must come in contact with the outdoor louver.
 - Make sure baffles are directed inward toward the center of coil.
 - Secure baffles tightly to the condenser coil using the screws provided. (Figures A7, B7 & C7)

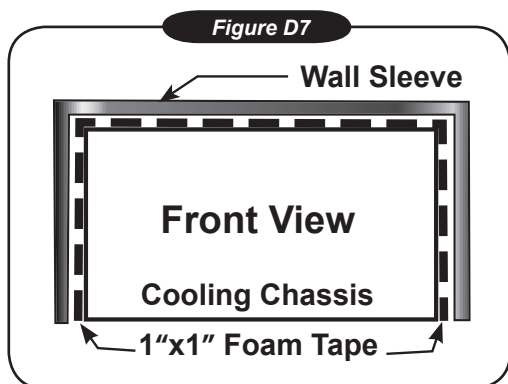
Figure C7



6. Apply 1/2" x 1/2" open cell foam strips around supply air duct to ensure that all the conditioned air is delivered into the room. Failure to do so results in recirculation of the conditioned air around the wall sleeve and through the unit causing the unit to short cycle, thus raising operating costs through improper heating and cooling. (Figure C7)

RC/RH45 INSTALLATION INSTRUCTIONS (Continued)

7. 1" x 1" Open cell foam strips are provided to prevent outside air from entering around the chassis to the room from the sides and top of the cabinet (*Figure D7*). Install between wall sleeve and cooling chassis. It is imperative to have a solid air seal between wall sleeve and chassis. Failure to do so will result in air leakage from outdoor to indoor causing system problems i.e. coils freezing, short cycling, and constant running of unit. If installer is in need of more foam than supplied in kit, consult factory.



8. Once confident that all seals are the correct size and in the proper location and the correct baffles are attached to the condenser coil in the proper orientation, slide unit into final position and tighten any tie down bolts or screws as necessary.

Hydronic Only: Remove the 2-position connector assembly from kit bag supplied with unit (this will have 2 yellow wires attached). Connect this 2-position connector to the 2-position connection located on the bottom of the control box panel.

To Connect Aquastat:

- A.** Remove the black jumper wire located on the bottom panel of the control box (this is also terminated with a 2-position connector).
- B.** Cut the jumper wire in the middle and splice the Aquastat to the jumper.
- C.** Place the connector back into original location. Refer to wire diagram on the unit for details.

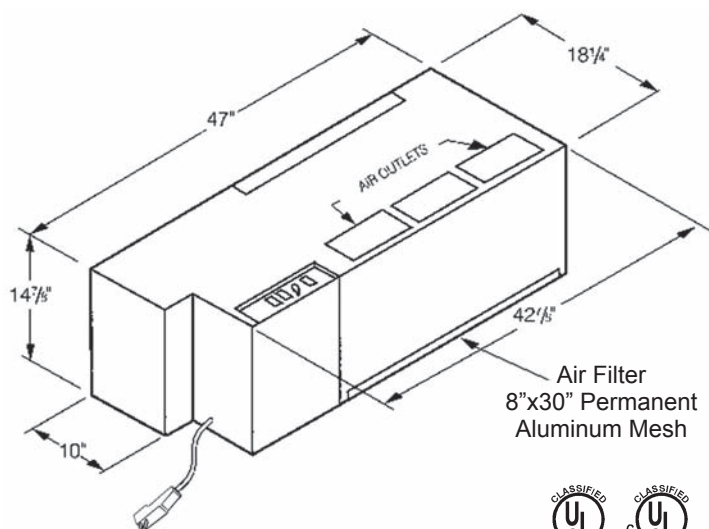
8. Connect line cord.
9. See Final Inspection and Startup on page 20.

RC/RH45 PERFORMANCE DATA*					
Unit Size	Cooling Btuh	EERs	Heat Pump Btuh	COP	Fresh Air CFM
9	9,500	10	8500	2.8	40/35
12	11,900	10	11400	2.9	40/35
15	14,700	9.2	13800	2.8	40/35
18	16,900	9.1	N/A	N/A	40/35

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

INSTALLATION INSTRUCTIONS

RC/RH80 REPLACEMENT PTAC



RC/RH80 BAFFLE INSTALLATION KIT

- 1 Installation Manual
- 1 Lt. Baffle
- 1 Rt. Baffle
- Screws
- 1" x 1" Open Cell Foam Tape
- 1/2" x 1/2" Open Cell Foam Tape

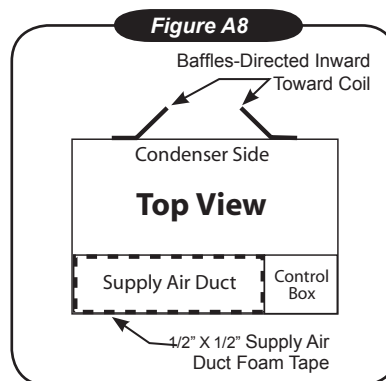
HYDRONIC
ONLY

- 1ea. 2-Position Connector & Pin Mate
- 14AWG Yellow Wire

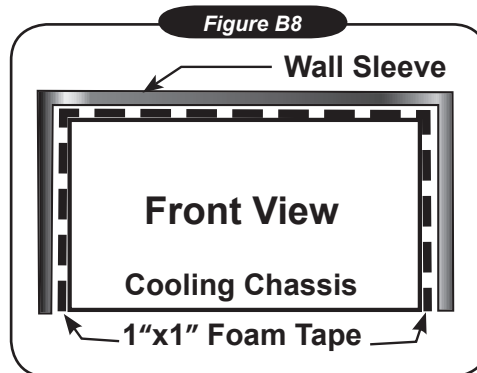
1. Take unit out of packaging.
2. Slide unit into wall sleeve. The supply duct on the cooling chassis should line up with the supply vent on the room cabinet. The weather angles should require no adjustment.
3. Slide unit out of wall sleeve.

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

4. **Baffle Installation** - Remove baffles from kit bag supplied with unit. Install left and right side baffles on the condenser coil in existing holes:
 - Baffles must come in contact with the outdoor louver.
 - Make sure baffles are directed inward toward the center of coil.
 - Secure baffles tightly to the condenser coil using the screws provided. (Figure A8)



3. Take 1/2" x 1/2" open cell foam strips from kit bag and apply to sheet metal flanges around the perimeter of the discharge outlet as shown in (Figure A8). Failure to do so results in recirculation of the conditioned air around the wall sleeve and through the unit causing the unit to short cycle, thus raising operating costs through improper heating and cooling.



5. 1" x 1" Open cell foam strips are provided to prevent outside air from entering around the chassis to the room from the sides and top of the cabinet (Figure B8). Install between wall sleeve and cooling chassis. It is imperative to have a solid air seal between wall sleeve and chassis. Failure to do so will result in air leakage from outdoor to indoor causing system problems i.e. coils freezing, short cycling, and constant running of unit. If installer is in need of more foam than supplied in kit, consult factory.

6. Once confident that all seals are the correct size and in the proper location and the correct baffles are attached to the condenser coil and in the proper orientation, slide unit into final position and tighten any tie down bolts or screws as necessary.

Hydronic Only: Remove the 2-position connector assembly from kit bag supplied with unit (this will have 2 yellow wires attached). Connect this 2-position connector to the 2-position connection located on the bottom of the control box panel.

To Connect Aquastat:

- A. Remove the black jumper wire located on the bottom panel of the control box (this is also terminated with a 2-position connector).
- B. Cut the jumper wire in the middle and splice the Aquastat to the jumper.
- C. Place the connector back into original location. Refer to wire diagram on the unit for details.

7. Connect line cord.

8. See Final Inspection and Startup on page 20.

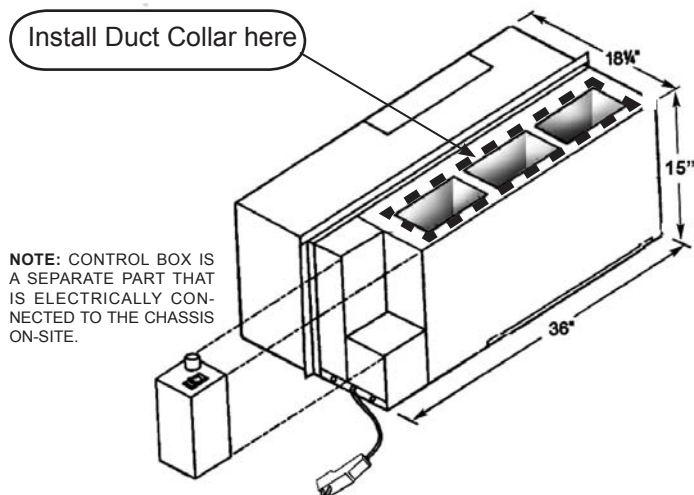
RC/RH80 Performance Data*

UNIT SIZE	COOLING BTUH	EER	HEAT PUMP BTUH	COP	FRESH AIR CFM
9	9,500	10	8500	2.8	40/35
12	11,900	10	11400	2.9	40/35
15	14,700	9.2	13800	2.8	40/35
18	16,900	9.1	N/A	N/A	40/35

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

INSTALLATION INSTRUCTIONS

RC/RH90 REPLACEMENT PTAC



RC/RH90 BAFFLE INSTALLATION KIT

- 1 Installation Manual
- 1 Lt. & Rt. Baffles
- 1 Duct Collar
- 1 Slide-Duct
- Screws
- 1/4" x 3/4" Open Cell Foam Tape
- 1" x 1" Open Cell Foam Tape
- 1/2" x 1/2" Open Cell Foam Tape

- HYDRONIC ONLY**
- 1ea. 2-Position Connector & Pin Mate
 - 14AWG Yellow Wire

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.

1. Remove unit from box and install duct collar.

Duct Collar and Slide-Duct Installation

- Remove duct collar and slide-duct from packaging.
- Fasten 1/4" x 1/2" foam tape to the bottom flanges of the duct collar, this serves as a gasket between the collar and the unit.
- Securely fasten duct collar over discharge opening with screws provided.
- Insert slide-duct into duct collar. (See illustration above)

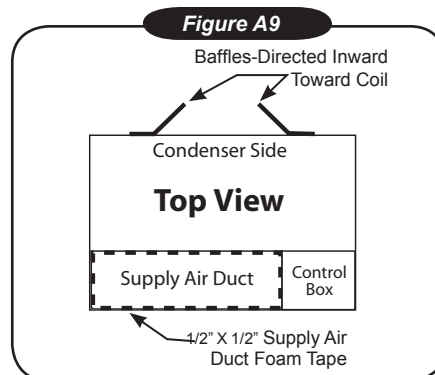
2. Slide unit into wall sleeve. The supply duct on the cooling chassis should line up with the supply vent on the room cabinet. The weather angles should require no adjustment.

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

3. **Baffle Installation** - Remove baffles from kit bag supplied with unit. Install left and right side baffles on the condenser coil in existing holes:

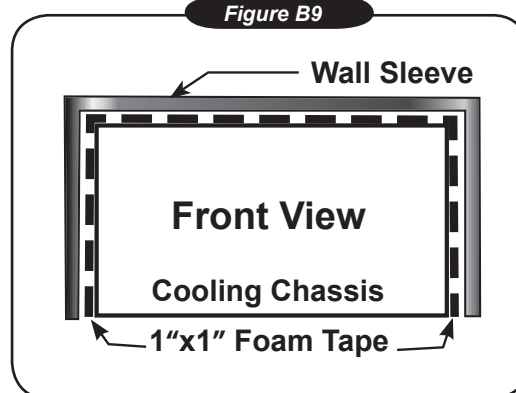
- Baffles must come in contact with the outdoor louver
- Make sure baffles are directed inward toward the center of coil
- Secure baffles tightly to the condenser coil using the screws provided (Figure A9)

Figure A9



4. Remove 1/2" x 1/2" open cell foam strips from kit bag and apply to sheet metal flanges around the perimeter of the supply air duct outlet as shown in Figure A9. Failure to do so results in recirculation of the conditioned air around the wall sleeve and through the unit causing the unit to short cycle, thus raising operating costs through improper heating and cooling.

Figure B9



5. 1" x 1" Open cell foam strips are provided to prevent outside air from entering around the chassis to the room from the sides and top of the cabinet (Figure B9). Install between wall sleeve and cooling chassis. It is imperative to have a solid air seal between wall sleeve and chassis. Failure to do so will result in air leakage from outdoor to indoor causing system problems i.e. coils freezing, short cycling, and constant running of unit. If installer is in need of more foam than supplied in kit, consult factory.

- Once confident that all seals are the correct size and in the proper location and the correct baffles are attached to the condenser coil and in the proper orientation, slide unit into final position and tighten any tie down bolts or screws as necessary.

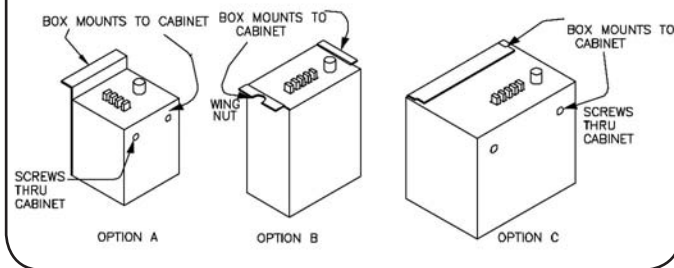
Hydronic Only: Remove the 2-position connector assembly from kit bag supplied with unit (this will have 2 yellow wires attached). Connect this 2-position connector to the 2-position connection located on the bottom of the control box panel.

To Connect Aquastat:

- Remove the black jumper wire located on the bottom panel of the control box (this is also terminated with a 2-position connector).
- Cut the jumper wire in the middle and splice the aquastat to the jumper.
- Place the connector back into original location. Refer to wire diagram on the unit for details.

RC 90 CONTROL BOX OPTIONS

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



- Install the control section:

- In a standard unit mount installation, take the thermal bulb from the control section and run the line along the unit to the blower section. There will be no thermostat bulb if a remote thermostat option is used.
- While looking at the sides of the blower housing, there are two clips that will support the thermal bulb. Take out the screws that hold these clips and slide the thermal bulb into the clips.
- Fasten the clips back into place, making sure you do not kink the bulb as you might break the thermostat end.
- After the thermostat is back in place, reinstall the front cover of the unit and finish the installation.

- Connect line cord.

- See Final Inspection and Startup page 20.

RC/RH90 FINAL INSPECTION AND START-UP

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

- Mount control box in wall sleeve (in the same location as the old control box)
- Make sure the chassis is level. Check by pouring water into the drain pan and making certain it flows through the drain hoses to the condenser side of the unit.
- Hard wire line voltage to control box and plug cooling chassis line cord into control box receptacle and Molex plugs.

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

- Attach the front panel to the existing cabinet enclosure.
- Turn the power on.
- Check for proper operation (i.e., cooling, optional fresh air, and heating if supplied).
- Check to be sure nothing will interfere with the room discharge air or the return air to the units (i.e., curtains or drapes that obstruct the air flow or plush carpeting that can obstruct the return air. Items like these can cause serious damage to the chassis and can void the warranty.

- See Sequence of Operation pages 20- 22.

RC/RH 90 Performance Data*					
UNIT SIZE	COOLING BTUH	EER	HEAT PUMP BTUH	COP	FRESH AIR CFM
9	9,500	10	8500	2.8	40/35
12	11,900	10	11400	2.9	40/35
15	14,700	9.2	13800	2.8	40/35
18	16,900	9.1	N/A	N/A	40/35

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

FINAL INSPECTION AND STARTUP



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.

1. Make sure the chassis is level. Check by pouring water into the drain pan and making certain it flows through the drain hoses to the condenser side of the unit.

2. Plug or hard wire line voltage to unit.

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

3. Attach the front panel to the existing cabinet enclosure.

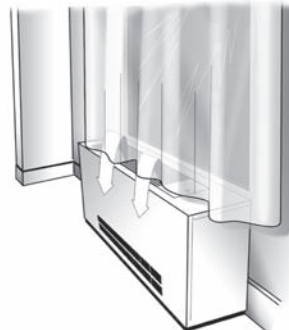
4. Turn the power on.

5. Check for proper operation (i.e., cooling, optional fresh air, and heating if supplied).

6. Check to be sure nothing will interfere with the room

discharge air or the return air to the units (i.e., curtains or drapes that obstruct the air flow or plush carpeting that can obstruct the return air (see below)). Items like these can cause serious damage to the chassis and can void the warranty.

The position of curtains or drapes over supply air grille may cause air to recirculate without cooling the room. The unit will short cycle and may cause premature compressor failure.



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

To ensure optimum performance of your PTAC, avoid restricting the air flow.

SEQUENCE OF OPERATION

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

UNIT MOUNTED THERMOSTAT OPERATIONAL INSTRUCTIONS

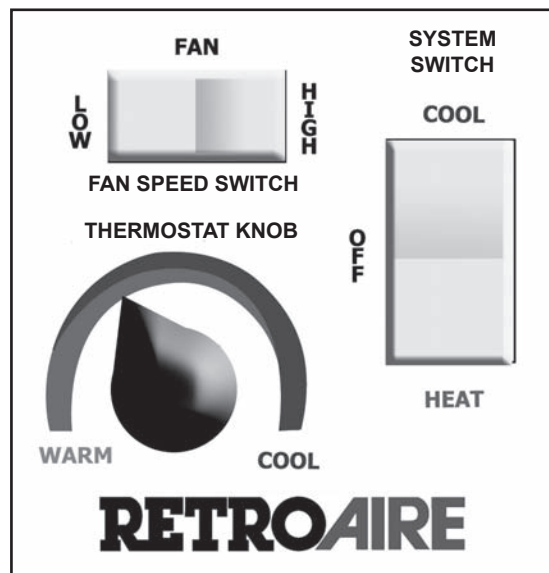
Turning the unit mounted thermostat knob to the far left will produce the warmest room temperature while turning it all the way to the right will produce the coolest. These settings can be adjusted for personal comfort.

RC12 SAFETY NOTE: When turning the selector switch on the RC12 for mode of operation, it is very important to make sure the switch position is **“SEATED”** directly on a mode of operation (**clicks into position**). Do not mistakenly place between two positions. This can result in a potential fan failure while the system is in a cooling or heating operation. A fan failure could result in the unit overheating (smoke) in an electric heating mode, or freezing coil in a cooling mode.

COOLING CYCLE:

1. Place system switch in the “COOL” position.
2. Rotate thermostat knob (below) clockwise until the compressor fans start running and cold air begins to flow from the unit. For a colder room temperature, continue turning the thermostat knob clockwise and let the unit continue operating to cool the room and remove humidity. If a warmer room temperature is desired, rotate the thermostat knob counter-clockwise until the compressor cycles off.

Typical Representation Of A Unit Mount Control



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.

3. Place system switch in the "OFF" position. All operation should stop.

HEATING CYCLE - *Electric*:

1. Place system switch in the "HEAT" position.
2. Rotate thermostat knob counter-clockwise until the indoor fans start running and the electric coil starts emitting heat. The condenser fans do not run during the heating cycle unless the chassis is a heat pump. After the unit starts running and the area gets warmer, turn the thermostat knob clockwise until a slight click is heard and the electric heater turns off. If a warmer room temperature is desired, continue turning the knob counter-clockwise and let the unit continue operating. If a cooler room temperature is desired, rotate the thermostat knob clockwise until the electric heater cycles off.

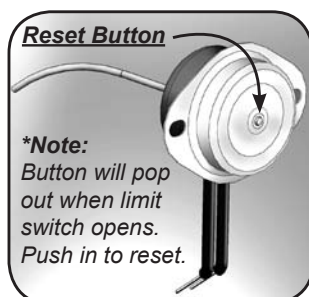
IMPORTANT: Room temperature must be below 85° F to energize the heater.

3. Place system switch in the "OFF" position. All operation should stop.

Manual Reset Limit Switch

(5 Kw heat models only) In the event the limit switch opens and de-energizes the electric heat, the limit switch will need to be manually reset.

- To reset switch remove the control box cover.
- Locate the limit switch.
- Push in the reset button on the face of the switch. (Refer to illustration above)



HYDRONIC COIL: The coil with the old unit can be located in the subbase, under the chassis in a special attachment, or above the chassis in a special attachment. It is necessary to know where the coil is to be located and the physical size of the coil so the right coil can be supplied if ordered for replacement. The coil is shipped loose for field installation. It should be installed in the same manner as the coil it is replacing. When the hydronic coil is not replaced, installation of the chassis should follow the instructions in this manual.

HEATING CYCLE - *Hydronic*: All straight cool Dual Motor PTACs are equipped with a field supplied hydronic heat option. The unit is provided with a two-position molex plug for motor valve connection. To wire this option, take the molex plug connector with (2) yellow wires from the kit and plug it into the molex on the unit. Then wire the opposite end of the molex to the motorized valve in the hydronic circuit.

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

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.

- A. Place system switch in the "HEAT" position.
- B. Turn thermostat knob counter-clockwise. Motorized valve should open and allow hot water to run through the coil. The indoor fans will run, blowing air through the hydronic coil.
- C. Check room comfort level as outlined under "Heating Cycle - Electric."

MOTORIZED FRESH AIR DAMPER (Optional): The optional motorized fresh air damper allows the operator to move fresh air into the space to be conditioned. This is done by placing the damper door switch in the "YES" position, opening the damper door and allowing fresh air to be moved into the space. To stop the flow of fresh air, simply place the switch in the "NO" position.

CHANGEOVER T-STATS (Heat Pump Only): On units with a changeover thermostat, the compressor can run to an outdoor temperature of 40° F and then shut off. Electric heat will then energize and assume the heating demand until the temperature of the outdoor air rises to approximately 50° F.

FAN CYCLE SWITCH: This option allows the operator of the Dual Motor PTAC to have the evaporator fan cycle or run continuously. With the switch in the cycling position the evaporator fan will only run when the unit is calling for heat or cooling. When the switch is in the "CONSTANT" position, the evaporator fan will run continuously unless the unit is physically turned off.

CONDENSATE REMOVAL: The Dual Motor PTAC has a drain connection at each end of the condensate drain pan. This allows the condensate to drain through the bulkhead to the area near the condenser fan. The condenser fan has a slinger ring that picks up the condensate and slings it on the hot condenser coil where it evaporates. On heat pump models condensate can form on the outdoor coil during the heat pump cycle. A temperature sensitive valve in the base pan will allow condensate to flow to an internal piping system or external drain kit (supplied by others).

AQUASTAT CONNECTION (Optional): All straight cool Dual Motor PTACs are supplied with a standard high volt aquastat connection. The connection is located on the bottom or side with a black jumper wire installed in molex. To wire option take jumper wire and cut in half. Then connect 2 field supplied wires to the cut ends of jumper and wire to aquastat (see wiring diagram for more information). If option is not being used simply leave jumper wire connected to unit.

SEQUENCE OF OPERATION (CONTINUED)

REMOTE THERMOSTAT OPERATIONAL INSTRUCTIONS

CHOOSING A THERMOSTAT: EMI offers a thermostat that is compatible with your PTAC/PTHP unit. Select EMI part number 240-2960 from the latest Retroaire price list for this option. This is a single stage, cool/heat, mercury bulb thermostat that can be used in all Retroaire cooling, heating or heat pump applications. The thermostat has an adjustable set-point range of between 55°F and 95°F. There are two independent, adjustable stops that can limit the heating or cooling range of the thermostat. If a non-mercury, electronic thermostat is needed, then choose EMI part number 240-3926.

SELECTING A THERMOSTAT “By Others”: When selecting a thermostat other than those offered by EMI, it is important to choose a single stage heat/cool, 24V thermostat. For models 09-17, do **NOT** select a thermostat that requires connection to a “C” terminal since these units do not have provisions for connecting to a “C” terminal. Only models 19 and 24 have provisions for connecting a “C” terminal to the unit.

If a thermostat without a “C” terminal is used in a models 19 or 24, then it is important to insulate the unused BROWN “C” low volt wire to prevent it from shorting at the thermostat.

COOLING ONLY WITH ELECTRIC HEAT OR HYDRONIC HEAT (RC - PTAC's): Select a thermostat that is compatible with a cooling - electric heat system. The thermostat should have “R”, “Y”, “W” and “G” terminals

HEAT PUMP WITH ELECTRIC HEAT (RH - PTHP'S): Select a thermostat that is compatible with a cooling - single stage heat - heat pump system. The thermostat should have “R”, “Y”, “O” and “G” terminals. Retroaire units are single stage heating only. The electric heat and heat pump will not operate simultaneously.

FAN OPERATION: Some thermostats are equipped with an auto/on fan switch. When this switch is placed in the on position the indoor fan will run continuous. When the switch is in the auto position the indoor fan will cycle with the call for heating or cooling.

FAN PURGE (Optional): After the room thermostat has been satisfied, the purge feature allows the indoor fan to remain on for an additional 60 seconds. This increases efficiency by pulling the remaining energy from the unit.

COOLING OPERATION: After connecting the thermostat to the unit place the system switch in cool mode. Adjust the set-point temperature below the room temperature. The compressor and fan motors will start and cooling will begin. Place the set-point temperature above the room temperature. The compressor and condenser fan will stop and the indoor fan will remain on for an additional sixty seconds.

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

ELECTRIC HEAT OPERATION: Place the thermostat system switch in heat mode. Adjust the set-point temperature above the room temperature. The electric heat will energize along with the indoor fan motor. Heating will continue so long as the set-point remains above room temperature. Next place the set-point temperature below room temperature. The Electric heater will switch off and the indoor fan will remain on for an additional sixty seconds.

HYDRONIC HEAT OPERATION (Optional): An optional hydronic heat package may be selected in lieu of electric heat. Heating operation is essentially the same as that of units with electric heat. With the thermostat system switch set to heat and the set-point temperature above room temperature, the hydronic valve will open allowing water to flow through the coil. The indoor fan will also switch on and warm air will flow from the unit. Heating will continue so long as the set-point remains above room temperature. Place the set-point temperature below room temperature. The hydronic valve will close and indoor fan will switch off after the sixty-second purge time has elapsed. The hydronic valve is a 24Vac normally open valve. Should power be lost to the unit, the valve will default to the open position.

HEAT PUMP (Cooling Mode): Cooling operation in a heat pump unit is described in “Cooling operation” above. The unit is equipped with a reversing valve that is energized for cooling and de-energized in heating mode.

HEAT PUMP (Heating Mode): Heat pump units are “Limited Range” equipped with back-up electric resistance heat. Limited Range heat pumps are designed to operate when outdoor temperatures are between 75°F and 40°F and with a maximum indoor temperature of 80°F. When the outdoor temperature falls below approximately 40°F the unit will switch from heat pump to electric resistance heat. Electric heat will then remain as the heat source until the outdoor temperatures rise above 50°F. Retroaire heat pumps (RH – PTHP) are single-stage heating units. The electric heat and heat pump will **NOT** operate simultaneously.

To operate the unit in heating mode, it must first be connected to an appropriate heat pump thermostat. (See choosing a thermostat). Select heat on the thermostat system switch. Then, adjust the set-point temperature above the room temperature. The compressor and fan motors will start and heating will begin. If the outdoor temperature is below approximately 40°F the heat pump system will not operate. Electric heat will then take over the heating demand. Heating will continue so long as the set-point temperature remains above the room temperature. Place the set-point

SEQUENCE OF OPERATION (CONTINUED)

temperature below the room temperature. The heating mode will cease and the indoor fan will remain on for an additional sixty seconds.

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

HEAT PUMP (Emergency Heat)



WARNING

Before accessing the control compartment, disconnect power to the unit. Failure to do so could result in serious injury or electrical shock.

Should the heat pump system fail, it is possible to force the control board into electric heat mode. This is a temporary solution until the heat pump system can be repaired. Locate the circuit board in the control section of the unit. Locate the terminals where the outdoor sensor connects to the circuit board. Using a small needle nose type pliers, disconnect one side of the sensor from the circuit board. This will appear to the circuit board as an outdoor coil freeze condition there-by energizing the electric resistance heater on the call for heat.

HEAT PUMP (Thermostatic Drain Pan Valve): Heat pump units are equipped with a thermostatic drain valve that will open when outdoor temperatures fall below 50°F. This keeps the base pan free of condensate water where it may otherwise freeze during colder outdoor temperatures. As part of its normal operation, the unit will produce condensate and collect it in the base pan of the unit. There it will be picked up by the condenser fan slinger ring and deposited onto the condenser coil. During the cooling season, this improves the unit's efficiency by maintaining adequate refrigeration system pressures.

ANTI-SHORT CYCLE TIMER – Random Start Feature:

This feature will prevent compressor short cycling and also prevent multiple units in a single facility from simultaneously starting following a power outage. This delay on break feature ensures that the compressor remains off, between cycles, until the three-minute time delay period has elapsed allowing system pressures to equalize before re-starting.

The random start feature, initiated after a power failure, will add a random time delay (between 5-120 seconds) to the three-minute anti short cycle time following a power outage. This will stagger the starting of multiple units in a single facility allowing a building to slowly go back on line when power is restored.

INDOOR COIL FREEZE PROTECTION: This feature will prevent the indoor coil from freeze up in the cooling mode. Indoor coil freeze up can occur due to a dirty air filter, low refrigerant charge or low room or outdoor temperatures. This in turn can cause compressor damage. Should a freeze

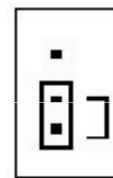
condition be detected, the compressor and condenser fan will be switched off for a minimum of three minutes and until the freeze condition is satisfied. During this time the indoor fan will continue to run to aid in the defrost process.

AJ4004 CONTROL BOARD: There are two sets of jumper pins on the control board that are factory set so there should no need to set them later on in the field. The first is a set of three pins labeled “HP” for selection of either a “Straight Cool” or “Heat Pump” unit. For “Straight Cool” the center pin and outer most pin (usually on the top) are to be jumped together. For Heat Pump units the center pin and the pin closest to the relay are to be jumped together (see *Figure #1*).

The second is a set of two pins labeled “TEST”. When these two pins are jumped together, all timers are eliminated (i.e. anti-short, purge, ect.). This is mainly used for production line testing however it may also be useful for field-testing as well. The units are shipped with the “TEST” jumper on only one of the pins. Please, do not leave a unit with the test jumper in the test mode (see *Figure #2*).

Figure #1

STRAIGHT COOL/HEAT PUMP JUMPER



HP

HEAT PUMP



HP

STRAIGHT COOL

Figure #2

TEST JUMPER POSITION FOR NORMAL OPERATION



The LED Blink codes are as listed in below.

- 1 Blink Normal Operation
- 2 Blinks Compressor Lockout (ASCT)
- 3 Blinks Outdoor freeze condition
- 4 Blinks Indoor freeze condition
- 5 Blinks Simultaneous W & Y Call

Important sensor resistances are as follows.

- 77 °F - 10K ohms
- 50 °F - 19.9K ohms
- 35 °F - 30K ohms
- 30 °F - 34.4K ohms

CLEANING AND MAINTENANCE

CLEANING THE INTERIOR OF THE UNIT



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.

1. Disconnect power from unit.
2. Remove access panels and do a visual inspection of the unit, making sure to check for obvious problems such as damaged coils or evidence of extended wear on any moving part.
3. Check for unusual odors, oil leaks, or stains on or around the coil and refrigerant lines. The presence of oil here may indicate a potentially serious problem such as a refrigerant leak.
4. Inspect all electrical connections. Look for frayed wires and poor connections. Terminal ends that are loose will eventually fail, causing a loss of performance or worse.
5. Check fan motors and blower assemblies. Some units may require a drop of light oil to motors and/or bearing assemblies (look for oil cups). Check setscrews and motor mounting hardware, making sure they are tight.
6. Brush and/or vacuum the centrifugal fan blades and blower cage assemblies. These parts must be clean to operate efficiently.
7. Inspect and clean the indoor and outdoor coils, using a fin comb, if necessary, to straighten any damaged fins. these coils must be clean for proper operation.

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.

8. Inspect and clean the drain pan and drainline (if any). Use of an anti-fungicide tablet is recommended to keep the condensate system free from bacterial contaminants.
9. Check weep holes along the rear flange of the base pan, making sure they are open.
10. Check the pitch of the unit. Over time the building and equipment may settle, causing a shift in the direction of the condensate flows. Ideally the unit should pitch a minimum of 5° (at least 1/2") to the outside to allow for proper drainage.

11. Replace panels and reconnect electrical power.
12. Test unit operation.

CLEANING THE EXTERIOR

1. Clean the air filter at least once a month by removing it from the unit and washing or vacuuming any dust from its surface. Allowing dust to collect on the filter will cause the PTAC to lose efficiency and eventually malfunction.
2. When cleaning the filter, be sure to vacuum any dust from the return air grille surface as well.
3. Clean exterior of the cabinet as desired with a mild soap or household cleaner.

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

TROUBLESHOOTING

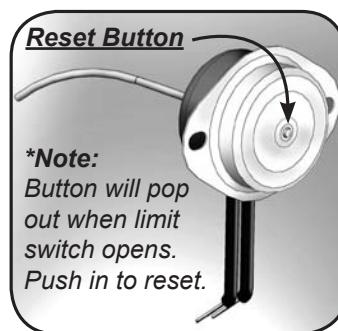
NO HEAT OR COOLING: Check to see if the unit has power and if the thermostat is satisfied. If the thermostat is not satisfied, refer to the wiring diagram and check control components for continuity.

Check The Manual Reset Limit Switch

(5 Kw heat models only)

In the event the limit switch opens and de-energizes the electric heat, the limit switch will need to be manually reset.

- To reset switch remove the control box cover.
- Locate the limit switch.
- Push in the reset button on the face of the switch. (Refer to illustration above)



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.

















When installing the RC/RH10/20/35/45/80/90 or the RC11/12/21 refer to the charts below for electrical and optional electric heat specifications.

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					
9	115/60/1	1.4	0.09	1.6	0.125	7.4	44	10.4	12.3	15	104	5-15P
	208/230/60/1	0.6	0.08	0.72	0.125	4.1	20	5.4	6.4	15	197	6-15P
	265/60/1	0.67	0.08	0.7	0.125	3.35	18	4.7	5.6	15	240	7-20P
12	115/60/1	1.4	0.09	1.6	0.125	9.7	54	12.7	15.1	20	104	5-20P
	208/230/60/1	0.6	0.08	0.72	0.125	5.1	28	6.4	7.7	15	197	6-15P
	265/60/1	0.67	0.08	0.7	0.125	4.25	26	5.6	6.7	15	240	7-20P
15	208/230/60/1	0.6	0.08	0.72	0.125	6.4	35	7.7	9.3	15	197	6-15P
	265/60/1	0.67	0.08	0.7	0.125	5.4	32	6.8	8.1	15	240	7-20P
18	208/230/60/1	0.6	0.08	0.71	0.09	7.6	45	8.9	10.8	15	197	6-15P
	265/60/1	0.67	0.08	0.71	0.09	6.3	32	7.7	9.3	15	240	7-20P

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	
2	208	1636	5600	7.9	8.5	10.4	15	6-15P	
	230	2000	6900	8.7	9.3	11.5	15	6-15P	
	265	2655	9100	10.0	10.7	13.2	15	7-20P	
3	208	2454	8400	11.8	12.4	15.3	20	6-20P	
	230	3000	10300	13.0	13.6	16.9	20	6-20P	
	265	3983	13600	15.0	15.7	19.5	20	7-20P	
4	208	3271	11200	15.7	16.3	20.3	25	6-30P	
	230	4000	13700	17.4	18.0	22.3	25	6-30P	
	265	5310	18200	20.0	20.7	25.7	30	7-30P	
5	208	4089	14000	19.7	20.3	25.2	30	6-30P	
	230	5000	17100	21.7	22.3	27.8	30	6-30P	

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					
12	208/230/60/1	0.6	0.08	0.71	0.09	5.1	28	6.4	7.7	15	197	6-15P
	265/60/1	0.67	0.08	0.71	0.09	4.25	26	5.6	6.7	15	240	7-20P
15	208/230/60/1	0.6	0.08	0.71	0.09	7.6	45	8.9	10.8	15	197	6-15P
	265/60/1	0.67	0.08	0.71	0.09	6.3	32	7.7	9.3	15	240	7-20P

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

Enviromaster International LLC (EMI) warrants to the purchaser/owner that EMI products will be free from defects in material and workmanship under the normal use and maintenance for a period of twelve months for all components and sixty months on unit compressors from the date of original installation, or fifteen months for all components and sixty-three months on unit compressors from the date of manufacture, whichever comes first.

WHAT WE WILL COVER

EMI will replace any defective part returned to EMI's approved service organization with a new or rebuilt part at no charge. The replacement part assumes that unused portion of this warranty.

WHAT WE DON'T COVER

THIS WARRANTY DOES NOT INCLUDE LABOR or other costs incurred for repairing, removing, installing, shipping, servicing, or handling of either defective or replacement parts.

EMI IS NOT RESPONSIBLE FOR:

- Normal maintenance
- Damage or repairs required as a consequence of faulty installation or application by others.
- Failure to start due to voltage conditions, blown fuses, open circuit breakers, or other damages due to the inadequacy or interruption of electrical service.
- Damage or repairs needed as a consequence of any misapplication, abuse, improper servicing, unauthorized alteration, or improper operation.
- Damage as a result of floods, winds, fires, lightening, accidents, corrosive atmosphere, or other conditions beyond the control of EMI.
- Parts not supplied or designated by EMI.
- Products installed outside the United States or Canada.
- Any damages to person or property of whatever kind, direct or indirect, special or consequential, whether resulting from use or loss of use of the product.

LIMITATION OF WARRANTIES

This warranty is exclusive and in lieu of any implied warranties of merchantability and fitness for a particular purpose and all other warranties express or implied. The remedies provided for in this warranty are exclusive and shall constitute the only liabilities on the part of EMI including any statements made by any individual which shall be of no effect.

FOR SERVICE OR REPAIR:

- (1) Contact the Installer
- (2) Call the nearest Distributor
- (3) Call or write:

An  **ECR International Brand**
ENVIROMASTER INTERNATIONAL LLC
5780 Success Dr., Rome, NY 13440