

RC50 PACKAGED TERMINAL AIR CONDITIONER

Replacement For:
Dunham/Bush Newport Models I, II, III, and IV

STRAIGHT COOL ONLY

Nominal Capacities:
9,000 - 12,000 - 15,000
& 18,000 Btuh

RETROAIRE

The Right Fit for Comfort



Enviromaster International LLC
5780 Success Dr.
Rome, NY 13440
Phone: 1-800-228-9364
Fax: 1-800-232-9364
Email: info@retroaire.com

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

P/N# 240004174, Rev. 1.4 [02/05]

RC50 PACKAGED TERMINAL REPLACEMENT AIR CONDITIONER

INSTALLATION, OPERATION, AND MAINTENANCE GUIDE

P/N# 240002990, Rev. 1.4 [02/05]

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 RC50 Packaged Terminal Air Conditioner. 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 _____

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

SAFETY INSTRUCTIONS

- ▲ Read all instructions before using the RetroAire RC50 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 RC50 PTAC before installation to make certain the voltage shown is the same as the electric supply to the unit.
- ▲ The RetroAire RC50 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 RC50 PTAC.
- ▲ Do not use the RetroAire RC50 PTAC if it has damaged wiring, is not working properly, or has been damaged or dropped.

[Save These Instructions]

DANGER

The RetroAire PTAC must:

- ▲ Be connected to a properly grounded electrical supply with the proper voltage as stated on the rating plate.
- ▲ Have proper over current protection (i.e. time-delay fuse/HACR-Breaker) as listed on the Rating Plate.

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

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INSTALLER RESPONSIBILITIES

This manual has been prepared to acquaint you with the installation, operation and maintenance of this RetroAire RC50 PTAC and to provide important safety information in these areas.

We urge you to read all of the instructions thoroughly before attempting the installation or operation of this 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 this RetroAire RC50 PTAC can be found on the unit. When referring to your unit, always have the information listed on the rating plate readily available.

MODIFICATION AND TAMPERING



Tampering with the RetroAire RC50 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 Intergral Safety Protection

All PTACs rated 250V or less that are cord connected to the power supply are equipped, with a power cord with intergral 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.



Completely read all instructions prior to assembling, installing, operating, or repairing this product. **Inspect all parts for damage prior to installation and start-up. The RetroAire RC50 PTAC must be installed ONLY by qualified installation personnel.**

PRODUCT DESCRIPTION

The RetroAire RC50 is a packaged terminal air conditioner designed to allow owners of Dunham/Bush Newport models I, II, III, IV to upgrade the performance of their room air conditioning and achieve significant efficiency improvement.

This unit is available as a cooling-only model and energy efficiency ratings as high as 9.0 can mean rapid payback of your replacement investment through energy savings.

The RC50 features two fan speeds and a manual fresh air damper. Because the outdoor fan is separate, it does not run in venting or heating modes, thereby saving energy. Whisper quiet operation improves room ambience and a washable, permanent filter makes service a snap. The 20 gauge galvanized steel construction of the chassis ensures long service life.

AIR SYSTEM

- Motors are PSC type with overheat protection.
- Blower deck air stream surfaces are insulated with 1/4" fiberglass or 1/8" volara.
- Filter is washable, permanent, and accessible without tools.

HIGH-EFFICIENCY HEAT EXCHANGER

Coil is seamless rifled copper tubing arranged in staggered configuration with enhanced aluminum fins and tested to 400 psig. The tubes are mechanically expanded for secure bonding to fin shoulders.

CONDENSER SECTION AND REFRIGERATION CIRCUIT

- High efficiency rotary compressor with a five year warranty (standard)
- Automatic expansion valve for low-ambient protection

STANDARD CONTROLS AND COMPONENTS

- Unit Mounted Operating Controls
 - Thermostat
 - Fan Speed Control
 - Heat/Cool System Switch
- Continuous/Cycling Fan Control Switch (unit mount only)
- Manual Fresh Air Damper (RC50 chassis)
- Weather Strip Insulation
- Condenser Duct Kit (field installed)

IMPORTANT: *To ensure proper duct supply, duct depth should have been identified prior to ordering. Verify duct depth as described under chassis installation in these instructions.*

OPTIONS & ACCESSORIES

- Electric Heat (field installed) See Spec & Performance on pg. 11
- 24V Remote Thermostat
- Hydronic Heat Coil
- Hydronic Coil Freeze Protection
- 2 or 3-Way Water Valve
- Sea Coast Coated Coils and Drain Pans

RATING AND TESTING

The RetroAire RC50 is tested and rated in accordance with ARI standards 310/380 and UL 484. Due to ongoing development programs, design and specifications may change without notice.

WARRANTY

All RetroAire products are covered under standard warranty and are backed by Enviromaster International, LLC.

PREPARATION FOR INSTALLATION

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. Remove old unit from wall sleeve for proper disposal.
2. Inspect wall sleeve for rust or damage, clean and repair as necessary.
3. Remove and repair old weather seals and note locations for new seals.
4. Make sure wall sleeve is pitched to the outside by 1/2" and drain holes are open.

ELECTRICAL WIRING

1. Inspect existing wiring for any deficiencies such as cut or frayed wires.
2. All electrical wiring must be run according to NEC and local codes. Check the unit rating plate for circuit ampacity and breaker or fuse size. Use only HACR type breakers and select the proper wire for ampacity rating.
3. If plug and receptacle are used, check for proper fit.

REMOTE THERMOSTAT UNITS RATED 208/230V

Units that are factory wired for remote thermostat and rated 208/230V utilize a multi-tap, low volt transformer for the control circuit. The transformer has separate voltage taps for 208V and 230V supply voltages and is factory shipped wired for 230V. If the actual measured power supply voltage is less than 210 Volts, it is recommended that the transformer tap be changed to the 208V transformer tap.

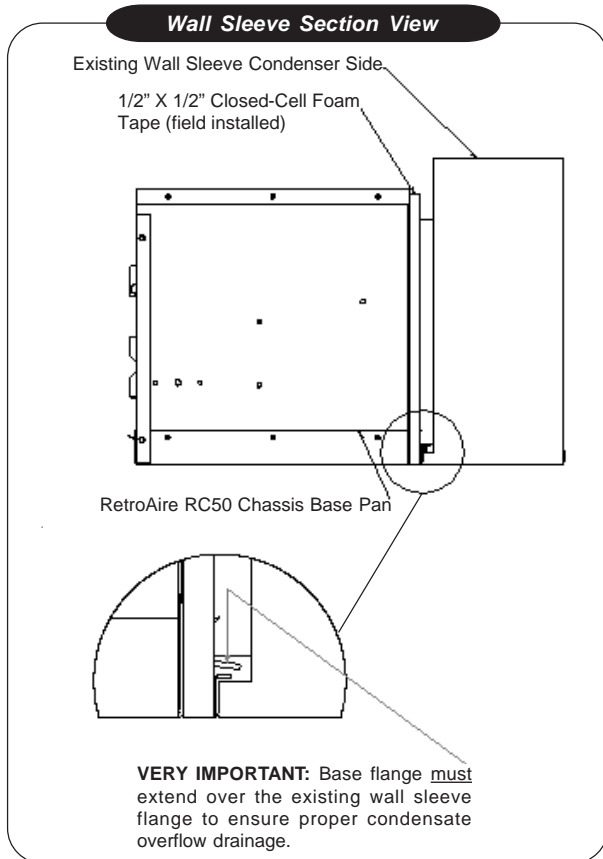
WARNING!! To avoid possible injury or death due to electrical shock, disconnect the power supply by unplugging the line cord or switching off the breaker switch to the unit prior to changing the transformer tap.

With the power completely disconnected from the unit, remove the control cover and locate the control transformer. The high Volt transformer taps are color-coded **Orange for 230V** and **Red for 208V** field supply voltage. Remove the orange tap from its location, clip the terminal and place a wire nut on the end to keep it insulated. Next, locate the Red transformer wire, crimp on an appropriate connector and place it back on the terminal from which the orange wire came. Finally, replace the control box cover and test the unit.

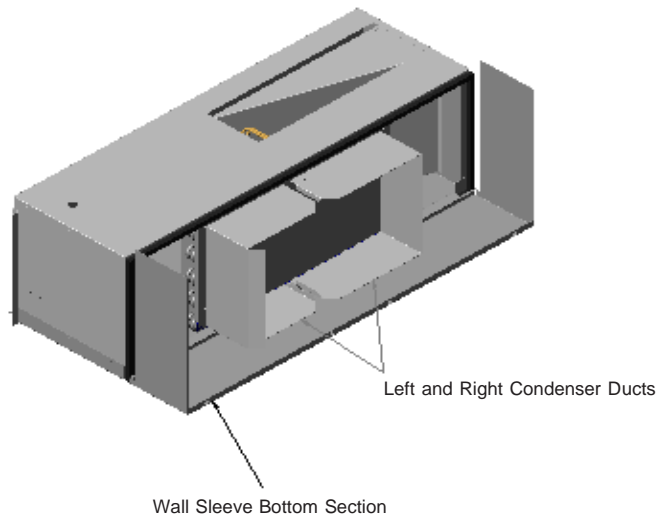
RC50 INSTALLATION INSTRUCTIONS

CHASSIS INSTALLATION

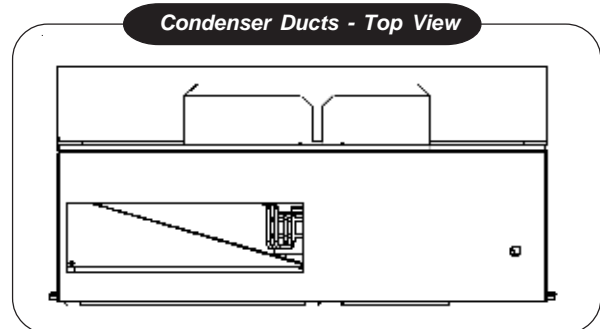
1. Remove unit from carton and inspect the cooling chassis for damage.
2. Inspect the outdoor side (condenser) for proper installation of foam tapes and sealing compound, there should be a 1/2" x 1/2" closed cell foam tape gasket around the perimeter of the condenser side face of the unit.



6. The cooling chassis must have condenser ducts installed to the condenser coil face to prevent any air re-circulation.



IMPORTANT: Verify depth of ducts by installing the unit and measuring from the face of the condenser coil to the outdoor louver.



3. Also, there will be factory installed sealing compound placed on either side of the condenser side flange, around the notches, to prevent premature overflow of condensation, in the event of excess water on the condenser side.
4. Prepare the wall sleeve for installation by removing ALL gasket material and clean the surface where the cooling chassis face will butt against the wall sleeve.
5. Clean out all debris from wall sleeve and drainage holes. inspect for cracks, holes, rust, etc., and repair (if necessary).

The existing wall sleeve (condenser side) may have a center baffle (air splitter), ensure the bottom section of this baffle has a notch in place to allow the drip edge on the chassis to hang over the wall sleeve bottom flange. If it does not, snip and bend away enough metal to provide at least 1" clearance away from chassis drip edge.

7. Retrieve the factory supplied condenser ducts and determine Left from Right as shown above. note that the end flanges will both point inward when installed.
8. Condenser duct installation.
 - a. Remove (2) bottom coil screws (approximately 2" from the drip edge on the left and right).
 - b. Hook top flange of duct behind chassis top flange and secure with screw.
 - c. Replace bottom coil screws.
9. Slide chassis into position
10. Using pry-angles, located on either side of the chassis, pry chassis tight against the wall sleeve.

CHASSIS INSTALLATION (RC50) *Continued*

IMPORTANT: *Ensure that the chassis drip edge extends off the wall sleeve bottom flange for proper drainage of condensate.*

11. After installation, fill base pan with water and run unit to ensure condensate will flow out of the chassis and into the wall sleeve properly, if there is water leakage, repeat step 10.

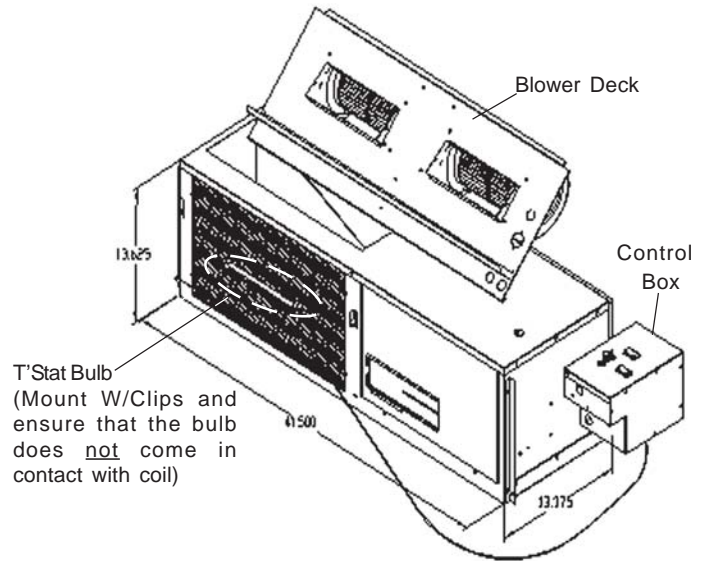
BLOWER SECTION (BC50)

1. Remove old blower deck and install new blower deck with existing thumb-screws or factory supplied thumb-screws.
2. Ensure that wire routing will not interfere with the chassis removal.



3. Plug in all sections to the control box (chassis and blower section), per the wire diagram.

4. Install thermostat bulb clips with rubber grommets to evaporator coil face and position bulb in these clips.



5. Install foam air filter to Velcro strips.

CONTROL SECTION (CC50)

1. Remove old control box and install new box using same thumb screws.
2. Refer to wire diagram to wire blower section and heating element.



FINAL INSPECTION AND START-UP

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 in 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). Items like these can cause serious damage to the chassis and can void the warranty.

SEQUENCE OF OPERATION

THERMOSTAT CONTROLS

The RetroAire RC50 can be equipped with unit mount controls or remote thermostats. Turning the unit mount 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.

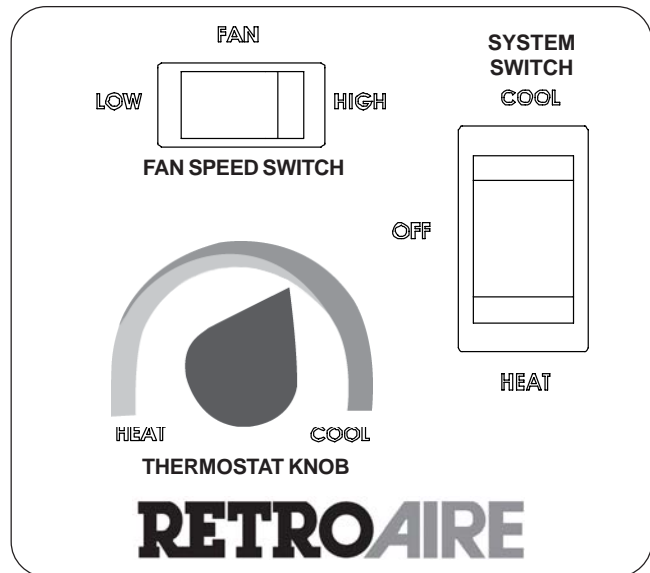
Units with remote thermostats will require operation according to standard thermostat settings. Refer to the operating instructions for specific thermostat used.

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.

COOLING CYCLE

1. Place system switch in the “COOL” position.
2. Rotate thermostat knob (above) clockwise until the compressor and fans start 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.

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.

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.

HEATING CYCLE - ELECTRIC

1. Place system switch in the “HEAT” position.
2. Rotate thermostat knob counter-clockwise until the indoor fans start and the electric coil starts emitting heat. The condenser fan does not run during the heating cycle. After the unit starts 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.

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 existing coil. when the hydronic coil is not replaced, installation of the chassis should follow the instructions in this manual.

SEQUENCE OF OPERATION *Continued*

HEATING CYCLE - HYDRONIC

The RetroAire RC50 is equipped with a 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. RetroAire units with unit mount controls will power a valve that is the same voltage as the unit (ex: a unit rated 208/230V will power a 208/230V valve). Other voltage options are available. Be sure that the value you are using matches the unit.*

- A. Place system switch in "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."

CONTINUOUS/CYCLING FAN CONTROL SWITCH (Unit Mount Only)

This option allows the operator of the RetroAire RC50 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 calls for heat or cooling. When the switch is in the "CONSTANT" position, the evaporator fan will run continuously unless the system switch is turned off.

IMPORTANT: *In heating mode, the indoor fan will continue to run for a short time after the call for heat has ceased to purge the unit of remaining heat for improved efficiency. This feature will only operate in cycling fan mode if the fan switch is in the "OFF" position. Otherwise, the fan will operate continuously.*

CONDENSATE REMOVAL

The RetroAire RC50 is equipped with a slinger ring prop that allows the unit to pick up condensate in the base pan and sling it on the hot condenser coil for re-evaporation.

AQUASTAT CONNECTION

The RetroAire RC50 is supplied with a standard 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 two 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.

CLEANING AND MAINTENANCE

WARNING!! The RetroAire RC50 is designed and constructed for reliability and long life with minimal maintenance but service or repairs should only be performed by qualified service personnel.

CLEANING THE INTERIOR OF THE UNIT

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. Check set-screws 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 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 ½") to the outside to allow for proper drainage.
11. Replace panels and reconnect electrical power.
12. Test unit operation.

CLEANING AND MAINTENANCE *Continued*

CLEANING THE EXTERIOR OF THE UNIT

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 RC50, consult factory for availability and/or proper sizing.*

TROUBLESHOOTING

DANGER!! Before servicing the RetroAire RC50, 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.

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.

FOR SERVICE OR REPAIR

When calling RetroAire for service assistance and/or parts orders you will need to provide: complete unit model number and complete serial number. This information can be obtained from the rating plate attached to the equipment. For your convenience record at time of installation:

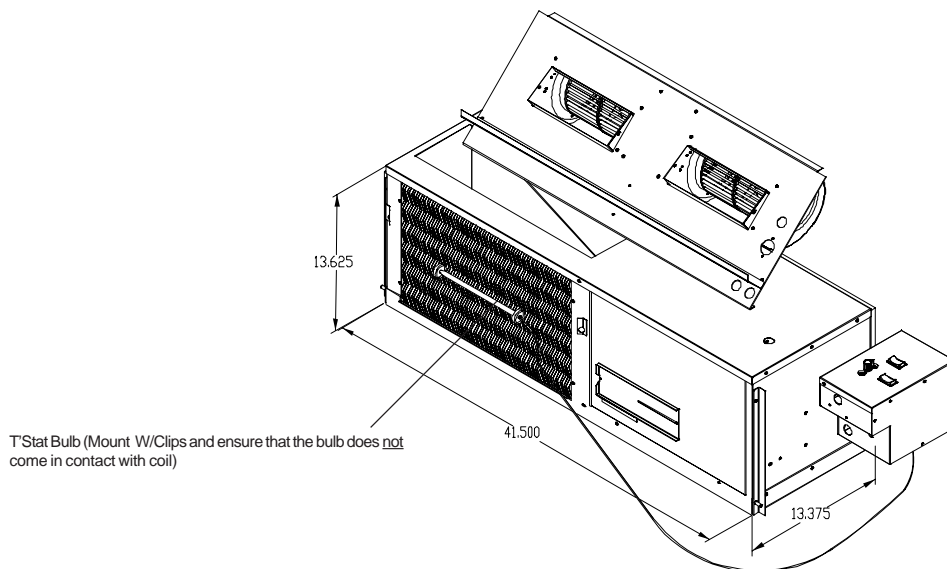
Model#

Serial #

Date Installed

RC50 DIMENSIONS AND SPECIFICATIONS

NOTE: Due to ongoing product development, design, specifications, and performance data may change without notice.



RC50 PERFORMANCE DATA				
UNIT SIZE	COOLING BTUH	EER	EVAP CFM HI/LO	FRESH AIR CFM
09	9,200	9.0	385/335	40/35
12	11,100	8.8	385/335	40/35
15	13,700	8.5	440/385	55/45
18	16,300	8.2	440/385	55/45

ELECTRICAL SPECIFICATIONS												
MODEL NUMBER	VOLTS/HZ/PH ASE	EVAP MOTOR		COND MOTOR		COMPRESSOR		TOTAL AMPS	MCA	MAX FUSE	MIN VOLTS	LINE CORD
		FLA	HP	FLA	HP	RLA	LRA					
9	115/60/1	1.4	0.09	1.25	0.1	7.4	44	10.1	11.9	15	104	5-15P
	208/230/60/1	0.6	0.08	0.71	0.09	3.8	20	5.1	6.1	15	197	6-15P
	265/60/1	0.67	0.08	0.71	0.09	3.3	18.6	4.7	5.5	15	240	7-20P
12	115/60/1	1.4	0.09	1.25	0.1	9.7	54	12.4	14.8	20	104	5-20P
	208/230/60/1	0.6	0.08	0.71	0.09	4.8	26.3	6.1	7.3	15	197	6-15P
	265/60/1	0.67	0.08	0.71	0.09	4.2	28	5.6	6.6	15	240	7-20P
15	208/230/60/1	0.6	0.08	0.71	0.09	6.4	38	7.7	9.3	15	197	6-15P
	265/60/1	0.67	0.08	0.71	0.09	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

OPTIONAL ELECTRIC HEAT SPECIFICATIONS							
HEATER NO.	VOLTAGE	WATTS	BTUH	AMPS	TOTAL HEAT AMPS	MCA	MAX FUSE
3	208	3,200	11,000	15.4	16.0	19.8	20
	230	3,900	13,400	17.0	17.6	21.8	25

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)	
PLUS									
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	

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
Phone: 1-800-228-9364
FAX: 1-800-232-9364
Email: info@retroaire.com