90 Monarch Road
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Installation Instructions

ECE-E
Vertical Through Wall Heat Pump Units with Electric Heat
R-410a

ECOLOGIX HEATING TECHNOLOGIES INC.
REV: 9/7/2021

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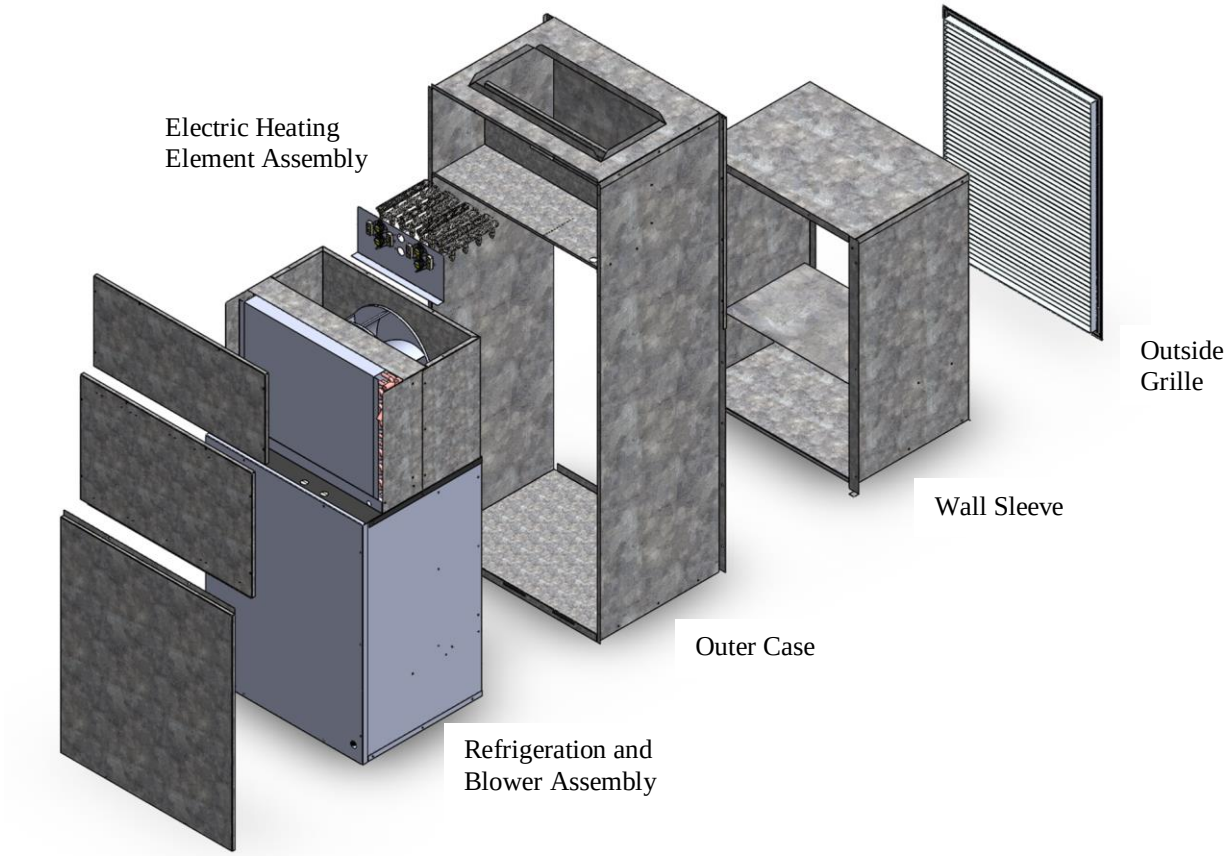
Contents

IMPORTANT NOTES FOR THE INSTALLER

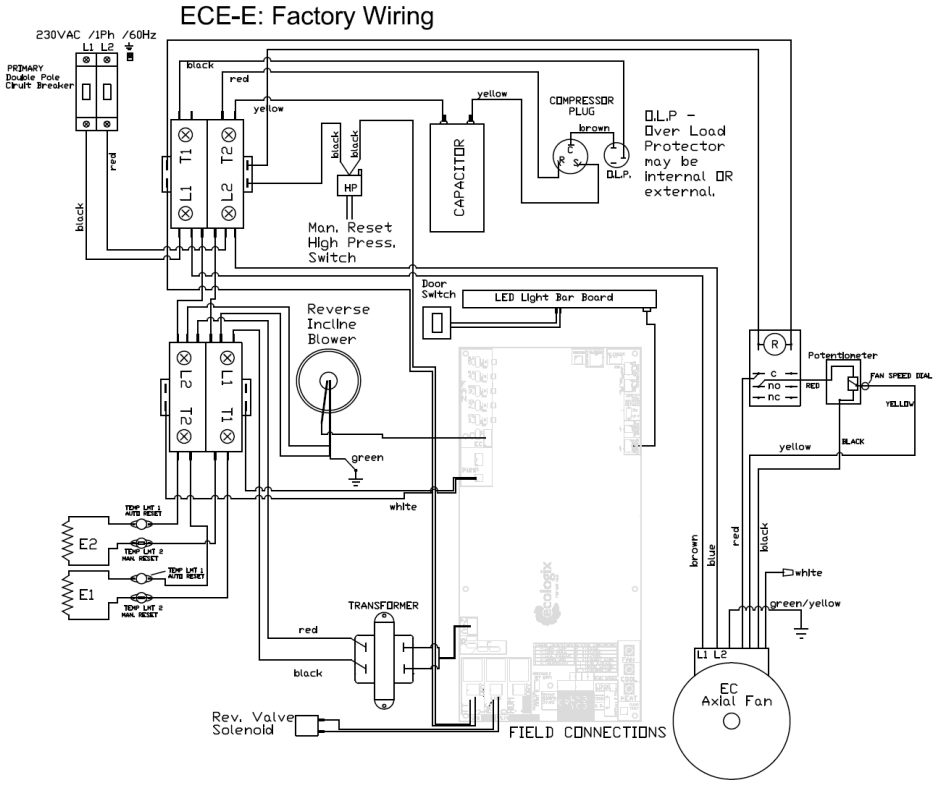
☑	**A Quick Check List**
☐	Is the wall sleeve installed square and caulked to the exterior wall?
☐	Is the grille installed?
☐	Is the base of the sleeve sloped to the outdoors?
☐	Is the disconnect properly sized and installed according to local code?
☐	Is there an installation manual for the homeowner?
☐	Is the low voltage wire connected between the air handler and condenser?
☐	Are the service panels closed?
☐	Is the unit accessible? Are there clearances for service?
☐	Has a filter been installed on the return air side of the unit?

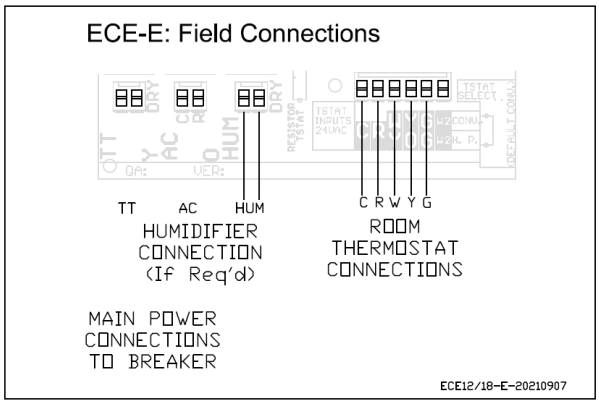
EQUIPMENT ASSEMBLY DETAILS



ELECTRICAL WIRING DIAGRAM

ECE-H Wiring Diagram





This diagram is provided as reference only. Wiring may differ depending on unit. Always refer to correct wiring diagram located on inside cover of electrical panel

Optional items that may be ordered separately or field installed:

- ICM220 solid state lock out
- Cold weather kit c/w/ fan control
- Low ambient lockout
- Crankcase heater

PHYSICAL PROPERTIES

Dimensions

Model	Indoor Cabinet Dimensions (ins)			Wall Sleeve Dimensions (ins)		
	Width	Height	Depth	Width	Height	Wall Depth (Min-Max)
ECE09-E	25	60	19	24	32	10”, 14” 18”
ECE12-E	25	60	19	24	32	10”, 14” 18”
ECE18-E	25	60	19	24	32	10”, 14” 18”
ECE24-E	25	60	19	24	32	10”, 14” 18”

Physical Properties

MODEL:	ECE09-E02	ECE12-E03	ECE18-E03	ECE24-E05
Heating Capacity (Btu/h)	8,470	10,500	13,700	19,200
Heating COP (47F)	3.3	3.3	3.3	3.3
Electric Heating Element (Btu/h)	8,530	8,530	11,600	17065
Cooling Capacity – (Btu/h)	9,100	11,800	18,300	23,400
EER	11	11	11	11
Continuous run speeds - cfm	240-400	240-400	240-400	240-400
Heating Air flow speeds - cfm	320	480	640	800
Cooling air flow speeds – cfm	320	480	640	800
Maximum Airflow (CFM)	800	800	800	800
Max. Ext. Static Pressure (in.wc)	0.5	0.5	0.5	0.5

1. Heating capacities are based on 47FDB/43FWB outdoor and 70FDB/60F WB indoor
2. Cooling capacities are based on 95FDB/75FWB outdoor and 80FDB/67F WB indoor
3. Fan speeds are torque limited to 30%,40% 60% 80% 100% which approximates air flows of 800, 640.480, 320, 240 cfm.
4. All fan speeds are recommended settings. Use temperature rise or temperature drop measurements as described in the installation instructions for setting fan speeds do not rely on this table. This is for initial setting and calculation purposes only.

PERFORMANCE Specifications

MODEL:	ECE09-E02	ECE12-E03	ECE18-E03	ECE24-E05
Heating Capacity (Btu/h)	8,470	10,500	13,700	19,200
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INTRODUCTION

ECE-E VTAC units are complete packaged heat pump heating and cooling units with electric backup heat that are installed through the wall and serviced from inside the dwelling. Their modular design ensures easy install and serviceability. They are ideally suited to high-rise buildings where exterior space and accessibility can be major issues.

The ECE-E comes with a built-in electric element heater for backup to the heat pump system when outdoor temperatures fall below the freezing point.

The ECE-E contains a complete refrigeration system for heating and cooling, eliminating the need for additional line-sets, brazing inside of the suite, and adjusting the system refrigerant charge.

PRODUCT DESCRIPTION

Cabinet

All cabinets have a tough, durable low maintenance G90 galvanized finish.

Cabinet dimensions are compact to provide maximum installation flexibility. Refer to product specifications and installation requirements for more details.

A variety of grilles are available to compliment the building exterior.

The ECE-E unit consists of an Outer Cabinet, Electric Heating Element Assembly, and Refrigeration and Blower Assembly. The Outer Cabinet is designed as a shell that the ductwork connects to and the Electric Element and Refrigeration and Blower Assemblies slide into.

Refrigerant Coils

All coils and internal piping conform to ASTM B68 or ASTM B88 standards.

High-density aluminum fins provide maximum heat transfer for small coil surface.

Electric Heating Coils

All heating coils are 208-230 VAC electric elements used for backup heat to the heat pump system. The controls are interlocked so that the compressor and electric heating elements do not run at the same time.

Fan and Motor

All fans are wide body dynamically balanced for extra quiet operation.

Compressor

Small compressors are available to closely match room loads in small or energy-efficient spaces.

EQUIPMENT SELECTION AND SIZING

Proper sizing of system components is crucial for proper operation.

Steps for sizing and selection:

1) Obtain room by room heat loss and gain
2) Select an ECE-E condenser equal to 80%-120% of the total heat gain.
3) Select ECE-E unit with heating capacity between 100% and 140% of the heat loss. Make sure that the electric backup heat is sufficient to meet the design load conditions.

Note: over-sizing of cooling equipment results in inefficiency, short cycles and poor humidity control.

INSTALLATION

WARNING !

Installation should only be performed by qualified personnel. In addition to this manual, all local codes shall be followed.
Improper installation may void all warranties.

Detailed instructions are shipped with all accessory items and should be followed.

Inspection

Carefully uncrate the equipment. Ensure that the rated voltage and capacity on the nameplate matches the requirement for the installation. If there is damage to the machine, a claim must be made to your carrier immediately. Shipping damage is the responsibility of the purchaser to file all necessary documents with their carrier. Remove any shipping materials.

Location

Consideration must be given to location. The machine must be mounted in an area with adequate clearance and access for servicing. Consideration must also be given to noise and vibration that is normal for operation of this unit. Additional isolation may be required in occupant sensitive locations.

If the machine is installed in a closet or behind a sealed panel, there must be adequate provision for service (2 ft./60cm).

For installation in a concrete, brick or block wall; the wall sleeve must be used. For installation in a wood frame wall, including face brick with proper lintel, the wall sleeve can be omitted. The entire base of the condenser unit must be supported. The cabinet shall be caulked in place at the exterior.

Allow at least six feet clearance in front of the grille outdoors for proper air circulation and heat dissipation.

Operating Environment

Do not install in a corrosive environment containing chlorine, fluorine, solvents or other corrosive chemicals. Do not install in any atmosphere containing explosive or flammable vapours.

Internal controls should not be exposed to temperatures above 105ºF/41ºC and should not operate in a condensing environment.

If the cooling unit is to be operated at temperatures below 50ºF/10ºC, a cold weather kit must be installed.

Mounting – Wall Sleeve

Assemble and install the wall sleeve according to the instruction sheet provided with the wall sleeve. The wall sleeve should be square and installed flush to the outdoor finished wall surface. The wall sleeve can be fastened through the inside face of the sides to the building framing with #10 pan head screws. When doing so, ensure that the screws are at least 8-1/4" back from the inside flange of the wall sleeve to avoid interference with the Refrigerant Assembly when the ECE is installed. The wall sleeve inside flanges can also be used to fasten to the wall framing if the depths match. Do not screw through the base of the wall sleeve. The base of the wall sleeve has a built-in slope to provide adequate drainage. There is no need to slope the condenser outward for drainage. The entire base of the wall sleeve should be properly supported.
Provide flashing and seal outside edge of cabinet to wall to ensure a watertight finish. Make sure drip edge at bottom extends beyond wall finish.

<u>Remember</u> to rough-in power wire and control wire before completing interior finishes. The electrical wires can be located on the left or right side of the unit.

The interior may be finished tight to the wall sleeve and/or the ECE outer cabinet. The outer cabinet is designed to match up with the inside flanges of the wall sleeve. The condenser fan portion of the refrigerant assembly protrudes into the wall sleeve.

Ductwork

Supply trunks may be square or round. SEAL all joints and seams with metal tape or sealing compound. Locate outlets at least 6 inches from outside walls or window coverings.

Ductwork installed in unheated space, such as attics, must be installed between the insulation and the heated space. Provide at least R-12 of insulation above ducts. If cooling is required, the branch and trunk lines must be insulated and sealed with a vapour barrier prior to applying house insulation.

Risk of Freezing

<u>HRV and Fresh Air Connections</u>
If a fresh air duct is required, make connection to return air plenum at least 18 inches from filter. Insulate all fresh air ducts.

If an HRV is to be attached to the return ductwork, the HRV must be interlocked to the air handler controls to ensure the air handler fan is forced to run when the

HRV is in operation. This interlock is required for both summer and winter operation.

ELECTRICAL

WARNING !

Make sure unit is properly grounded. Locate condensing unit on a separate electric circuit. Provide a line of site disconnect according to local code requirements.

The wiring diagram is located on the service door. A copy is provided in this document for reference only. Nameplate data is located on the side of the unit. Ampacity is also shown in the specification table. If there is a difference in ampacity and circuit size between the rating plate and this document, the rating plate shall be followed.

All ECE units operate on 230VAC/1ph/60hz line voltage. All control circuits are 24 VAC.

Use copper conductors only. Connect power wires to terminal lugs in the electrical section. Protect and seal wires where they enter the condenser cabinet.

Low Voltage Control Wiring

Connect low voltage control wire (i.e. thermostat wires) to the control board in the electrical section. Protect and seal wires where they enter the condenser cabinet.

START-UP PROCEDURES

1.Verify power is connected to the contactor in the electrical panel.

2. Verify that the thermostat is installed. Verify that the thermostat wiring is done between the thermostat and control board.

3.Install all service panels of the ECE unit. Ensure that the filter is installed in the air handler section.

4.Turn on the power to the ECE unit. Set the room thermostat for heating or cooling to test the systems functionality. In heating, the unit should bring on the indoor fan, outdoor fan, and compressor. In cooling, the unit should bring on the indoor fan, outdoor fan, compressor, and energize the reversing valve. On a W2 or if the outdoor temperature is below 0C, the unit should bring on the indoor fan and the backup electric heating element. Note: some thermostats and air handlers have a five-minute lock-out delay.

SERVICE AND MAINTENANCE

WARNING !

Service should only be provided by qualifies personnel. Disconnect electrical supply before opening service panels.

Wiring

Examine wires for signs of pinching, fraying or charring. Replace as necessary.

Condenser Coil

Examine the condenser coil for lint, debris or damage. Wash or vacuum if necessary.

Fan and motor

Check fan for dust once a year. The fan is accessible and removable through the top panel. If dirty, vacuum to remove dust. Keeping the fan blades clean will reduce noise and improve the capacity and efficiency of the cooling system.

Filter

All ECE-H units require a filter on the return air to the unit. This filter should be inspected monthly and replaced as required. Replacement filters are available from Ecologix or can be sourced from your local hardware store.

Evapourator Coil

At the start of each cooling season, check the drain connection to the cooling coil to ensure it is free of debris. If a plugged air conditioning coil is suspected, call a service technician for testing and cleaning.

TROUBLESHOOTING

WARNING !

Service should only be performed by qualified personnel. Take proper care to disconnect voltage supply. Use caution when working near charged capacitors.

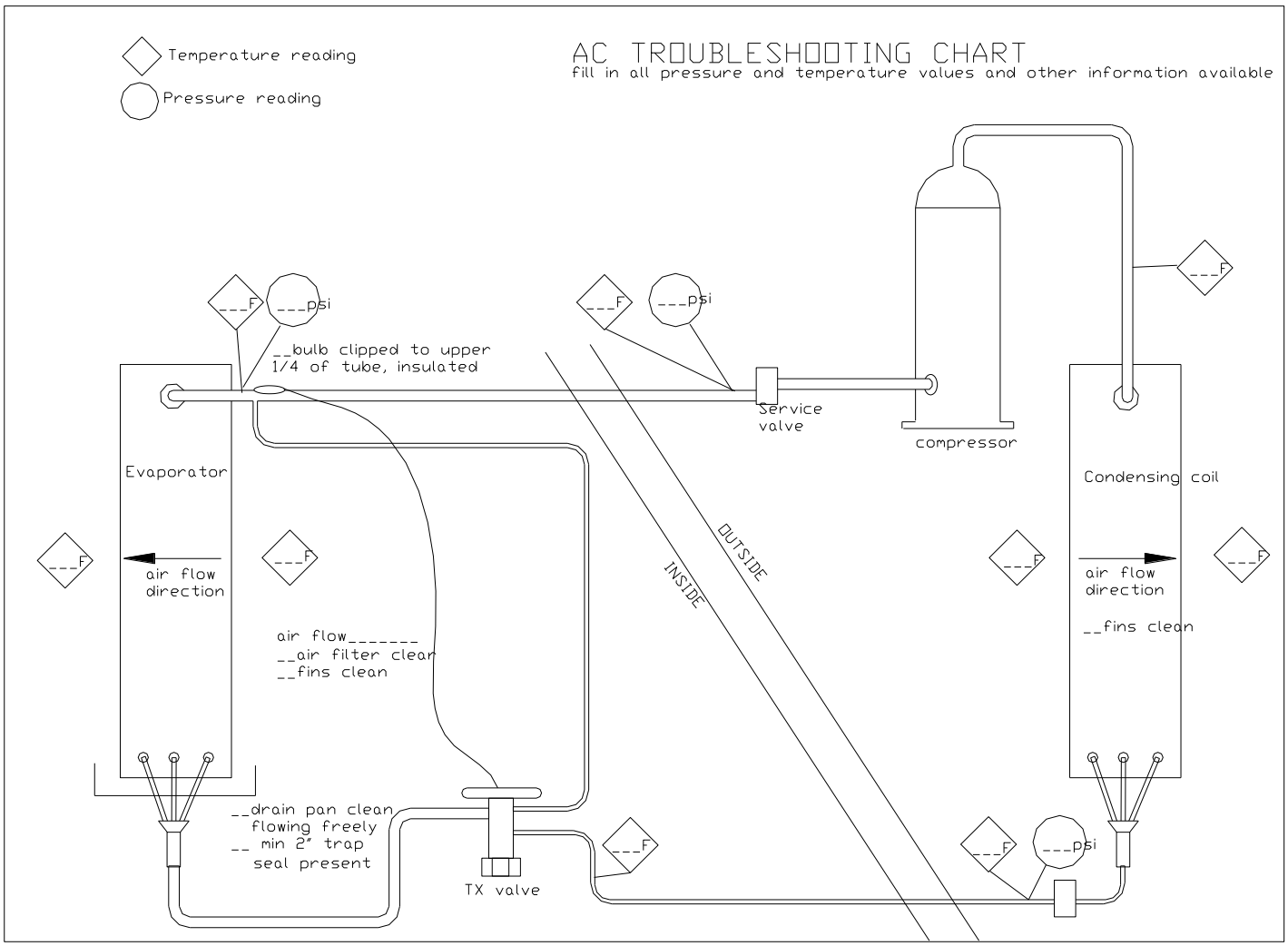
Symptom	Cause	Check
Fan and compressor will not operate	1. Power off 2. Improperly wired 3. Loose connections 4. 24vac supply 5. Thermostat 6. Firestat/Freezestat	1. Check main fuse/circuit breaker and remote disconnect. Measure power and control voltages at condenser. 2. Check power and control wiring. Refer to wiring diagram. 3. Check wiring. 4. Measure voltage and check ampacity (should be at least 40VA, replace transformer if faulty or under-sized.

		5. Thermostat or air handler may have a delay of up to five minutes. Check thermostat settings. Disconnect thermostat and apply 24vac directly from air handler. If it operates, fault is at thermostat or a.h. control. 6. Determine cause of trip. Repair/reset/replace Firestat/freezestat if necessary.
Fan operates, compressor does not	Safety lock-out	1. Reset thermostat 2. Check manual reset high pressure switch.
Compressor hums, won't start	1. Low voltage or wrong voltage 2. Capacitor problem	1. Check wiring and voltage at unit, check wire size, check for loose wires. 2. Test compressor capacitor, replace if necessary
Fan starts but cuts out	1. Incorrect or low voltage 2. Capacitor problem 3. Doesn't turn freely 4. Seized 5. High internal amperage	1. Check wiring and voltage at unit, check wire size, check for loose wires. 2. Test fan capacitor, replace if necessary 3. Oil motor, check bearings, replace fan motor if necessary. 4. Replace fan motor 5. Change to lower fan speed
High suction pressure	1. Excessive evap. Air 2. Excessive load 3. High latent heat	1. Confirm correct amount of evap. Air, adjust air handler air flow. 2. Estimate space cooling load and compare to unit capacity. Replace with larger cooling unit if necessary. 3. Estimate space cooling latent load and compare to unit latent capacity.
High discharge pressure	1. Insufficient air over condenser. 2. Plugged or restricted air over condenser coil	1. Adjust condenser fan speed. 2. Wash or vacuum condenser coil.
Thermostat call error	1. Thermostat issue (simultaneous heat & cool call) 2. Alarm condition	1. Check status lights on control board to see if the call is being seen by the control. 2. Check error lights on board to see

		if there is a thermostat error.
Backup electric heat doesn't come on	1. High limit switch tripped 2. Failed contactor. 3. Failed 'Pump' relay on control board	1. Check to see if the manual reset high limit switch(es) has tripped by pressing the reset button. 2. Check to see if there is 24 VAC at the heating element contactor coil. 3. Check to see if the LED light at the PUMP output on the board is turning on. Also check to see if it is providing 24VAC to the heating element contactor.
Fan runs for cooling but not heating	1. Room thermostat may be connected improperly.	1. Refer to wiring diagram for proper installation

If you require diagnostic assistance, complete the Troubleshooting chart and send to your distributor.

START UP INFORMATION AND TROUBLESHOOTING CHART



WARRANTY

This product is warranted by Ecologix Heating Technologies Inc to be free from defects in materials and workmanship that affect product performance under normal use and maintenance within the applicable periods specified below. Replacements furnished will carry only the un-expired portion of the original warranty.

Two-Year Parts

Ecologix Heating Technologies Inc will provide replacement parts for ANY part that fail within two years of purchase, subject to the **terms** below.

Five-Year Parts

Ecologix Heating Technologies Inc will provide replacement parts for compressor, refrigerant coil, water coil, cabinetry and piping that fail within five years of purchase, subject to the **terms** below.

Terms

- Reasonable proof of original purchase date must be provided in order to establish the effective date of the warranty, failing which, the effective date will be based on the date of manufacture plus thirty days.
  The warranty does not cover failure or damages caused by:
  - improper installation or operation
  - accident, abuse or alteration
  - operation of device at temperatures or pressures outside of the rated capacities
  - corrosive operating environment
  - equipment moved from original installation location
- Replacements furnished under this warranty will be F.O.B. Ecologix Heating Technologies Inc product distribution points in the United States and Canada. They will be invoiced at regular prices. The account will be credited the full amount when the defective part is received by Ecologix, examined and approved as a valid warranty.
- Warranty applies to the original purchaser, but may be transferred to another owner provided the equipment is not moved from the original installation site.
- This warranty does not apply to labour, freight or any other cost associated with the service repair or operation of the product.
- Ecologix shall not be liable for any direct, special, incidental or consequential damages caused by the use, misuse, or inability to use this product.
- Ecologix is under no legal obligations to rectify, including but not limited to, lost profits, downtime, good will, damages to, or replacement of equipment and property
- Purchaser assumes all risk and liability of loss, damage or injury to purchaser and purchaser's property and to others and their property arising out of the use, misuse or inability to use this product.