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Hensley Thermodynamics  
1.830.370.2362

# HT Heating and Cooling System HC 5000 Series User Manual & Installation Guide





# Manufacturer Information

## About Hensley Thermodynamics

Hensley Thermodynamics, Inc. is a manufacturer focused on the design and manufacture of affordable, efficient, easy to use and easy to maintain systems for everyone from major industry to the individual hobbyist that have personnel and equipment that require heated or cooled air.

### Hensley Thermodynamics

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HT is used herein as shorthand notation to refer to Hensley Thermodynamics.

HT System is used herein as shorthand notation to refer to the Hensley Thermodynamics Heating and Cooling System.

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Instructions in English

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THIS USER MANUAL & INSTALLATION GUIDE  
APPLIES TO THE FOLLOWING UNITS:

**HT HEATING AND COOLING SYSTEM**

MODEL **HC52301**

MODEL **HC52303**

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## Important Information



Read this **User Manual & Installation Guide** carefully before you begin HT Heating and Cooling System installation, operation, or service. This manual contains important information. Failure to read this manual can result in personal injury or damage to your HT System.


## Abbreviations and Definitions


Abbreviation	Definition
EST	Energy Storage Tank
GPM	gallons per minute
HT	Hensley Thermodynamics
HT System	Hensley Thermodynamics Heating and Cooling System
PSI	pounds per square inch
SEER	Seasonal Energy Efficiency Ratio
COP	Coefficient of Performance
BTU	British Thermal Unit


## Safety


Safety instructions must be followed when you install, operate, inspect, or perform maintenance or service on this equipment. If ignored, physical injury or death may follow, or damage may occur to the equipment. Always observe applicable safety precautions when using this equipment.

## Recognizing Safety Information in this Manual

This is the safety-alert symbol  when you see this symbol on the unit and in this manual, be alert to the potential for personal injury or equipment damage. Understand these signal words; DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol.

 **DANGER:** Identifies the most serious hazards that will result in severe personal injury or death.




 **WARNING:** Identifies hazards that could result in personal injury or death.

 **CAUTION:** Identifies unsafe practices, which would result in minor personal injury or product and property damage.

**NOTE, TIP and IMPORTANT:** Used to highlight suggestions, which will result in enhanced installation, reliability, or operation.

## Equipment Labels, Symbols and Meanings

The following labels and symbols are used in/on the Hensley Thermodynamics Heating and Cooling System.

Symbol / Label	Purpose / Meaning	Location
 	Hazardous voltage may cause severe injury or death. Only Qualified and Authorized Personnel may access areas marked with this label.	Condensing Unit
	Hazardous voltage may cause severe injury or death. Only Qualified and Authorized Personnel may access areas marked with this label.	Recirculating Pump
<b>Make-up</b>	Indicates the Make-up valve for circulating water.	Front panel to the right of the Make-up Valve.
<b>Supply</b>	Indicates the Supply valve for supply of the recirculating water to the "IN" on Air Handler.	Front panel above the Supply valves.
<b>Return</b>	Indicates the Return valve for return of the recirculating water from the "OUT" on Air Handler.	Front panel above the Return valves.

### Access by Qualified Personnel Only

Access to the HT System shall be restricted to properly trained and qualified personnel who are familiar with the potential hazards of equipment that uses high voltages, high temperatures, low temperature, refrigerant and components under pressure.



## Freezing Temperature Precautions

If the entire HT Central Unit is placed outside, precautions must be taken to protect the HT Central Unit from temperatures 35°F or below. If the central unit is exposed to freezing temperatures without the proper precautions, the following issues may occur: the freeze stat will trip and require a manual reset; exterior and interior water lines will freeze and possibly rupture, causing equipment failure.

If the central unit will be exposed to temperatures 35°F or below, we suggest the HT System be connected to inside plumbing, the HT System is left turned on continuously and the control valves (Supply, Return and an insulated Make-up) on the front of the Energy Storage Tank cabinet be turned to the open position. Allowing the HT central unit to run continuously will create sufficient heat within the unit to protect against freezing and the freeze stat being tripped.

If these precautions cannot be met, the HT central unit should be stored inside.

## Electrical Precautions

Only properly trained and qualified personnel are authorized to perform work on an energized system.



### WARNING

To prevent electrical shock:

- The HT central unit must be grounded through your electrical power source.
- The HT central unit must be powered off and disconnected from the main power supply prior to installation, maintenance, moving, and decommissioning.

## Emergency Shutdown

In case of emergency, disconnect power to the HT Heating and Cooling System at your electrical power source.



## Structural Support

The HT heat pump condensing unit is mounted on steel legs; however, underlying, level and structurally sound support must be provided.



### WARNING

Failure to provide proper support may result in personal injury and / or damage to the HT central unit.

## Mechanical Strength

Do not stack, mount or lean anything on the HT central unit or air handlers.



### WARNING

External loads or stresses placed on or against the HT central unit or air handler may result in personal injury and / or damage to the HT System.

## Product Description

### Purpose

The Hensley Thermodynamics Heating and Cooling System (HT System) provides heating or cooling to spaces where traditional HVAC systems are ineffective and expensive.

### HT System HC 5000 Series Model Configurations

All HT System models include a central unit (heat pump condensing unit and energy storage tank) and one air handler.

HC52301 5 ton central unit single phase – 230V

HC52303 5 ton central unit three phase – 230V

Individual air handlers can be added to the HT Heating and Cooling System for up to three air handlers per central unit.

HTAH1 HT Air Handler 120V

**NOTE:** The HT System is not intended for use other than described in this manual. To prevent damage to the HT System and voiding the warranty, call the Hensley Thermodynamics Engineering Department at 1-830-370-2362 before using the HT System beyond the scope of this manual.



### CAUTION

To prevent damage to the HT System and voiding the warranty, only use water as a coolant.

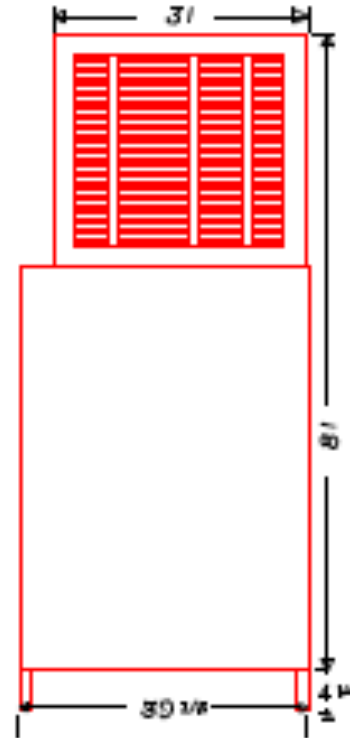
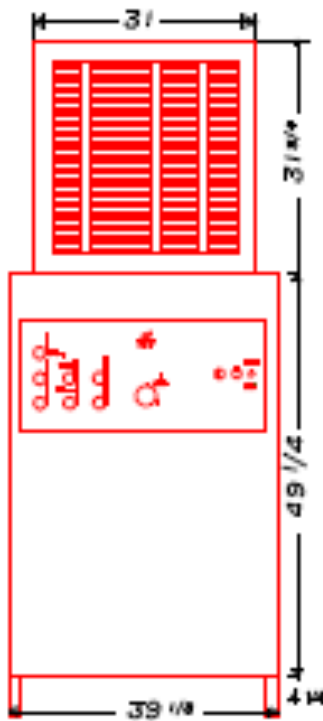
For questions about using other coolants, call the Hensley Thermodynamics Engineering Department at 1-830-370-2362.

## Decibel Levels

The HT Central Unit is quiet with a maximum decibel level of 74. This low decibel level does not overwhelm normal conversation so the unit can be placed in the work environment.

## Dimensions and Weight

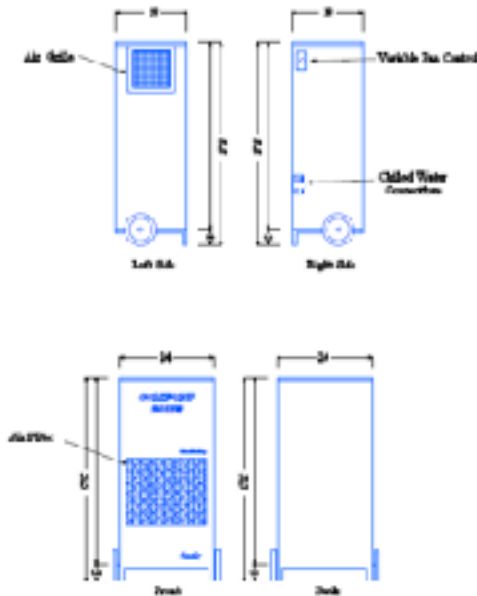
HT central unit	Weight	Width	Length	Height
Empty	850 Pounds	39 <sup>5</sup> / <sub>8</sub> inches	39 <sup>5</sup> / <sub>8</sub> inches	81 inches
Barrel filled with water	1300 Pounds			



HT central unit front view

HT central unit side view

	Weight	Width	Length	Height
HT Air Handler	100 Pounds	24 inches	18 inches	51 ½ inches



## **Product Components**

The HT Heating and Cooling System are comprised of the following major components:

### **Condensing Unit**

A 14 SEER heat pump condensing unit manufactured by Carrier and contains the environmentally friendly R410A Puron® refrigerant.

### **Recirculating Coolant Reservoir**

Holds 7.3 gallons of recirculating water for heating or cooling water circuit.

### **Make-up Coolant Float Valve**

Maintains the correct level in the recirculating coolant reservoir tank.

### **Recirculating Pump**

Recirculates cooling/heating water from coolant reservoir tank, through immersed bare tube evaporator coil, thru flexible lines, thru air handler and returning to coolant reservoir tank.

### **Energy Storage Tank**

The Energy Storage Tank located within the HT central unit, holds approximately 55 gallons of water that is utilized for two specific purposes:

1. The thermo-conductive property of water enables efficient heat transfer, and
2. The water stores excess energy to be used when the refrigeration system cycles off.

The recirculating flow-through coolant lines are submerged within this R-10 insulated Energy Storage Tank and the recirculating coolant is efficiently chilled on the way to the equipment. Fill the Energy Storage Tank barrel with clean water upon installation and secure the lid. The water in the barrel stays in the barrel and you will only need to check the water level during periodic inspections.

## **HT Heating and Cooling System Functions**

The HT System performs 2 essential functions:

- Refrigeration of water
- Distribution of air generated by chilled or heated water

- Recirculation of water

## Refrigeration

The HT Heating and Cooling System use coil technology to chill your equipment recirculating water. Immersed inside the 55 gallon energy storage tank are separate copper lines containing recirculating water and refrigerant.

In the cooling mode, heat is removed from the recirculating water lines **and** the water contained within the energy storage tank. When the water within the energy storage tank reaches approximately 45 degrees, the refrigerant system cycles off. At this time, there are approximately 11,000 BTUs of energy stored within the 55 gallons of water in the energy storage tank. When the water in the energy storage tank reaches 52 degrees, the refrigeration cycles on again to continue cooling the recirculating water and the water in the energy storage tank.

In the heating mode, heat is added to the recirculating water lines **and** the water contained within the energy storage tank. When the water within the energy storage tank reaches approximately 120 degrees, the refrigerant system cycles off. At this time, there are approximately 60,000 BTUs of energy stored within the 55 gallons of water in the energy storage tank. When the water in the energy storage tank drops to 114 degrees, the refrigeration cycles on again to continue heating the recirculating water and the water in the energy storage tank.

## Thermostats

Within the energy storage tank there are two thermostats, one maintaining the range of 45-52°F and one maintaining the range of 114-120°F.

Within the recirculating reservoir there are also two thermostats, one maintaining the recirculating coolant temperature and a freeze-stat preventing the system from freezing should one of the cooling thermostats fail.

## Recirculation

The recirculating water pump draws suction from the water reservoir tank, through immersed bare tube evaporator coil, thru flexible lines, thru air handler hydronic coil and returning to water reservoir tank.

### The recirculating water system consists of 5 parts:

1. Water reservoir tank located in the base of the HT central unit
2. Refrigerant and recirculating water lines submerged in water within the energy storage tank
3. Water recirculation pump
4. Air handler

A low water level switch located in the recirculating water reservoir tank will interrupt power to the recirculation pump in the event of low recirculating water conditions.

## Installation Instructions

The HT Heating and Cooling System are typically delivered on a pallet.

1. Review the **Location Checklist** below before installing the HT System.
2. Use a pallet jack or forklift to safely move the HT System to the selected location.
3. Carefully remove any protectant wrapping or crating material.
4. Use a pallet jack to lift the HT central unit (heat pump condensing unit and energy storage tank) off of the pallet and set into position.
5. Roll air handlers to desired location.

## Location Checklist

Review the following items to help determine the best location for the HT System:

- The HT central unit must be installed on a level surface indoor or outdoor. If placing outdoors, precautions must be taken against freezing temperatures. Please refer to the section “Freezing Temperature Precautions”.
- The HT central unit can be separated (field split) with the condensing unit located in one area and the energy storage tank (lower half of the HT central unit) located in another area. To separate the unit, refer to the section “How to Field Split the HT central unit”.
- The HT central unit (heat pump condensing unit and energy storage tank) is designed for use with an ambient temperature minimum of 36°F and maximum of 125°F.
- Allow sufficient airflow around and vertical discharge above the Condensing Unit for proper operation.

Proper Clearance	Measurement
Around all sides of HT central unit	18 inches
Above top of condensing unit	4 feet

- Access to required electrical source as follows:

Model Number	Phase	Freq. (Hz)	Voltage (Volts)	Rated Load Amperes (RLA)	Minimum Circuit Amperes	Fuse/HACR Breaker	
						Min Amps	Max Amps
HC52301	1	60	230	26.4	34	40	50
HC52303	3	60	230	16	19.6	25	30

- Contact a licensed electrician and your local power company to ensure that installation wiring complies with local fire, safety and electrical codes.
- Access to a clean water source.
- To prevent heat gain or loss to the Supply line, place the HT central unit near your equipment and insulate the water line. (Insulating the line also protects surrounding surfaces from condensation or sweating from the chilled water.)

## How to Access the Energy Storage Tank

1. If the HT Heating and Cooling System are powered on, press the ON/OFF push button power switch to turn the HT System off. The light will extinguish to indicate that the HT System is powered off.



**ON**



**OFF**

**Push Button Power Switch**

2. Disconnect electrical power from the HT System.
3. Remove the left side panel of the Energy Storage Tank compartment by unscrewing the 7 screws around the perimeter



4. Loosen and remove the clamp ring on the Energy Storage Tank.



5. Lift off and remove the Energy Storage Tank lid.



## How to Fill the Energy Storage Tank

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**⚠ CAUTION** Do **not** add any chemicals to the Energy Storage Tank; possible damage to the HT System may occur. Adding chemicals to the Energy Storage Tank will void the warranty.

Refer to [“How to Access the Energy Storage Tank”](#)

1. Fill the Energy Storage Tank with clean water to the water line indicator located on the inside of the tank. (Approximately 55 gallons.)





2. Replace the Energy Storage Tank lid securely.
3. Replace and fasten the Energy Storage Tank ring onto the Energy Storage Tank.
4. Replace the side panel by securing all 7 screws.

## Attaching Make-up, Supply and Return Lines

**NOTE:** The Make-up, Supply, and Return valves are all ½" NPT valves.

**NOTE:** Use a backup wrench to secure coolant valves while installing connections to prevent damage to the lines.

1. Attach the Return line *from* your air handler to the bottom (Return) valves.
2. Attach the Supply line going *to* your equipment, to the middle (Supply) valves.
3. Attach the line from your Make-up water source (coolant tank or water hose) to the top (Make-up) valve.



**Valves Shown in Closed Position**

**TIP:** To maintain the chilled water temperature and to prevent heat gain of the chilled Supply line, the HT central unit either needs to be close to the equipment or the Supply line needs to be properly insulated. This is especially important if the Supply line is exposed to high temperatures or hot surfaces.

**TIP:** The chilled water leaving the HT central unit will be typically below the dew point so condensation may occur. Properly insulate the Supply line to prevent nearby surfaces from condensation damage.

### Reminder about the Water in the Energy Storage Tank

This HT Heating and Cooling System is a recirculating system with recirculating water flowing through a pipe that is submerged in the Energy Storage Tank. This recirculating water pipe is chilled/heated by refrigerant lines **and** the water within the Energy Storage Tank. The purpose of the water in the Energy Storage Tank is to store energy only. Do not remove water from the Energy Storage Tank during use.

## Wiring Electrical Power to the HT Heating and Cooling System

**⚠ DANGER ELECTRICAL SHOCK HAZARD – Disconnect Main Power!**

Before installing, modifying, or servicing the HT System, your main electrical disconnect switch must be in the OFF position. Your setup may have more than 1 (one) disconnect switch. Lock out and tag switch(es) with a suitable warning label(s).

All Electrical Work Must Be Completed By a Qualified Person

Wire according to all national, state and city electrical codes.

Failure to follow this warning could result in personal injury or death.

 **CAUTION PREVENT REVERSE WIRING OF 3-PHASE**

As with all typical 3-phase systems, you can accidentally wire the HT System incorrectly to cause the compressor motor to run backwards. This is evident by excessive compressor noise, no heat being exhausted by the condenser fan within 1 minute, and recirculating water not cooling. Reverse any two leads to change the phase for proper rotation. Not correcting the wiring will cause the compressor to overheat, turn off, and stay off until the compressor protector has sufficiently cooled.

 **CAUTION PREVENT BREAKAGE OF LINES - *Fill Energy Storage Tank before Applying Power***

To prevent freezing and breakage of recirculating water lines, the Energy Storage Tank **MUST** be filled with water before power is applied to the HT System.

 **CAUTION PREVENT SKIN DAMAGE – *Do not Touch Refrigerant Lines in Storage Tank***

Refrigerant lines in the Energy Storage Tank can operate at temperatures below freezing. Touching these lines can freeze skin.

**NOTE:** Operating the HT System on improper line voltage will void the warranty.

**NOTE:** Do not connect the HT System to an electrical source that has power fluctuations beyond approved limits.

## Wiring Instructions


1. Connect proper voltage to condensing unit.  
See applicable data plate on condensing unit.
2. Install proper size wire to the “Line In” connections in the condensing unit electrical compartment.
3. Attach proper ground.
4. Reinstall cover on condensing unit.

## HT Heating and Cooling System Operation

Your HT System arrives pre-set and ready to use as soon as:

- Proper electrical connections are made,
- Energy Storage Tank is filled with water,
- Coolant and heating connections attached, and
- Air handlers are attached.

**TIP:** If the condensing unit does not come on upon initial installation, the freeze stat may have tripped due to unit being exposed to below 35°F during shipping or storage. See section “Freeze Thermostat” for instructions on how to reset the freeze stat.

 **CAUTION** Prevent damage to your equipment and/or the HT System by confirming the following:

1. Energy Storage Tank has been properly filled.
2. Your equipment recirculating pump is turned on.
3. Your make-up source is turned on.
4. Your HT central unit is left on or stored during freezing temperatures.

## How to Turn On the HT Heating and Cooling System

1. Press the HT System ON/OFF push button power switch located on the front panel.
2. Verify the power indicator light in the switch is illuminated.



*Power Light Illuminated*

## How to Turn Off the HT Heating and Cooling System

1. Press the HT System ON/OFF push button power switch.
2. Verify the indicator light in the switch goes out.



*Power Light Off*

## How to turn On the Heating mode

1. Flip the Heat/Cool switch located on the front panel to Heat.

## How to turn On the Cooling mode

1. Flip the Heat/Cool switch located on the front panel to Cool.



## Maintenance, Repairs and Storage

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**WARNING** To prevent electrical shock, the HT System (condensing unit, energy storage tank and all air handlers) must be disconnected from all electrical sources during maintenance and repair.

### General Maintenance

The HT System is designed to be virtually maintenance free when operated under normal working conditions.

As long as the Energy Storage Tank is securely sealed, water will not escape. If you move the HT central unit after the tank has been filled, it is recommended that you visually inspect the water level.

The condensing unit requires only routine maintenance as required with a standard air conditioning condensing unit. If you have a yearly contract with an air conditioning service company, ask them to inspect your HT System condensing unit during your yearly inspection.

Clean air handler air filters regularly. Once a week or more often in dirty/dusty conditions.

### Repairing Components

Other than the general maintenance outlined in the sections below, do NOT attempt to repair any HT System components unless previously authorized in writing by Hensley Thermodynamics.

**Unauthorized repairs will VOID warranty.**

#### Contact Technical Support:

Telephone: 1-830-370-2362 Email: Support@HTheatandcool.com

8:00 a.m. to 5:00 p.m. Central Time, Monday - Friday

### Draining Water Reservoir Tank

Keep the reservoir clean check periodically.

**TIP:** Some spilling of water will occur. A drain pan placed under the front of the HT central unit is recommended to catch the leakage of water while attaching a drain hose. **NOTE:** The recirculating coolant reservoir tank holds approximately 7.3 gallons.

#### How to Drain the Water Reservoir Tank

1. Close the Make-Up valve.
2. Remove both side panels of the HT energy storage tank cabinet.
3. Remove the lower section of the front panel.



4. Disconnect the cap on the water reservoir side by unscrewing the brass cap and then *quickly* attach a garden hose or appropriate drain hose to allow draining of the reservoir tank into an appropriate container.



5. Allow tank to drain, clean interior of reservoir tank with clean cloth, replace brass cap and refill reservoir tank by opening up Make Up valve. Replace all panels in reverse order (lower front panel first).

## Replacing Make-up Float Valve

Over time, age and exposure to water will naturally degrade the rubber washer on the float valve. **If the rubber washer fails, the water tank will overflow. To Replace the Float Valve Rubber Washer**

1. Close Make-up valve.
2. Remove both side panels of the HT Energy Storage Tank Cabinet.
3. Remove lower section of front panel.
4. Remove recirculating reservoir tank lid.
5. Disconnect float valve assembly from water line brass connection.



6. Remove brass ¼" 20 screw from front of the water reservoir tank and remove float valve assembly.



7.  
8. Remove cotter pin.

8. Remove Float.




9. Replace rubber washer.  
10. Reassemble in reverse order.  
11. Attach front panel of HT Energy Storage Tank Cabinet, and then attach side panels.

## Storing the HT System while Not in Service

To prolong the life of the HT System when taking the unit out of service, it is recommended that all water is removed from the Energy Storage Tank and reservoir tank, and purged from all associated piping; **especially** if the HT System will be stored in a location that could potentially freeze.



 **CAUTION** Prevent component damage/rupture by removing/purging all water

 **CAUTION** Prevent component damage/rupture by removing/purging all water and refrigerant from the HT System if the unit is taken out of service.

### How to Remove Water from the Energy Storage Tank

1. Turn off the HT System by pushing the ON/OFF push button switch located on the front panel. The light in the switch will go out.
2. Disconnect the HT System from your electrical power source.
3. Access the Energy Storage Tank by removing the left side panel of the cabinet.
4. Remove the tank ring and the tank lid.
5. Either siphon or pump the water out of the tank.

### How to Remove Water from Recirculating Reservoir Tank

1. Remove both side panels of HT Energy Storage Tank Cabinet, and then remove front lower panel.
2. Drain reservoir tank by following instructions in section “Draining Reservoir Tank”.
3. Remove excess coolant in the bottom of the reservoir by using a clean rag or wet-dry vac.

### How to Remove Water from the Recirculating Lines

1. Turn off your air handler.
2. Turn off the HT System by pressing the ON/OFF push button power switch located on the front panel.
3. Close Make-up, Supply and Return valves.
4. Disconnect Make-up line, Supply and Return lines being sure to drain water in an appropriate container.
5. Open Supply and Return valves.
6. Apply no more than 60 psi of pressure to one of the valves so that when under pressure the water escapes from the other valve. (Alternatively, a wet-dry vacuum can be used if you seal off the vacuum head to create sufficient suction. There isn't that much water in the line but it must be removed.

### Freeze Thermostat

If the HT System has been stored or shipped in temperatures less than 35° F, the freeze thermostat (freeze stat) will trip. This thermostat, by design, requires a manual reset.

Indications of a tripped freeze stat are the recirculating pump is running, but the condensing unit on top is not running and the HT System is not cooling or heating.

**NOTE:** If the freeze stat trips during operation, turn the HT System off and troubleshoot the Energy Storage Tank and recirculating tank thermostats.

### How to Reset the Freeze stat

1. Remove the right side panel of the Energy Storage Tank Cabinet by unscrewing the 7 screws around the perimeter.



2. Remove the 2 screws that hold the control box cover.
3. Press (push down) the reset button. (The freeze stat is the largest of the 3 thermostats.)



## Field Splitting the HT Central Unit

**NOTE:** Field Splitting the HT central unit is **optional** and not required.

The HT central unit is “Field Split-able” allowing you to place the condensing unit away from the Energy Storage Tank cabinet. For example, split the HT central unit if you prefer that the condensing unit be located away from the work area to eliminate noise and heat exhaust.

### How to Field Split the HT Central Unit

**IMPORTANT:** These instructions are a general guide to be used in conjunction with the “Refrigeration Technician Section: Installing the Condensing Unit” located near the end of this manual.

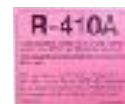
#### Step 1: Empty the Energy Storage Tank (Optional)

**WARNING** The weight of the HT central unit when filled with water is 1300 pounds. If you are moving the HT central unit for the splitting process, it is highly recommended that you drain the Energy Storage Tank.

1. Gain access to the internal Energy Storage Tank by following the instructions “How to Access the Energy Storage Tank”.
2. Empty the Energy Storage Tank by following the instructions “How to Remove Water from the Energy Storage Tank”.

#### Step 2: Pump down Refrigerant

**WARNING** To prevent personal injury and/or damage to equipment, only qualified refrigeration technicians are authorized to make the modifications outlined below. The condensing unit uses R-410A refrigerant.



1. Using the proper high pressure gauges for 410A, connect the High and Low side hoses to the appropriate pump-down valves at condensing unit.
2. On Energy Storage Tank Cabinet front panel, press the ON/OFF push button power switch to apply power to the condenser

3. Close the High side pump-down valve and pump refrigerant into the condenser until suction pressure reaches approximately 5 psi.
4. Turn off the condenser by pushing ON/OFF push button power switch. The light in the switch will go out.
5. Disconnect the electrical power from the HT System.
6. Close the Low side pump-down valve.

### Step 3: Remove Internal Wiring



**DANGER** To prevent electrical shock, only qualified electricians are authorized to make the modifications outlined below.

1. Completely remove all electrical power from the HT System by using the breaker on your fuse box, or pulling the fuse in your electrical panel, as is appropriate for your electrical connections.
2. Remove the HT Energy Storage Tank Cabinet right side panel.
3. Disconnect the 24 Volt control wiring from the Control Box.

### Step 4: Cut Refrigeration Lines

1. With all electrical lines removed, proceed to unsweat copper connection at the base of the condensing unit after following proper refrigeration techniques for removing remaining refrigerant. Be sure that the brass pump-down valves stay cool while unsweating the connections.
2. Seal refrigerant lines to prevent contamination.

### Step 5: Separate Energy Storage Tank Cabinet from Condensing Unit

The condensing unit is attached to the Energy Storage Tank Cabinet top by 2 bolts accessible from the inside of the condensing unit under the fan housing.

1. Separate the condensing unit from the Energy Storage Tank Cabinet top by removing these 2 bolts.
2. Provide a pad for the condensing unit at its new location.

### Step 6: Connect New Refrigerant Lines and Electrical Wires

Please refer to: [“Refrigeration Technician Section: Installing the Condensing Unit”](#)

1. Install the condensing unit at the new location according to all city and state codes.
2. Install new refrigerant lines in accordance to the instructions by following section “Refrigeration Technician Section: Installing the Condensing Unit” following proper refrigeration techniques and referring to the long line application chart.
3. Install new liquid line filter dryer.
4. Run new 24-volt control wiring from the condensing unit to the Control Panel in the Energy Storage Tank Cabinet.
5. Replace the Control Box cover in the Energy Storage Tank Cabinet.
6. Replace the electrical panel on the condensing unit.



**CAUTION** The Energy Storage Tank **MUST** be filled with water before power is applied. **Follow the instructions below.**

**Step 7: Position the Energy Storage Tank Cabinet in the new location.****Step 8: Refill the Energy Storage Tank**

1. Fill the Energy Storage Tank to the waterline indicated on the inside of the tank. Refer to the instructions "How to Fill the Energy Storage Tank".
2. Replace the Energy Storage Tank cover and secure the ring.
3. Replace the Energy Storage Tank Cabinet front panel, and then the side panels.

**Step 9: Evacuate Refrigerant System**

**CAUTION:** The Energy Storage Tank must be filled with water BEFORE powering on the condensing unit to prevent damage to the HT System.

1. Pull proper evacuation of the condensing unit system and release refrigerant accordingly.
2. Deliver power to the HT System by energizing the breakers or fuses depending on your electrical setup.
3. Power up the system by pressing the ON/OFF push button power switch located on the Energy Storage Tank Cabinet front panel. The system will begin cooling the water in the Energy Storage Tank if the water is above 58°F.
4. Adjust refrigerant to 13° sub cooling. Please allow at least 30 minutes of running for unit to settle out

## Refrigeration Technician Section: Installing the Condensing Unit




### WARNING

The following steps must be performed by a qualified refrigerant technician.

### SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions, which may cause death, personal injury, or property damage. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing. Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and current editions of the National Electrical Code (NEC) NFPA 70. In Canada, refer to current editions of the Canadian electrical code CSA 22.1.

Recognize safety information. This is the safety-alert symbol  when you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these signal words; DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards, which **will** result in severe personal injury or death. WARNING signifies hazards, which could result in personal injury or death. CAUTION is used to identify unsafe practices, which would result in minor personal injury or product and property damage. NOTE is used to highlight suggestions, which will result in enhanced installation, reliability, or operation.



### WARNING

#### ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position.

There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.



### CAUTION

#### CUT HAZARD

Failure to follow this caution may result in personal injury.

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing and gloves when handling parts.

The condensing unit contains system refrigerant charge for operation with the HT System. For proper unit operation, check refrigerant charge using charging information located inside condenser electrical cover and/or in the Check Charge section of [this instruction](#).

**IMPORTANT:** Maximum liquid-line size is 3/8-in. OD for all applications including long line. Refer to Piping and Longline Guideline for further information.

**IMPORTANT:** Always install the factory-supplied liquid-line filter drier. If replacing the filter drier, refer to Product Data Digest for appropriate part number. Obtain replacement filter driers from your HVAC distributor or branch.

## INSTALLATION

### Check Equipment and Job Site

#### Install on a Solid, Level Mounting Pad

If conditions or local codes require the unit be attached to pad, tie down bolts should be used and fastened through knockouts provided in unit base pan. Refer to unit mounting pattern in Fig. 2 to determine base pan size and knockout hole location. For hurricane tie downs, contact local distributor for details and PE (Professional Engineer) certification, if required by local authorities. On rooftop applications, mount on level platform or frame. Place unit above a load-bearing wall and isolate unit and tubing set from structure. Arrange supporting members to adequately support unit and minimize transmission of vibration to building. Consult local codes governing rooftop applications. Roof mounted units exposed to winds may require wind baffles. Consult the Carrier Application Guideline and Service Manual - Residential Split System Air Conditioners for wind baffle construction.

**NOTE:** Unit must be level to within  $\pm 2^\circ$  ( $\pm 3/8$  in. /ft.,  $\pm 9.5$  mm/m) per compressor manufacturer specifications.

### Clearance Requirements

When installing, allow sufficient space for airflow clearance, wiring, refrigerant piping, and service. Allow 24 in. (609.6 mm) clearance to service end of unit and 60 in. (1219.2 mm) (above unit. For proper airflow, a 6-in. (152.4 mm) clearance on 1 side of unit and 12-in. (304.8 mm) on all remaining sides must be maintained. Maintain a distance of 24 in. (609.6 mm) between units or 18 in. (457.2 mm) if no overhang within 12 ft. (3.66 m) Position so water, snow, or ice from roof or eaves cannot fall directly on unit.


**NOTE: 18" (457.2 mm) clearance option described above is approved for outdoor units with wire grille coil guard only. Units with louver panels require 24" (609.6 mm) between units.**

On rooftop applications, locate unit at least 6 in. (152.4 mm) above roof surface.

### Operating Ambient

The minimum outdoor operating ambient in cooling mode without accessory is 55 °F (12.78 °C), and the maximum outdoor operating ambient in cooling mode is 125°F (51.67 °C).

#### Sweat Connection

	<h2>CAUTION</h2>
<p><b>UNIT DAMAGE HAZARD</b></p> <p>Failure to follow this caution may result in equipment damage or improper operation. Service valves must be wrapped in a heat-sinking material such as a wet cloth while brazing.</p>	

Use refrigeration grade tubing. After wrapping service valve with a wet cloth, braze sweat connections using industry accepted methods and materials. Consult local code requirements. Refrigerant tubing and Energy Storage Tank heat exchanger are now ready for leak testing. This check should include all field and factory joints.

<b>24ABB3</b>	
<b>LIQUID</b>	<b>RATED VAPOR</b>

UNIT SIZE	Connection & Max. Tube Diameter	Connection Diameter	Tube Diameter
60	3/8	7/8	1 1/8

\*For Tubing Set lengths between 50 and 200 ft. (24.38 and 60.96 m) horizontal or 35 ft. (10.7 m) vertical differential 250 ft. (76.2 m) Total Equivalent Length), refer to the Carrier Residential Piping and Longline Guide line - Air Conditioners and Heat Pumps using 410 A refrigerant.

UNIT SIZE	Liquid		Rated Vapor	
	Connection Diameter	Tube Diameter	Connection Diameter	Tube Diameter
36	3/8	3/8	3/4	3/4
60	3/8	3/8	7/8	1-1/8

\*Units rated with 15 of line set. See Product Data sheet for performance data when using different size and length linesets.

\*\*For tubing set lengths between 80 and 200 Ft horizontal or 30ft vertical differential 250ft total equivalent length. Refer to the Residential Piping and Longline Guideline – Air Conditioners and Heat Pumps using Puron Refrigerant.

### Change Liquid-Line Filter Drier inside Energy Storage Tank Cabinet



**UNIT DAMAGE HAZARD**

Failure to follow this caution may result in equipment damage or improper operation.

1. Installation of a new filter drier in liquid line is required.
2. Filter drier must be wrapped in a heat-sinking material such as a wet cloth while brazing.
3. Flow arrow must point towards Energy Storage Tank heat exchanger.

Refer to Fig. 3.



Liquid Line  
Dryer

**Fig. 3**

Refrigerant tubes and Energy Storage Tank heat exchanger should be evacuated using the recommended deep vacuum method of 500 microns. The alternate triple Evacuation method may be used (see triple evacuation procedure in service manual). Always break a vacuum with dry nitrogen.



## CAUTION

### UNIT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Never use the system compressor as a vacuum pump.

## Deep Vacuum Method

The deep vacuum method requires a vacuum pump capable of pulling a vacuum of 500 microns and a vacuum gage capable of accurately measuring this vacuum depth. The deep vacuum method is the most positive way of assuring a system is free of air and liquid water. A tight dry system will hold a vacuum of 600 microns after approximately 7 minutes. See Fig. 4.

## Make Electrical Connections

Be sure field wiring complies with local and national fire, safety, and electrical codes, and voltage to system is within limits shown on unit rating plate. Contact local power company for correction of improper voltage. See unit rating plate for recommended circuit protection device.

**NOTE:** Operation of unit on improper line voltage constitutes abuse and could affect unit reliability. See unit rating plate. Do not install unit in system where voltage may fluctuate above or below permissible limits.

**NOTE:** Use copper wire only between disconnects switch and unit.

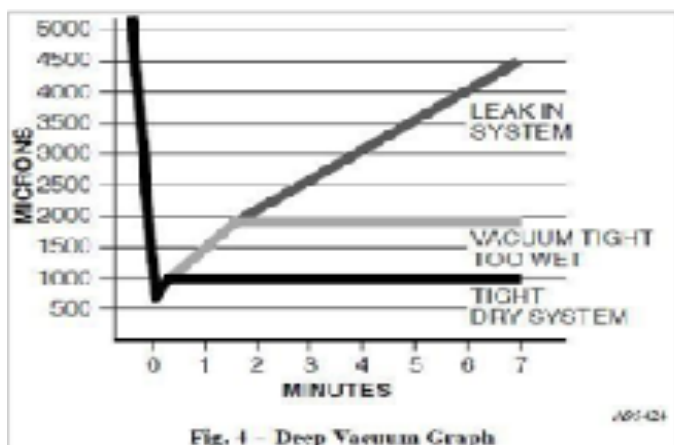


Fig. 4 - Deep Vacuum Graph

**Final Tubing Check**

**IMPORTANT:** Check to be certain factory tubing on both Chiller Barrel heat exchanger and outdoor unit has not shifted during shipment. Ensure tubes are not rubbing against each other or any sheet metal or wires. Pay close attention to feeder tubes, making sure wire ties on feeder tubes are secure and tight.

## WARNING

**ELECTRICAL SHOCK HAZARD**  
 Failure to follow this warning could result in personal injury or death.  
 The unit cabinet must have an uninterrupted or unbroken ground to minimize personal injury if an electrical fault should occur. The ground may consist of electrical wire or metal conduit when installed in accordance with existing electrical codes.

**Connect Ground and Power Wires**

Connect ground wire to ground connection in control box for safety. Connect power wiring to contactor as shown in Fig. 5.

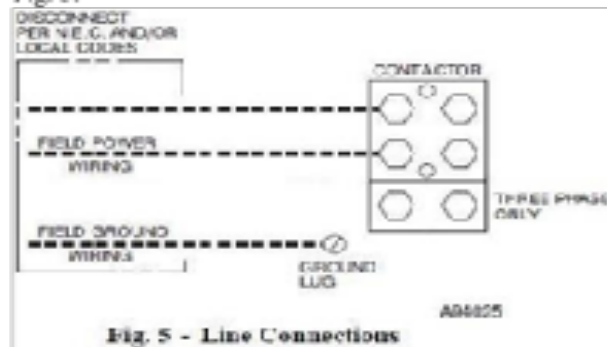


Fig. 5 - Line Connections

**NOTE:** Install branch circuit disconnect of adequate size per NEC to handle unit starting current. Locate disconnect within sight from and readily accessible from unit, per Section 440-14 of NEC.

**Route Ground and Power Wires**

Remove access panel to gain access to unit wiring. Extend wires from disconnect through power wiring hole provided and into unit control box.

**Connect Control Wiring**

Route 24-v control wires through control wiring grommet and connect leads to control wiring. Refer to HT System Wiring Diagram.

Use No. 18 AWG color-coded, insulated (35°C minimum) wire. If condensing unit is located more than 100 ft. (30.48 m) from Energy Storage Tank Cabinet, as measured along the control voltage wires, use No. 16 AWG color-coded wire to avoid excessive voltage drop.

All wiring must be NEC Class 1 and must be separated from incoming power leads.

**Final Wiring Check**

**IMPORTANT:** Check factory wiring and field wire connections to ensure terminations are secured properly. Check wire routing to ensure wires are not in contact with tubing, sheet metal, etc.

**START-UP**

## CAUTION



**UNIT OPERATION AND SAFETY HAZARD**

Failure to follow this caution may result in personal injury, equipment damage or improper operation.

- Do not overcharge system with refrigerant.
- Do not operate unit in a vacuum or at negative pressure.
- Compressor dome temperatures may be hot.

**CAUTION****PERSONAL INJURY HAZARD**

Failure to follow this caution may result in personal injury. Wear safety glasses, protective clothing, and gloves when handling refrigerant and observe the following:

Front seating service valves are equipped with Schrader valves.

**Follow these steps to properly start up system:**

1. After system is evacuated, fully open liquid and vapor service valves.
2. Replace stem caps after system is opened to refrigerant flow. Replace caps finger-tight and tighten with wrench an additional 1/12 turn. .
3. If the Energy Storage Tank was emptied, confirm that it was refilled.
4. If Water In / Water Out lines were cut, confirm that they were reconnected and purged of air.
5. Confirm that Water In / Water Out lines are open and flowing.
6. Close electrical disconnects to energize system
7. Turn on the HT System by pushing the ON/OFF switch located on the front of the Energy Storage Tank Cabinet. Light in the switch will illuminate.
  - a. Note: If the unit is noisy and/or cooling is not being achieved, the compressor is probably running in reverse direction. Remedy is to change any 2 Incoming power leads.
8. Operate unit for 30 minutes.

**Check Charge** Desired sub cooling is 12-13 °F and is shown on unit rating plate. Charging method is shown on information plate inside condensing unit. To properly check or adjust charge, conditions must be favorable for sub cooling charging. Favorable conditions exist when the outdoor temperature is between 70°F and 100°F (21.11°C and 37.78°C), and the Energy Storage Tank water is between 70°F and 90°F (7.22°C and 26.67°C). Follow the procedure below:

Unit is factory charged for 15ft of line set. Adjust charge by adding or removing 0.6 oz. /ft. of 3/8 liquid line above or below 8ft (2.44 m) respectively.

For standard refrigerant line lengths (50 ft./24.38 m or less), allow system to operate in cooling mode at least 30 minutes. If conditions are favorable, check system charge by sub cooling method. If any adjustment is necessary, adjust charge slowly and allow system to operate for 30 minutes to stabilize before declaring a properly charged system.

If the Energy Storage Tank water temperature is above 80°F (26.67°C), and the outdoor temperature is in the favorable range, adjust system charge by weight based on line length and allow the Energy Storage Tank water temperature to drop to 80°F (26.67°C) before attempting to check system charge by sub cooling method as described above.

**NOTE:** If line length is beyond 50 ft. (24.38 m) or greater than 30 ft. (6.10 m) vertical separation, See Long Line Guideline for special charging requirements.

**Final Checks**

**IMPORTANT:** Before leaving job, be sure to do the following:

1. Ensure that all wiring is routed away from tubing and sheet metal edges to prevent rub-through or wire pinching.

2. Ensure that all wiring and tubing is secure in unit before adding panels and covers. Securely fasten all panels and covers.
3. Tighten service valve stem caps to 1/12-turn past finger tight.
4. Leave this User Manual & Installation Guide including Wiring Diagram with owner.

## CARE AND MAINTENANCE

For continuing high performance and to minimize possible equipment failure, periodic maintenance must be performed on this equipment.

Frequency of maintenance may vary depending upon geographic areas, such as coastal applications. See Owner's Manual

### REFRIGERANT CHARGE ADJUSTMENTS

Liquid	Line
3/8	0.5 oz. /ft. (Factory charge for line set = 3 oz. / 85.05 g)

#### Charging Formula:

$[(\text{Lineset oz. /ft.} \times \text{total length}) - (\text{factory charge for line set})] = \text{charge adjustment}$

**Example:** System has 20 ft of line set.

**Formula:**  $(.50 \text{ oz. /ft.} \times 20\text{ft}) - (3 \text{ oz.}) = 7 \text{ oz.}$

Net result is to add 7 oz. of refrigerant to the system.

## LONG LINE APPLICATIONS

An application is considered Long Line, when the refrigerant level in the system requires the use of accessories to maintain acceptable refrigerant management for systems reliability. See Accessory Usage Guideline table for required accessories. Defining a system as long line depends on the liquid line diameter, actual length of the tubing, and vertical separation between the indoor and outdoor units.

For Air Conditioner systems, the chart below shows when an application is considered Long Line.

#### AC WITH 410A REFRIGERANT LONG LINE DESCRIPTION ft. (m) Beyond these lengths, long line accessories are required

Liquid Line Size	Units On Same Level	Outdoor Below Indoor	Outdoor Above Indoor
3/8	80 (24.4)	35 (10.7) vertical or 80 (24.4) total	80 (24.4)

## ELECTRICAL DATA

UNIT SIZE- VOLTAGE, SERIES	V/PH	OPER VOLTS*		COMPR		FAN	MCA	MAX FUSE** or CKT BRK AMPS
		MAX	MIN	LRA	RLA	FLA		
060	230/1 Ø	253	197	144. 2	24.4	1.52	25.2	40
060	230/3 Ø	253	197	110	15.9	1.2	21.1	30

\* Permissible limits of the voltage range at which the unit will operate satisfactorily

If wire is applied at ambient greater than 30°C, consult table 310-16 of the NEC (NFPA 70). The ampacity of non-metallic-sheathed cable (NM), trade name ROMEX, shall be that of 60°C conditions, per the NEC (NFPA 70) Article 336-26. If other than uncoated (no-plated), 60 or 75°C insulation, copper wire (solid wire for 10 AWG or smaller, stranded wire for larger than 10 AWG) is used, consult applicable tables of the NEC (NFPA 70).

Length shown is as measured one way along wire path between unit and service panel for voltage drop not to exceed 2%.

\*\* Time -Delay fuse.

FLA - Full Load Amps

LRA - Locked Rotor Amps

**MCA** - Minimum Circuit Amps

**RLA** - Rated Load Amps

**NOTE:** Control circuit is 24-V on all units and requires external power source. Copper wire must be used from service disconnect to unit. All motors/compressors contain internal overload protection.

Complies with 2007 requirements of ASHRAE Standards 90.1

## CHARGING SUBCOOLING (TXV-TYPE EXPANSION DEVICE)

UNIT SIZE-VOLTAGE, SERIES	REQUIRED SUBCOOLING °F
36,000	13°
60,000	13°


Please allow 30 minutes for the unit to completely stabilize.

### Condensing unit operating in low ambient conditions

If the condensing unit is required to run in ambient temperatures below 65degrees F, a low ambient and cycle control kit is required.

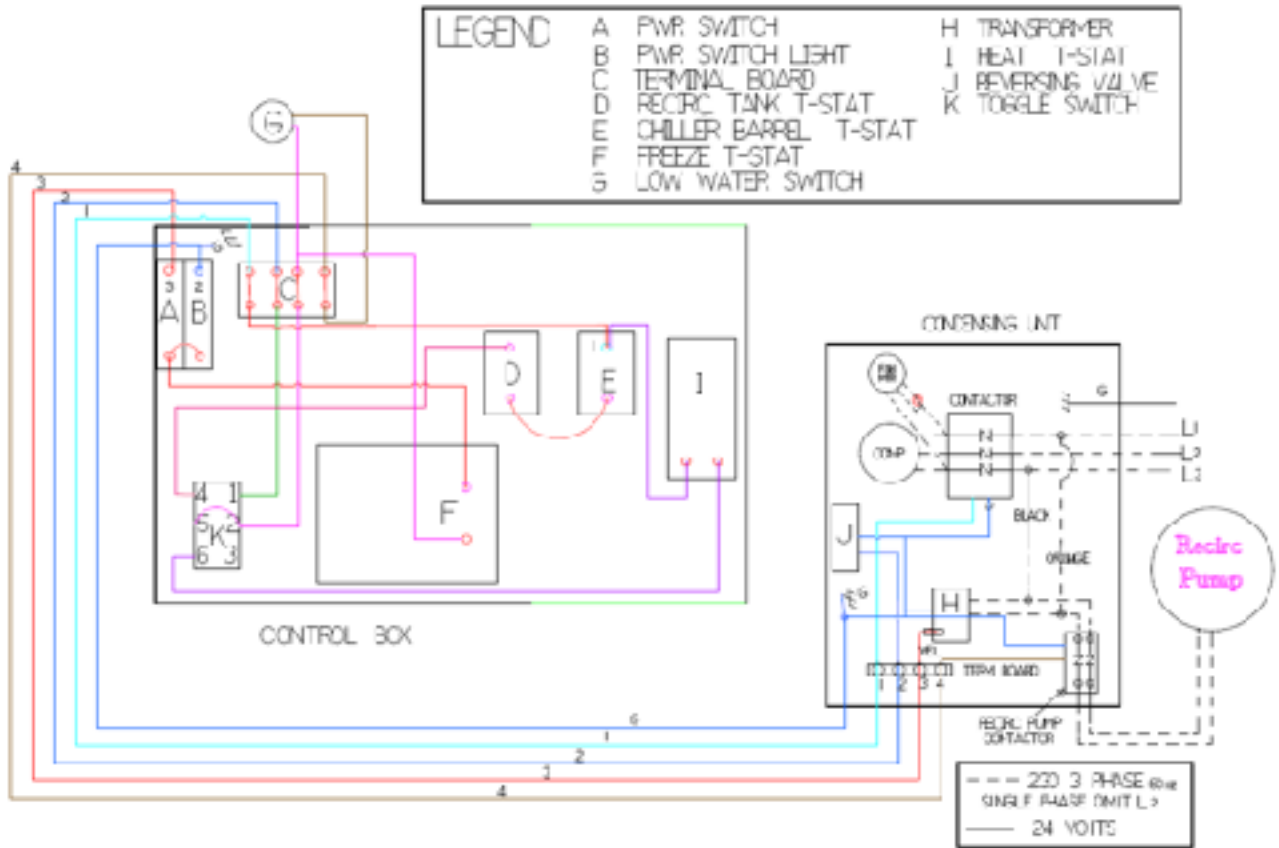
## Trouble Shooting

The following chart is included to help guide you as you approach a troubleshooting course of action. For assistance, please feel free to call Technical Support at 1-830-370-2362.

 **WARNING** To prevent electrical shock, disconnect all power to unit before servicing.

Symptom	Possible Cause	Actions to Try
<b>System not cooling</b> (Recirculating pump running, condensing unit off)	If upon initial startup from receipt of HT System, or if unit coming out of storage, the freeze stat may be tripped if unit was exposed to temperatures below 35°	Reset freeze thermostat
<b>System not cooling</b>	Freeze stat trips while unit operating	Replace both thermostats
	Improper voltage to unit	Confirm supply voltage
	Compressor running backwards as indicated by noise in the compressor	3-phase only: Switch any 2 power leads
	Faulty thermostat	Replace thermostat. Use ohm meter to determine which thermostat is bad.
	Dirty condenser coil	Clean coil
	Condenser fan not operating	1. Check voltage to the fan 2. Check run capacitor 3. Replace fan motor
	Improper charge	Check and adjust to 12-13 degrees sub-cooling
<b>Circulating pump noisy</b>	Restriction in water lines Make up feed valve closed Low water in tank	Check for restrictions in the lines Open Make up feed valve Fill coolant tank
<b>Circulating pump not running</b>	Insufficient water in tank <ul style="list-style-type: none"> <li>Faulty water level switch</li> <li>Faulty circulating pump contactor</li> <li>Faulty pump</li> </ul>	<ul style="list-style-type: none"> <li>Fill water in tank</li> <li>Replace coolant level switch</li> <li>Replace circulating pump contactor</li> <li>Replace pump</li> </ul>
<b>Coolant leaking from Energy Storage Tank Cabinet</b>	<ul style="list-style-type: none"> <li>Faulty float valve in water tank</li> <li>Line failure (connections or fittings)</li> </ul>	<ul style="list-style-type: none"> <li>Replace water tank float valve</li> <li>Tighten or replace connections</li> <li>Tighten or replace fittings</li> </ul>
<b>Water leaking from check valve from CBEST</b>	Ruptured heat exchanger	Replace heat exchanger, replace the two thermostats, and replace the freeze thermostat.
<b>Coolant leaking from rotary seal on pump</b>	Faulty pump	Replace pump

## Wiring Diagram (3-Phase Units Shown /Disregard L3 for single phase)



## Receiving and Unpacking Instructions

**IMPORTANT:** Inspect the shipping crate immediately upon receipt and file a claim with the delivery driver if any obvious damage is present.

Upon delivery, carefully remove the crating and inspect the HT System for damage.

Call HT Heating and Cooling System Support at 1-830-370-2362 within 72 hours of receipt if you have any questions or concerns.

## Repair Authorization

All HT Heating and Cooling System warranty repairs must be first authorized by calling Hensley Thermodynamics technical support: 1-830-370-2362. **Any repairs performed without prior authorization will be at owner's expense and may void the warranty.**

Proof of purchase and delivery date are required before service can be authorized.

Only qualified personnel shall be allowed to unpack, install, use and perform maintenance on this unit.

Only a qualified HVAC technician is authorized to repair the condensing unit under warranty.

This warranty will be null and void if unauthorized personnel perform any modifications or repairs on this unit. Misuse of the product will void the warranty.

Hensley Thermodynamics, LLC. is not liable for any injury or damaged cause by incorrect installation, maintenance, or operation of this HT Heating and Cooling System resulting from failure to follow instructions and guidelines outlined in this manual.

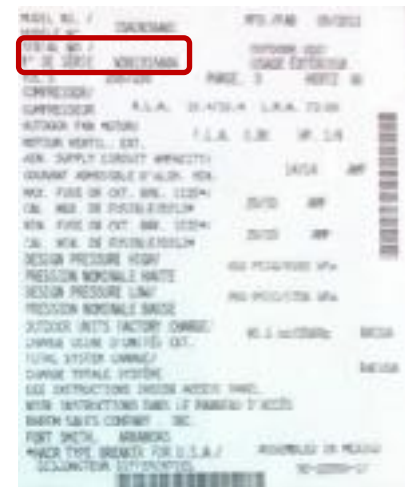
**Replacement of parts or subassemblies will be provided under warranty when they have failed due to faulty manufacturing. Misuse will void warranty.**

## Limited Warranty

The Limited Warranty for the HT Heating and Cooling System is 1 year parts and labor starting the date of delivery. **This warranty is non-transferable.**

You will need the HT System **serial number** for all correspondence.

The unit's serial number is located on the back of the condensing unit.



## Limited Warranty – Parts and Labor – 1 year

**SCOPE OF WARRANTY AND EQUIPMENT COVERED:** The products covered by this Limited Warranty. Hensley Thermodynamics (Manufacturer) warrants the Covered Equipment to be free from defects in materials and workmanship, and will repair or replace, at its option, ANY PART of Covered Equipment which fails in normal use and service within the Applicable Warranty Periods in accordance with the terms, including, but not limited to, the specific exclusions set forth below, of this Limited Warranty and subject to the Manufacturer's right to inspect and validate the warranty claim as set forth below. If an exact replacement is not available, an equivalent unit or credit will be provided. The replacement will be warranted for only the unexpired portion of the original Applicable Warranty Period. If government regulations, industry certification or similar standards require the replacement unit to have features not found in the defective unit, you will be charged for the difference for those required features. If you pay the difference, you will also receive a completely new Limited Warranty for the new replacement unit. The Manufacturer does not authorize or warranty any online/Internet sale of equipment through auction or any other method of unapproved online sales direct to the consumer, nor the sale of equipment by liquidators. The ONLY approved online sales are through the Manufacture's websites: [www.HTheatandcool.com](http://www.HTheatandcool.com) and [www.HensleyThermodynamics.com](http://www.HensleyThermodynamics.com)

**EFFECTIVE DATE AND APPLICABLE WARRANTY PERIODS:** The Effective Date of warranty coverage is the date of sale plus 1 year.

**EXCLUSIONS** – In addition to the specific exclusions set forth in the other sections of this Limited Warranty document, THIS Limited Warranty WILL NOT APPLY TO: A) damages, malfunctions, or failures resulting from failure to properly install, operate or maintain Covered Equipment in accordance with the Manufacturer’s instructions B) damages, malfunctions, or failures caused by misuse, accident, contaminated or corrosive atmosphere, vandalism, freight damage, fire, flood, freeze, lightning, acts of war, acts of God and the like C) Covered Equipment which is not installed by qualified, trained personnel in accordance with applicable codes, ordinance, and good trade practices; or D) damages, malfunctions, or failures caused by the use of any attachment, accessory or component not authorized by the Manufacture: E) Covered equipment when operated with system components or accessories which do not match or meet the specifications recommended by the Manufacturer; F) any Covered Equipment manufactured by the Manufacturer that has been sold to the consumer via the Internet from an unapproved website or auction website. Online sales are only authorized through [www.HTheatandcool.com](http://www.HTheatandcool.com) and [www.HensleyThermodynamics.com](http://www.HensleyThermodynamics.com)

**SHIPPING COSTS:** This Limited Warranty does NOT cover shipping costs. You are responsible for the cost of shipping warranty replacement parts from our factory to the location of your Covered Equipment. You also are responsible for the cost of shipping failed parts and for incidental costs incurred locally, including handling charges. (You also must pay the shipping costs of returning the failed part to the port of entry into the continental United States.)

**LABOR COSTS:** This Limited Warranty covers any labor costs or expenses for repair that has been authorized by the Manufacturer.

**HOW TO OBTAIN WARRANTY CLAIMS ASSISTANCE:** You must promptly report any failure covered by this Warranty to the Manufacturer. Normally, your local HVAC air conditioning contractor will be able to take the necessary corrective action by obtaining replacement parts through the Manufacturer. The name and location of local HVAC contractors can be usually found in your telephone directory in the HVAC contractor section. HOWEVER, ANY PART REPLACEMENTS ARE MADE SUBJECT TO VALIDATION BY THE MANUFACTURER OF IN-WARRANTY COVERAGE. Any part to be replaced must be made available in exchange for the replacement.

**EXCLUSIVE WARRANTY- LIMITATION OF LIABILITY:** This Limited Warranty is the ONLY warranty given by the Manufacturer. This warranty is non-transferable. No one is authorized to make any warranties on behalf of the Manufacturer. ANY IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, SHALL NOT EXTEND BEYOND THE APPLICABLE WARRANTY PERIODS SPECIFIED IN THIS LIMITED WARRANTY. THE MANUFACTURER’S SOLE LIABILITY WITH RESPECT TO DEFECTIVE PARTS OR FAILURE SHALL BE AS SET FORTH IN THIS LIMITED WARRANTY, AND ANY CLAIMS FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES ARE EXPRESSLY EXCLUDED. Some states do not allow limitations on how long an implied warranty lasts or for the exclusion of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from state to state. The Manufacture suggests that you immediately complete the Purchase and Installation Records section and retain this Limited Warranty Certificate in the event warranty service is needed and that you keep proper documentation.

## Purchase and Installation Records

**COMPLETE THE FOLLOWING INFORMATION FOR YOUR RECORDS – DO NOT MAIL**

\_\_\_\_\_  
Date of Purchase

\_\_\_\_\_  
Date of Delivery

\_\_\_\_\_  
Model Number

\_\_\_\_\_  
Serial Number

Original Installation \_\_\_\_\_

Installing Contractor Name: \_\_\_\_\_

Contractor's address/phone: \_\_\_\_\_

Owner Name: \_\_\_\_\_

Address: \_\_\_\_\_

City/State/Zip: \_\_\_\_\_

Manufactured by Hensley Thermodynamics, LLC  
P.O. Box 318, Ingram, Texas 78025 (mailing address)  
456 Cade Loop, Ingram, Texas 78025 (shipping address)  
1-830-370-2362