AquaComfort Solutions

XL Series Heat Pump Pool Heater
INSTALLATION MANUAL

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Inspection

Immediately upon receipt, inspect cartons and their contents for damage due to transit. Damage, if found, should be noted on delivery papers and a claim filed with the carrier. Also check the unit data plate to make sure you have the proper model before installing. Damage incurred during shipping is not covered under AquaComfort Solutions warranty.

Safety Consideration

- For personal safety, and to avoid damage to equipment, follow all safety instructions displayed on the equipment and within this manual. Repair and service of heat pump must be performed by an authorized service center.
- Warranties may be voided if the equipment has been improperly installed, maintained or serviced.
- If service is deemed necessary, please contact AquaComfort Solutions Technical Support.

When installing and using your heat pump basic safety precautions must always be followed, including the following:

WARNING: Failure to heed the following may result in injury or death.

- Installation and repairs must be performed by a qualified technician.
- The heat pump contains refrigerant under pressure. Repairs to the refrigerant circuit must not be attempted by untrained and/or unqualified individuals. Service must be performed only by qualified HVAC technicians.
- Recover refrigerant before opening the system.
- The heat pump utilizes high voltage and rotating equipment. Use caution when servicing.
- Electrical installation and service should be performed by a Licensed Electrician only.
- Improper water chemistry can present a serious health hazard. To avoid possible hazards, maintain pool / spa water per standards detailed in this document.
- Prolonged immersion in water warmer than normal body temperature may cause ***Hyperthermia***.
  – The symptoms of Hyperthermia include unawareness of impending hazard, failure to perceive heat, failure to recognize the need to exit the spa, and unconsciousness. The use of alcohol, drugs, or medication can greatly increase the risk of fatal Hyperthermia. In addition, persons having an adverse medical history, or pregnant women, should consult a physician before using a hot tub or spa. Children and the extreme elderly should be supervised by a responsible adult.
- Prolonged immersion in water colder than normal body temperature may cause ***Hypothermia***.
  – The symptoms of Hypothermia include shivering (although as hypothermia worsens, shivering stops), clumsiness or lack of coordination, slurred speech or mumbling, confusion and poor decision-making, drowsiness or low energy, lack of concern about personal welfare, progressive loss of consciousness, weak pulse and slow or shallow breathing. In addition, persons having an adverse medical history, or pregnant women, should consult a physician before immersing in a cold body of water. Children and the extreme elderly should be supervised by a responsible adult.

CAUTION - Failure to heed the following may result in equipment damage.

- Maintain proper water chemistry in order to avoid damage to pump, filter, pool shell, etc.
- Water flow exceeding maximum flow rate requires a bypass. Damage due to excessive water flow will void warranty.

General Information

The information in this manual was prepared to assist in the proper installation, operation, maintenance and service of your new heat pump pool heater.

Please read the entire manual and follow all instructions. Improper installation and use can result in damage to the heat pump, unsatisfactory operation and performance, and may void the warranty. Retain this manual for quick reference.

MODEL SPECIFICATIONS

Heat Only

Model	ACT-750	ACT-1100	ACT-1250	ACT-1500	ACT-1750
Compressor	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL
Minimum Breaker Size	20	30	40	40	50
Voltage / Hertz / Phase	230 / 60 / 1	230 / 60 / 1	230 / 60 / 1	230 / 60 / 1	230 / 60 / 1
Water Flow (gpm)	15 - 50	20 - 70	20 - 70	20 - 70	20 - 70
Dimensions (L x W x H)	28 x 28 x 26	39 x 30 x 32	39 x 30 x 32	39 x 30 x 32	39 x 30 x 32
Shipping Weight (lbs)	170	240	240	250	290

Recommended clearance access on service side is 24" and 18" on other three air intake sides.

Recommended minimum over head (top of unit) clearance is 48".

HeatCOOL

Model	ACT-1100HC	ACT-1250HC	ACT-1500HC	ACT-1750HC
Compressor	SCROLL	SCROLL	SCROLL	SCROLL
Minimum Breaker Size	30	40	40	50
Voltage / Hertz / Phase	230 / 60 / 1	230 / 60 / 1	230 / 60 / 1	230 / 60 / 1
Water Flow (gpm)	20 - 70	20 - 70	20 - 70	20 - 70
Dimensions (L x W x H)	39 x 30 x 32	39 x 30 x 32	39 x 30 x 32	39 x 30 x 32
Shipping Weight (lbs)	250	250	260	300

Recommended clearance access on service side is 24" and 18" on other three air intake sides.

Recommended minimum over head (top of unit) clearance is 48".

FIGURE 1: HEAT PUMP WATER CONNECTION TEMPLATES

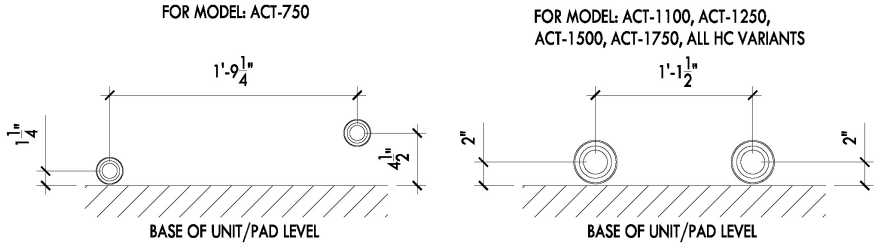
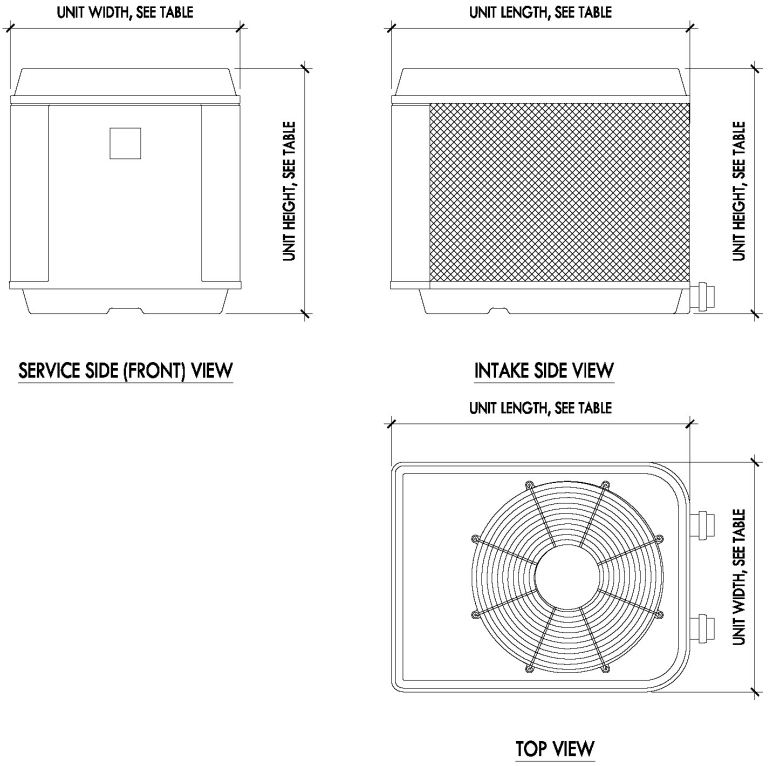


FIGURE 2: HEAT PUMP DIMENSIONAL DRAWINGS



Installation Location & Clearances

When selecting a location consider the following:

- Heat pump must be located outdoors. Unit is not rated for indoor use and will not operate to specifications.
- The heat pump should sit on a solid level surface sufficiently above grade to prevent water from entering it, and to allow condensate to drain from the base. Some locations require specific anchorage requirements. See later sections in this manual for further details.
- The length of water piping and electrical conductors should be kept as short as possible to avoid capacity loss and decreased efficiency.
- The heat pump can produce a large amount of water in the form of condensation. The amount of water depends on air temperature and humidity. Plan for water drainage disposal as needed.
- Irrigation water may damage heat pump components. Have irrigation water directed away from the heat pump.
- The heat pump will withstand normal rainfall. Do not allow a roof slope to direct rainwater onto the heat pump. Have a gutter installed on the roof edge to direct this water away from the heat pump or install the heat pump in another location.

MOUNTING PAD REQUIREMENTS

- Build the heat pump pad out of concrete or another code-approved material.
- Confirm the pad can support the weight of the heat pump. See Model Specifications table in previous section.
- Elevate the pad enough to allow for drainage.
- Make sure the pad is flat and level.
- Have the pad extend at least 6 inches from the heat pump base in all directions.
- Do not install the heat pump on soil or grass.
- Do not allow the heat pump base to touch the buildings foundation.
- Do not place the heat pump directly on a concrete floor inside a building. This can cause noisy equipment vibration. Install vibration dampeners between the heat pump base and floor.
- Equipment pad must meet all requirements of authorities having code-related jurisdiction

ANCHORING THE HEAT PUMP

- Follow all applicable local, state, and national requirements regarding wind load anchoring.
- If required by local building code and/or AHJ, AquaComfort Solutions offers a Hurricane/ Seismic Clip Kit to anchor the heat pump pool heater to a code-approved concrete pad.
- See anchorage requirements in **Engineering Report ACS-ENG-001**.

FIGURE 3.1: HURRICANE CLIP INSTALLATION DETAIL

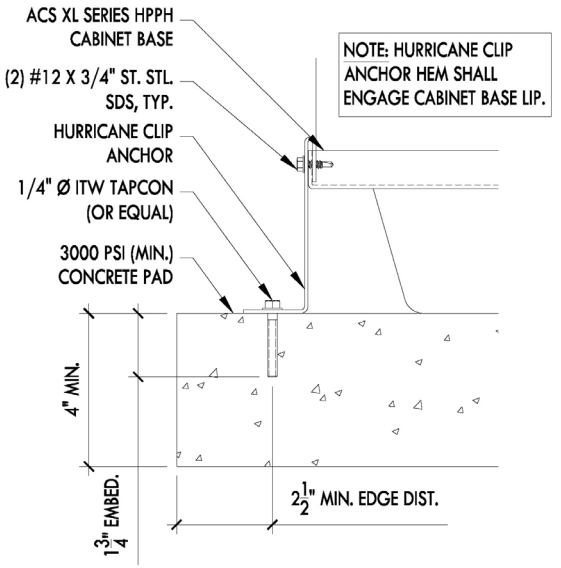
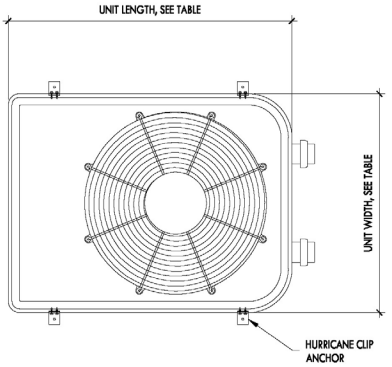
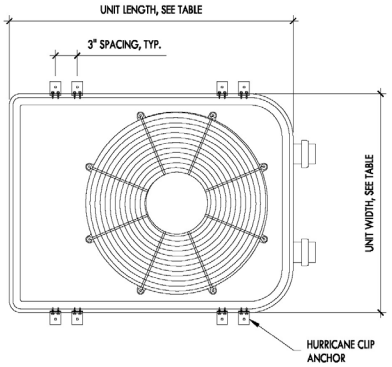


FIGURE 3.2: HURRICANE CLIP ANCHOR LAYOUTS

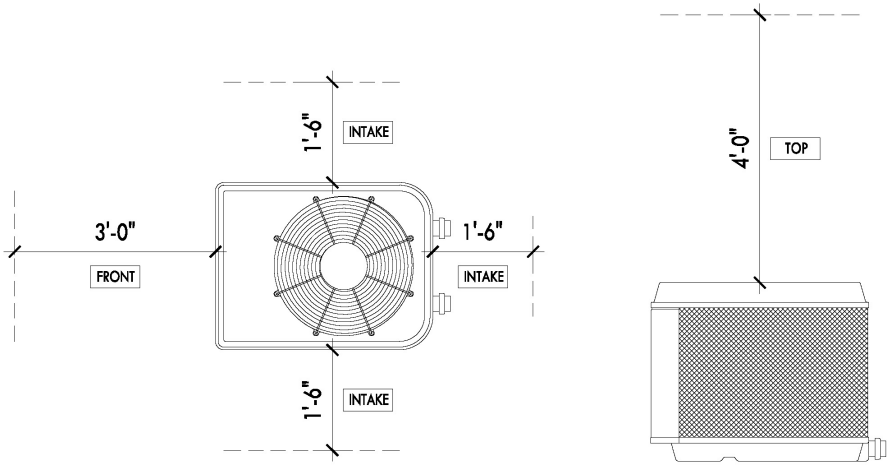




CLEARANCES

- Proper air flow is required for the heat pump to operate efficiently. Avoid placing objects near or on top of the heat pump. This includes shrubbery and lawn furniture. These objects will also hinder maintenance access.
- Avoid storing corrosive chemical containers near the heat pump. Certain chemicals can cause equipment damage & premature failure.
- Minimum of 36” of clearance on access/service side of heat pump.
- Minimum of 18” of clearance on all three air intake sides of heat pump.
- Minimum of 48” of clearance for air discharge (top of unit). For optimal performance it is recommended that nothing is above the top of the unit.

FIGURE 4: HEAT PUMP CLEARANCES



Water Flow & Connections

Water connections are made at the rear of the heat pump opposite the control panel. Water “in” and “out” are labeled at the connections. Unions are supplied and are made to accept either 2” or 1 ½” rigid PVC pipe. See Model Specifications table (page 3) for required flow rates.

NOTE: Unions can be used for quick drainage of your heat pump and winterizing.

- Heat pump must be piped downstream from the filter in the pool return line.
- When all the plumbing connections are complete, and ample drying time is allowed for the glued connections, run the filter pump and check the entire system for water leaks.
- Make sure filter is clean and there are no obstructions in the filtering system.
- Proper water flow is essential to the performance of the heat pump.
- The minimum flow rate is 20 GPM.
- Use proper PVC cleaner, PVC glue, and proper gluing techniques when making PVC pipe connections.

PLUMBING REQUIREMENTS

CAUTION - Failure to heed the following may result in equipment damage.

- Do not use glue on the threaded portion of the equipment’s unions. Gluing a union in place will prevent the ability to service or winterize the unit.
- The heat pump must receive water flow within the specified ranges in all conditions. Water flow exceeding maximum flow rates may damage heat pump and will not be covered under equipment warranty. See Model Specifications table (page 3) in previous section for water flow rate ranges based on unit.

FIGURE 5.1: SINGLE HEAT PUMP & POOL

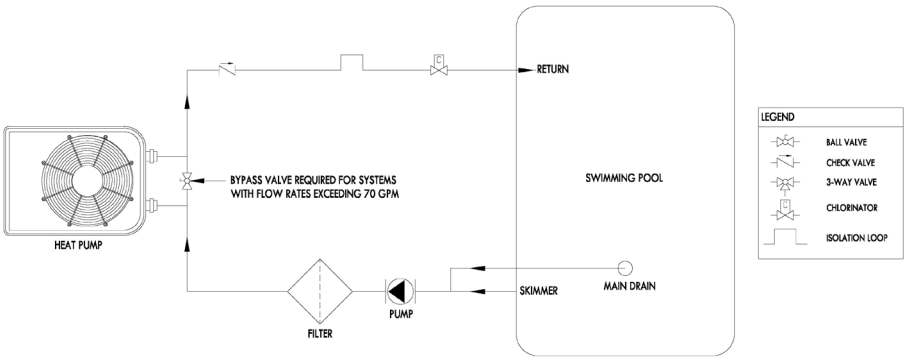


FIGURE 5.2: SINGLE HEAT PUMP, POOL & SPA

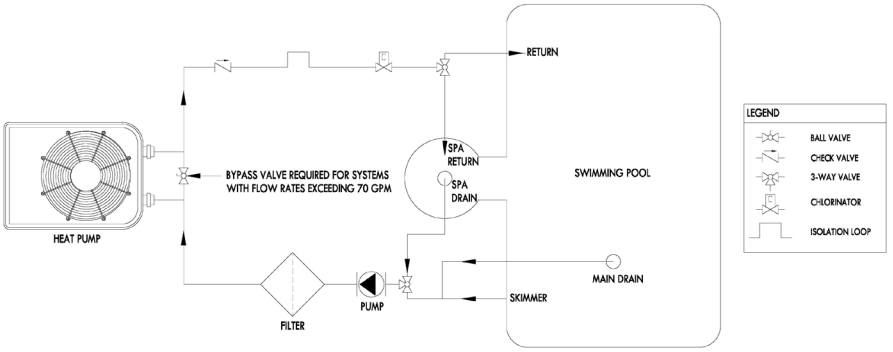


FIGURE 5.3: SINGLE HEAT PUMP & POOL WITH SOLAR POOL HEATING SYSTEM

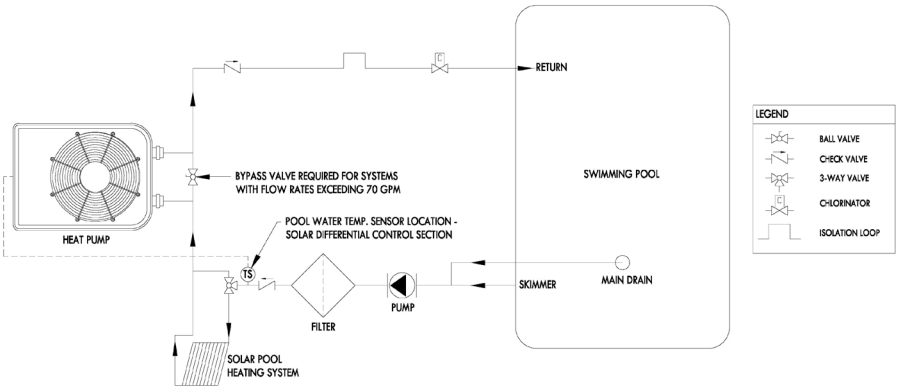


FIGURE 5.4: SINGLE HEAT PUMP & POOL WITH GAS HEATER

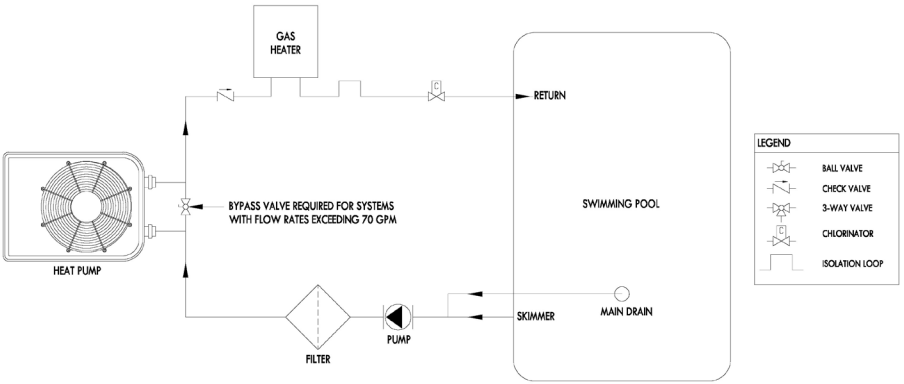
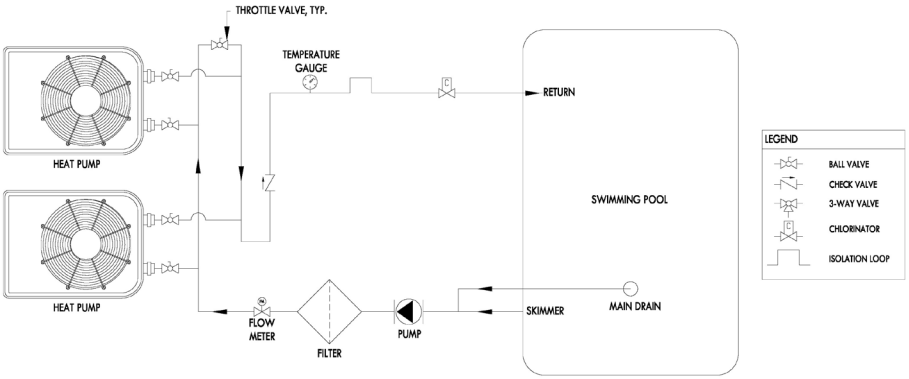


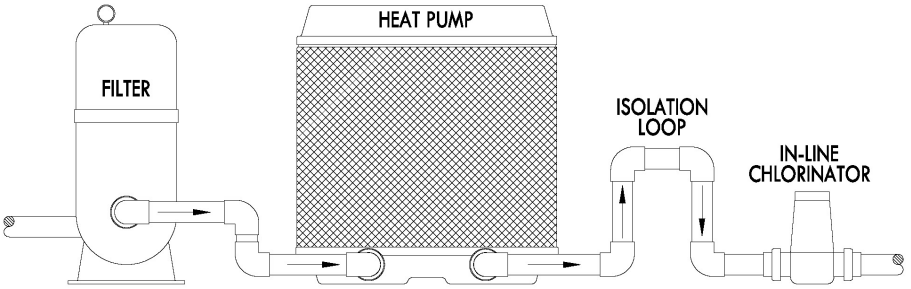
FIGURE 5.5: MULTIPLE HEAT PUMPS & POOL



IN-LINE CHLORINATORS

- In-line chlorinators must be placed downstream of the heat pump pool heater as low to the ground as possible.
- The plumbing placed between the chlorinator and heat pump must be done in a way to isolate chemical concentrations from entering the heat pump when the pool's filter pump is off. The isolation loop method shown in Figure 6 is one method to achieve this.
- Failure to isolate high concentrations of chemicals in the water from entering the heat pump pool heater will damage the heat exchanger.

FIGURE 6: ISOLATING IN-LINE CHLORINATOR



Electrical Connections

- Field connections must comply with NEC and local electrical codes, (i.e. CSA C22.1 or NFPA70.) The work must be done by a qualified electrician.
- The heat pump must be permanently grounded and bonded. Bonding will drastically reduce the chances of electrolysis (Electrical Corrosion) due to dissimilar metals.
- Use copper conductors only.

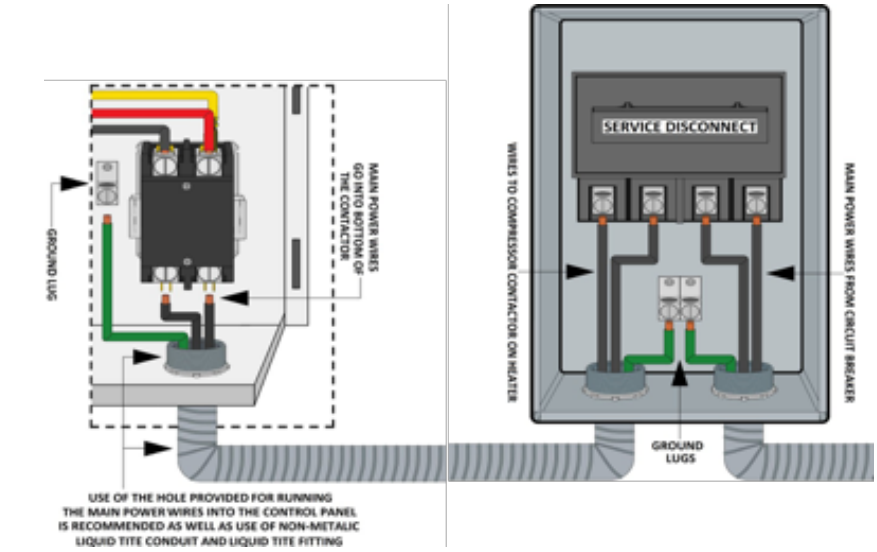
DANGER: Disconnect all power sources before performing any work on unit.

- Standard Power Supply: 230Volts – 60Hertz – 1Phase.
- See unit data plate for specific ampacity.

WIRING THE MAIN POWER SUPPLY

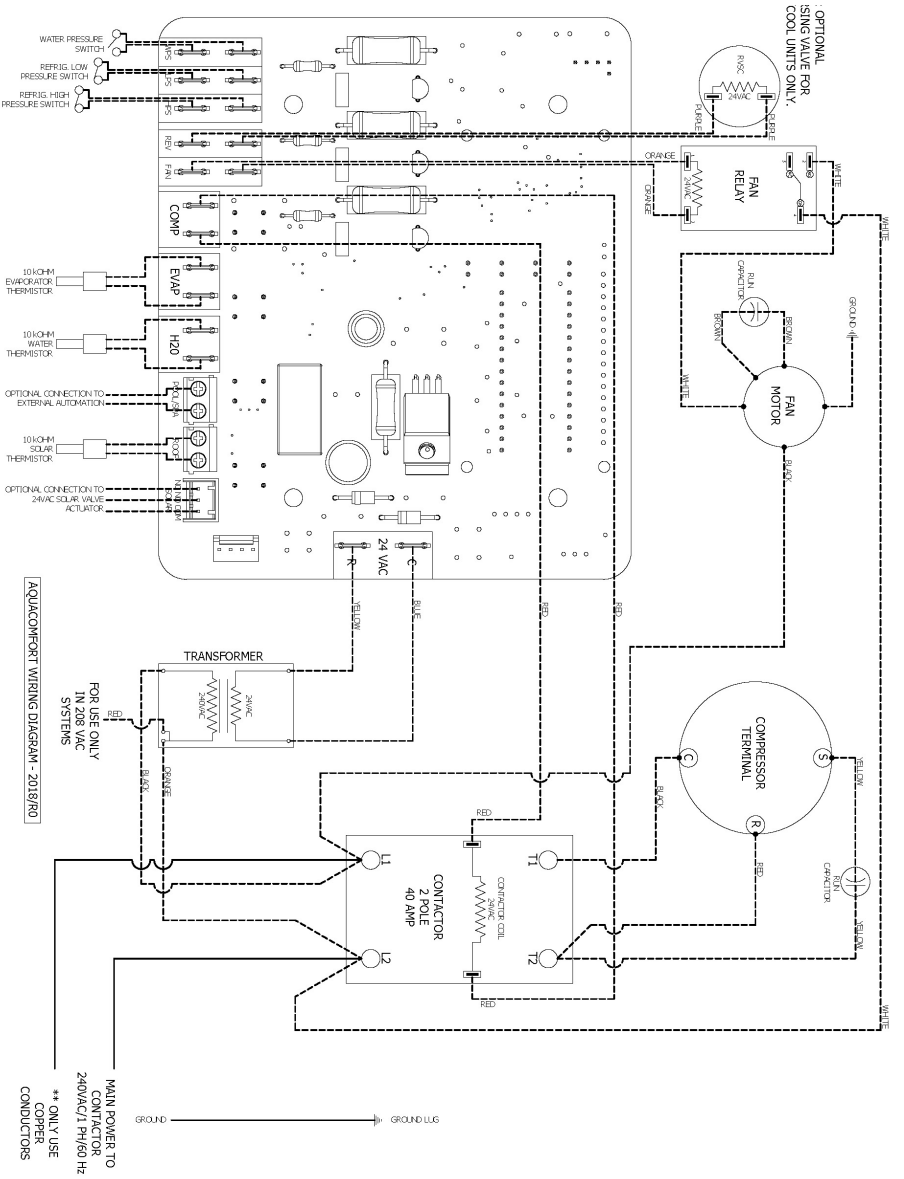
1. Remove the screws from lower left and right side of front cover (service panel).
2. Remove the screws on left side of the hinged electrical enclosure.
3. Route weather tight, flexible conduit through opening at base of unit.
4. Connect conduit to bottom of the electrical enclosure using a weather tight fitting. A 1.13" hole is provided near the main contactor to accept a weather tight fitting. Mounting conduit directly to the electrical enclosure will ensure a moisture tight seal, thus extending the life of the heat pump. Attach grounding conductor to the ground lug provided inside the electrical enclosure (labeled).
5. Install L1 and L2 input conductors to the line side of the main contactor. (See wiring diagrams.) Ensure that the wires are inserted properly into the contactor connecting lugs and that the screws are properly torqued. Torque lugs to 40 in-lbs. Burnt/failed contactors due to poor field wiring is NOT covered under warranty!
6. Connect bond wire (at least #8 solid copper wire) to bond lug provided on right or left side of coil header plate to pool pump bonding terminal or other suitable location.

FIGURE 7: MAIN POWER SUPPLY



Wiring Diagram

1. Use copper conductors only.
2. Connect field wiring in grounded rain tight conduit, per rating plate.
3. Connect bond wire to pool steel using # 8 solid copper wire or larger.
4. All wiring must conform to National (N.E.C.) and local electrical codes.



Connecting to Automated System

Wiring External Controls and Remotes For Heating Control:

NOTE: When connecting remotes and external controls to the main control within the electrical enclosure, conduit must be used within the enclosure to ensure a definite separation of factory wiring/circuits and external control wiring. When installed ensure that there is no transmission of stress to main control wire terminal connections.

1. Route control wires through .875" hole provided in bottom of electrical panel.
2. Route control wires to the circuit board.
3. Connect control wiring to the POOL / SPA connection at the bottom right of control board. ***See page 15 for diagram showing location on Board.***
4. See Below (Remote Thermostats and Controllers: Controlling in Heating)

REMOTE THERMOSTATS AND CONTROLLERS (Controlling a Heat only Model)

If a remote thermostat or any other control system is to be used to turn the heat pump on and off, a normally open dry contact connection can be made at the terminals labeled POOL/SPA on the bottom right of the electronic control board. In the case of a remote thermostat where the temperature will be regulated externally, set the "POOL" mode to the OFF position and the "SPA" mode to 104º F (40º C). The heat pump will only run when the remote control calls for heating (circuit closed).

When the heat pump is being told to turn on by the Automated system, it will switch into "SPA" mode.

This does not mean it has changed how it heats but simply that "SPA" mode is the mode that is enabled for Automated system control in heating.

CONTROLLING A HeatCOOL MODEL WITH AN AUTOMATED SYSTEM

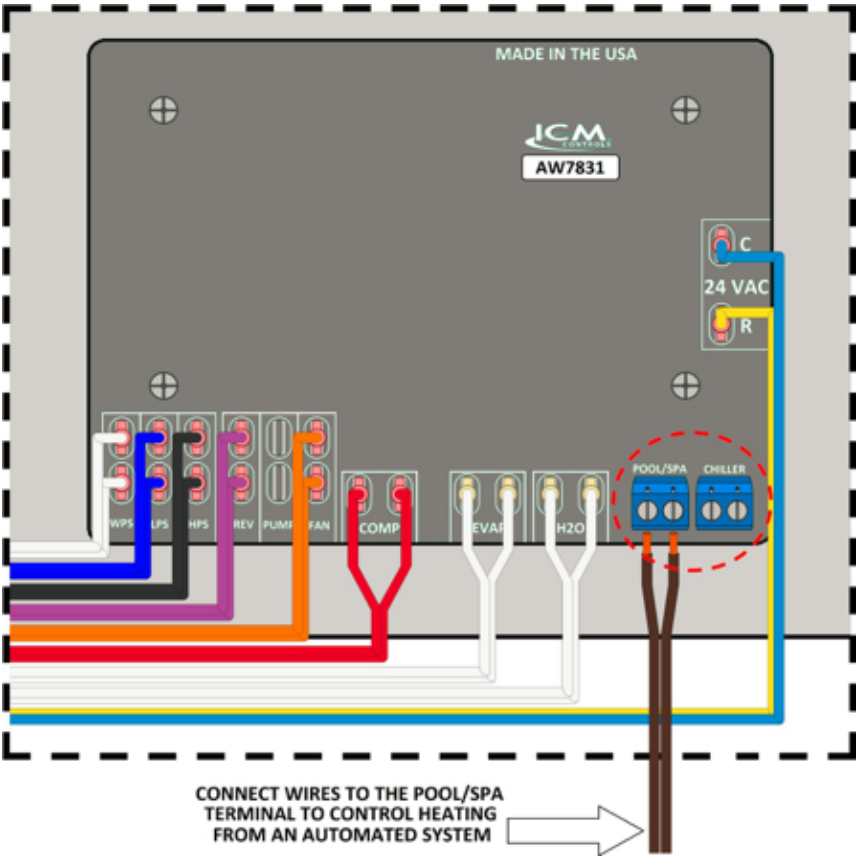
If a remote thermostat or any other control system is to be used to turn a Heat/Cool unit on and off, first go to the pool mode set point temperature. This is accomplished by pushing the hand (settings) button multiple times until you see "POL" on the display. As soon as the display shows this, press the up arrow multiple times until the set point temperature is at 90.

In order for the cooling feature to work while the unit is connected to an automated system, the unit must be set to auto mode. To do this push the hand button multiple times until you see "PHC" in capital letters on the display. As soon as you see this press the up arrow multiple times until "AUt" is displayed on the unit. The LED next to the word Pool will no longer be illuminated.

The final setting you must do in order for the heat/cool unit to work properly with the automated system is set the SPA set point temperature to 104. To do this, press the hand button multiple times until the display reads "SPA" and then immediately press the up arrow multiple times until you reach 104. Once that is done the unit should be ready to be controlled by the automated system.

When the HeatCOOL unit is being told to turn on by the Automated system, it will switch into "SPA" mode. This does not mean it has changed how it heats but simply that "SPA" mode is the mode that is enabled for automated system control in heating.

Automated System Wiring Installation Diagram



Start Up

ON/OFF MODE

When in OFF Mode the display will show actual water temperature for six seconds and then display “OFF” for two seconds. When the unit is set to “ON”, it will show the actual water temperature for six seconds and then show “HEA” for two seconds. To switch the unit from “off” to “on”, Press the SELECT KEY until you reach “OFF”. Then immediately press the down arrow twice. The display should read on in lower case letters. To switch the unit from on to off, Press the SELECT KEY until you reach “OFF”. Then immediately press the up arrow twice. The display should read “OFF” in lower case letters.

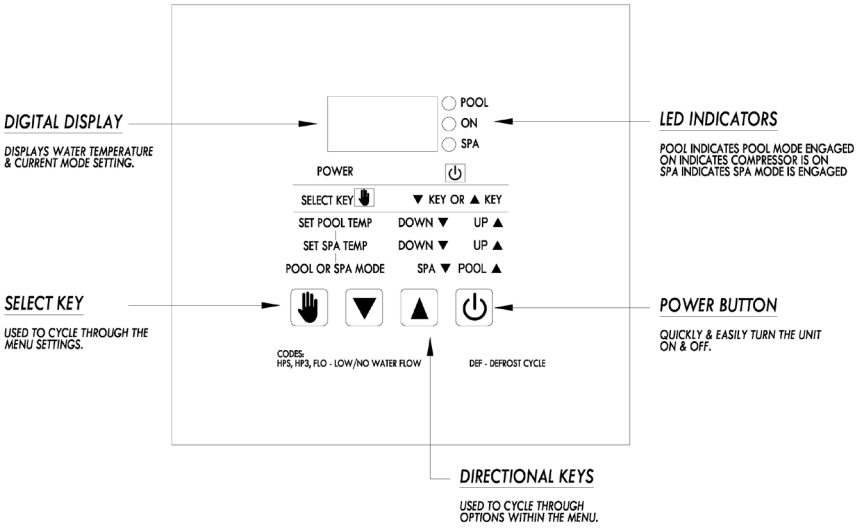
NOTE: Some units will have a power button (⏻) on the control board.
Pressing this simply turns the unit on or off with one press.

NOTE: The fan may take **3-5 minutes** to start after pressing the power button.

Electronic Control Panel

The control panel will display the actual Pool or Spa water temperature for six seconds and then display the mode of operation that it is currently in (HEA, COL, AUt or OFF) for two seconds.

MENU OPTIONS



The unit will be factory preset as follows:

- Heat only unit: Will be programmed in “Pool mode (POL)” to “heat” and set to desired temperature of 82°F.
- Chill only unit: Will be programmed in “Pool mode (POL)” to “cool” and set to desired temperature of 87°F.
- Heat/Cool unit: Will be programmed in “Pool mode (POL)” to “auto” and set to desired temperature of 87°F.

FACTORY SELECT MENU

Select Menu Setting	POL	SPA	SSP	P_S	PHC
Default Setting	85	85	82	dIS	P_H

Pool Mode Set Point:

When SELECT button is pressed the control displays pool set point screen “POL”

- The set point is raised by pressing the UP button up to desired temperature. (95°F, 35°C maximum)
- The set point is lowered by pressing the DOWN button down to 61 (61°F, 10°C). When DOWN button is pressed again then “OFF” will be displayed.
- The set point is adjusted faster by holding pressed UP or DOWN button.

Spa Mode Set Point:

When SELECT button is pressed again after POL is displayed the control displays spa set point screen “SPA”

- The set point is raised by pressing the UP button up to desired temperature. (104°F, 40°C maximum)
- The set point is lowered by pressing the DOWN button down to 61 (61°F, 16°C) When DOWN button is pressed again then “OFF” is displayed.
- The set point is adjusted faster by holding pressed UP or DOWN button

Solar Mode Set Point

This feature shows only when enabled in Configuration menu.
When SELECT button is pressed again after SPA is displayed the control displays spa set point screen “SSP”

- The set point is raised by pressing the UP button up to 105 (105°F, 41°C)
- The set point is lowered by pressing the DOWN button down to 61 (61°F, 16°C). The value for SSP may be equal to or greater than the value for POL but not lower when operating in pool mode. The value for SSP may be equal to or greater than the value for SPA but not lower when operating in spa mode.
- The set point is adjusted faster by holding pressed UP or DOWN button

Pool vs. Spa Mode Selection

When SELECT button is pressed again after SPA or SSP display then shows Pool vs. Spa mode screen is, “P_S”

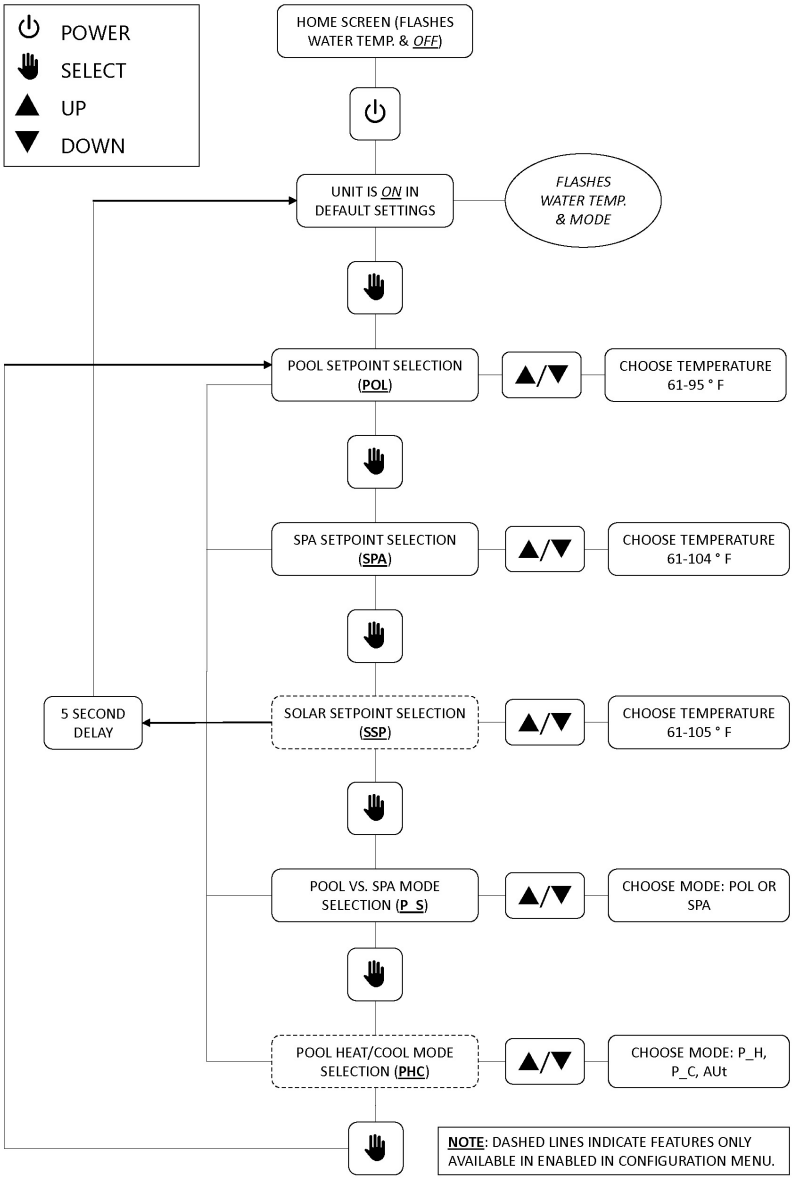
- Pool mode is selected by pressing UP button
- Spa mode is selected by pressing DOWN button
- Note this will be overridden by the remote pool spa switch.

Pool Heat vs. Cool Mode Selection

This feature shows only when enabled in Configuration menu.
When SELECT button is pressed after P_S display the control displays pool heat vs. cool mode screen “PHC”

- With UP button user sets the Pool Heat mode, “P_H”
- With DOWN buttons user sets the Pool Cool mode, “P_C”
- With either UP or DOWN buttons a second time user sets the Auto mode, “AUt”. This is set for heat-cool units to automatically switch between heating and cooling.

FACTORY SELECT MENU CHART



FACTORY CONFIGURATION MENU

Configuration Menu Setting	F_C	P_C	SLR	S_t	tSC	dSC	sSC	db	SDS	SDO	dEF	dEL
Default Setting	°F	dIS	dIS	dIS	0	0	0	2	6	3	Alr	0

The service menu is entered by a serviceman by pressing UP and DOWN buttons simultaneously for 5 seconds. The screens and settings within the service menu are shown below. User advances from one screen to another and goes in circles by pressing Select button.

Temperature Scale Selection (Fahrenheit vs. Celsius):

When the unit enters Service Menu display will read F_C. Or if the SELECT button is pressed again after setting DEL. This is for temperature scale selection displayed in Fahrenheit or Celsius. The Fahrenheit scale, "°F" is selected by pressing the UP button or the Celsius scale, "°C" is selected by pressing the DOWN button. Factory default is F.

Pool Cool Mode Selection Enable/Disable:

When SELECT button is pressed again after F_C then display reads P_C. This feature is enabled (EnA) by pressing the Up button or disabled (dIS) by pressing the DOWN button. Factory default is dIS.

Solar Mode Selection Enable/Disable:

When SELECT button is pressed again after P_C then display reads SLR. This feature is enabled (EnA) by pressing the UP button or disabled (dIS) by pressing the DOWN button. Factory default is dIS.

Water Temperature Reading Calibration:

When SELECT button is pressed again after SLR then the display reads tSC. This feature is used to adjust the reading calibrated of the water temperature +/-5°F (+/-3°C). The control will show the water temperature reading plus calibration setting when is in normal operating screen. Factory default is 0.

Evaporator Temperature Reading Calibration:

When SELECT button is pressed again after tSC then the display reads dSC. This feature is used to adjust the reading of the evaporator temperature +/-5°F (+/-3°C). The control will show evaporator temperature reading plus calibration setting when the SELECT and UP buttons are held for 5 seconds. The control will revert back to the water temperature after 5 seconds of viewing the evaporator temperature. Factory default is 0.

Solar Temperature Reading Calibration:

When SELECT button is pressed again after dSC then the display reads sSC. This feature is used to adjust the reading of the solar temperature +/-3°F (+/-2°C). The control will show solar temperature reading plus calibration setting when the SELECT and DOWN buttons are held for 5 seconds. The control will revert back to the water temperature after 5 seconds of viewing the evaporator temperature. Factory default is 0.

HeatCOOL Call Differential Setting:

When SELECT button is pressed again after the sSC then display reads db. This feature can be adjusted from 1 to 3 °F in 1 increment (0.5-1.5°C, 0.5 increments). This is the minimum distance between heat and cool set points in pool mode. Factory default is 2°F.

Solar Call Differential START Setting:

When SELECT button is pressed again after the db then display reads SDS. This feature can be adjusted from 4 to 9 °F in 1 increment (2-5°C, 0.5 increments). This is the minimum distance between heat and cool set points in pool mode. Factory default is 6°F.

Solar Call Differential OFF Setting:

When SELECT button is pressed again after the SDS then display reads SDO. This feature can be adjusted from 2 to 5 °F in 1 increment (1-3°C, 0.5 increments). This is the minimum distance between heat and cool set points in pool mode. Factory default is 3°F.

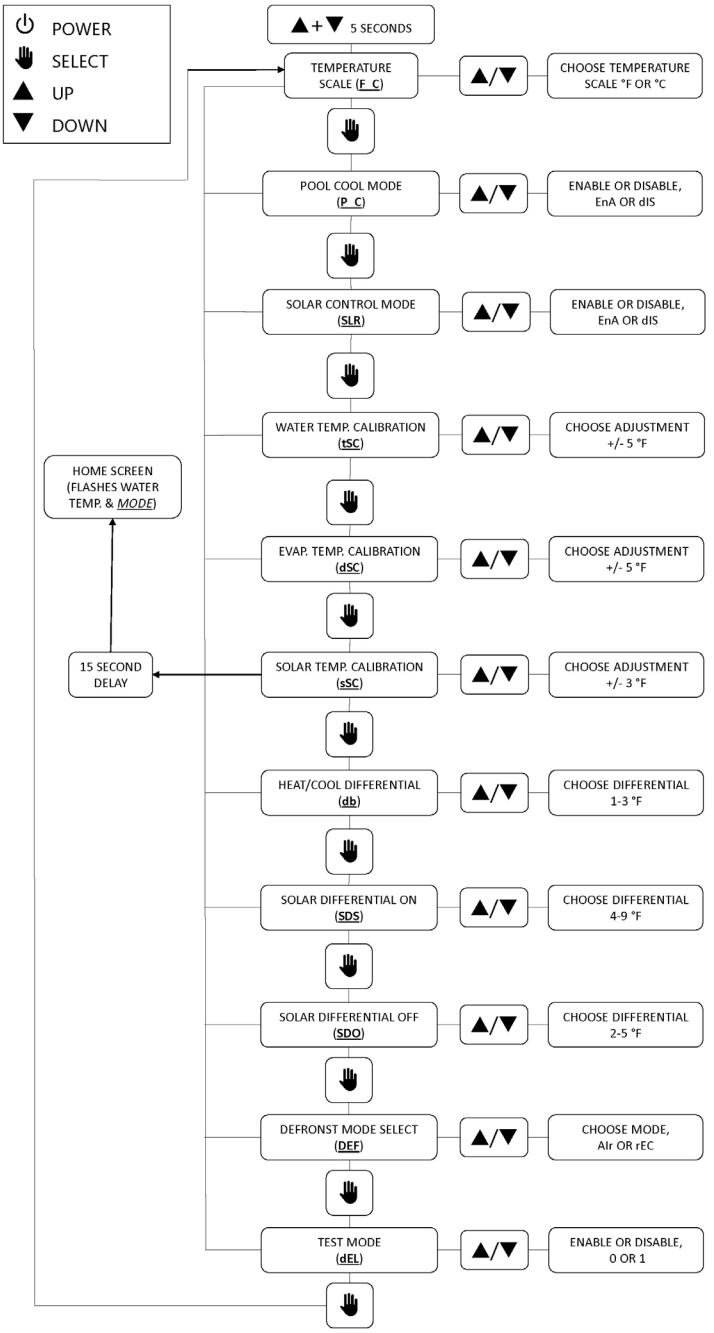
Defrost Selection:

When SELECT button is pressed again after the SDO then display reads DEF. This feature DEF is either Air defrosting selected by pressing the Up button or Reverse cycle defrosting selected by pressing the down button. Factory default is AIr. The control will show AIr for Air defrosting and rEC for Reverse cycle defrosting

Test Mode:

When Select button is pressed again after the DEF then display dEL. This feature is used to enable a test mode. Test mode bypasses the time delays. Using the UP button the setting can be changed from 0 to 1. The setting “1” means the control is in test mode for one compressor cycle. After the compressor cycle ends the test mode is ended. Factory default is 0.

FACTORY CONFIGURATION MENU CHART



Mode of Operation

HEAT ONLY UNIT

- Power up the unit. After a 3-5 minute delay the fan will start and the board will display “rXX” and then it will display the current pool water temperature. Your Pool LED light will light up as well. Your pre-set desired pool water temperature is 82. To adjust up or down to a different desired pool water push the select/service button (the hand button) until “POL” appears and then use the up or down arrows to set your desired temperature.
- Once the desired temperature is set, within a short time the board will revert to displaying the actual pool water temperature.
- Within 5 minutes of start up the “ON” LED will illuminate to indicate that heat pump is heating. The board will then display the current pool water temperature and “HEA” intermittently.

AquaCOOL UNIT

- Power up the unit. After a 3-5 minute delay the fan will start and the board will display “rXX” and then it will display the current pool water temperature. Your Pool LED light will light up as well. Your pre-set desired pool water temperature is 87. To adjust up or down to a different desired pool water push the select/service button (the hand button) until “POL” appears and then use the up or down arrows to set your desired temperature.
- Once the desired temperature is set, within a short time the board will revert to displaying the actual pool water temperature.
- Within 5 minutes of start up the “ON” LED will illuminate yellow to indicate that the chiller is cooling. The compressor will start, the board will then display the current pool water temperature and “COL” intermittently.

HeatCOOL UNIT

- Power up the unit. After a 3-5 minute delay the fan will start and the board will display “rXX” and then it will display the current pool water temperature. Your Pool LED light will light up as well. Your pre-set desired pool water temperature is 87. To adjust up or down to a different desired pool water push the select/service button (the hand button) until “POL” appears and then use the up or down arrows to set your desired temperature.
- Once the desired temperature is set, within a short time the board will revert to displaying the actual pool water temperature.
- Within 5 minutes of start up the “ON” LED will illuminate to indicate that the heat pump is heating. The compressor will start, the board will then display the current pool water temperature and either “HEA” or “COL” intermittently depending on whether your unit is heating or cooling.

HEATING IN SPA MODE

- Use the select/service button to scroll through the menu until “P_S” is displayed. Use the up or down arrow key to select “S”. The “Spa” LED will illuminate. Once water temperature appears, use the up or down arrow buttons to set desired Spa temperature. Within 5 minutes of start up the “ON” LED will illuminate to indicate that the heat pump is heating. The board will then display the current spa temperature and “Spa” intermittently.

SOLAR DIFFERENTIAL CONTROL

- All models have a controller with the ability to control a solar pool heating system without having to use an external solar controller. Solar mode may be enabled in pool and spa heat modes. Solar mode is disabled by default.
- When enabled the control will send power to a 24 VAC diverter valve to divert water flow to, or away from, the solar collector loop.
- The call to divert water to the solar loop is initiated when the difference between the solar sensor and the water sensor is equal to, or greater than, the solar differential start setting (SDS) AND the water sensor reading is less than the solar set point setting (SSP).
- The call to turn the diverter back to the pool and away from the solar loop (home position) is initiated when the difference between the solar sensor and the water sensor is equal to, or less than the solar differential off setting (SDO) OR the water sensor reading is equal to or greater than the solar set point setting (SSP).
- When P_C is enabled and the controller switches to cooling mode then solar mode will be disabled until the cooling mode is deactivated.
- When solar mode is activated heat pump heating mode is deactivated for a minimum 3 minutes. After 3 minutes heat pump heating mode will be reactivated if conditions dictate so. This time delay will prevent the compressor from damage due to short cycling.

NOTE: When using a solar pool heating system in conjunction with a heat pump the factory installed water temperature sensor must be disconnected from the controller. A new temperature sensor must be electrically connected to the control board and installed in the PVC piping between the filter outlet piping and the 3-way (solar) diverter valve in the pool plumbing circuit.

TEMPERATURE SET POINT

- Temperature set point maximum for POOL mode is 95°F (35°C).
- Temperature set point maximum for SPA mode is 104°F (40°C).
- Temperature set point maximum for SOLAR mode is 105°F (41°C) displayed for 5 seconds, then revert back to the actual pool or spa water temperature.

NOTE: HeatCOOL UNITS WILL ONLY COOL IN THE POOL MODE. (NOT IN THE SPA MODE)

- Before proceeding with this section make certain all plumbing connections are water tight and leak free. Flow rates should not exceed 70 GPM maximum. Use of an external bypass is necessary at 70 GPM and above. Minimum flow rate is 20 GPM.
- Turn power supply to heat pump ON.
- The control panel will light up and display either OFF or the actual pool water temperature.
- See Electronic Control Panel section (page 2-3) to program the unit.
- For initial heating, the pool heat pump and filter pump should run continuously until your desired temperature is reached. Once desired pool water temperature is achieved, turn the filter pump time clock to the ON position and set filter pump hours. After initial heating and desired temperature is achieved, the heat pump will run only to maintain the desired temperature.
- If your programmed water temperature is above the actual water temperature, the fan and compressor will start once the time delay is satisfied.

NOTE: Each time the compressor turns off it is protected by a 5 minute delay to prevent short cycling.

OPERATING HOURS

Initial heating may require you to run the heat pump and filter pump continuously until desired temperature is achieved. Once temperature is achieved, heat pump/filter run time is dependent on the following factors:

- Size of pool.
- Temperature difference between actual water temperature and desired water temperature.
- Ambient air temperature (the cooler the air temperature the longer the heating time).
- Heat loss (evaporative, convective, radiative and conductive).
- A pool cover/solar blanket may reduce initial heating time substantially.

REDUCING HEAT LOSS - POOL COVER / SOLAR BLANKET

We highly recommend the use of a pool cover/solar blanket. Covering the pool is the single most cost-effective means of reducing heat costs by as much as 70%. Heating a pool without a cover is like heating a house without a roof. Evaporation accounts for the greatest percentage of pool heat loss; the beneficial effect of using a pool cover or solar blanket can be dramatic.

WIND SPEED REDUCTION

Reducing wind velocity at the water surface reduces convective and evaporative losses. Fences, trees, hills, or tall hedges close to the pool perimeter are effective windbreaks. Locate the obstructions to take the maximum advantage of their effectiveness as windbreaks, without shading the pool surface from the sun.

DEFROST CYCLE

The heat pump pool heater has an automatic defrost function. When the outdoor temperature drops below 40 °F, frost may start to form on the evaporator (air) coil. Frost buildup will be heaviest on humid days when the temperature is between 35 and 40° F. During the defrost cycle, the display will show “DEF” indicating the unit is defrosting. During this time the compressor is inactive and the fan will run.

- Defrosting applies in pool and spa heat modes.
- Defrosting occurs when evaporator sensor reading is below 28°F (-4°C).
- Defrosting is terminated when evaporator sensor reading is above 40°F (4.5°C).
- During air defrosting, the compressor is turned off but the fan keeps running.
- During reverse cycle defrosting compressor will keep running, fan will shut off, and the reversing valve is engaged. Evaporator temperature conditions for initiation and termination of defrosting are the same as for air defrosting above.
- During defrosting “DEF” is displayed.

INTERNAL PROTECTION ANALYZERS

- The heat pump is equipped with internal devices to monitor and protect the integrity of the unit. If an abnormal condition occurs, the device will interrupt the operation of the unit and may display the appropriate code on the control panel.
- LOW WATER FLOW: Indicated by “HPS” or “HP3” on the control panel. The heat pump is designed to run efficiently above twenty (20) GPM. If there is insufficient water flow the unit will shut down to protect the compressor. The usual causes for these conditions are a dirty pool water filter, a restriction in the return line (i.e. skimmer), or improper valve positioning.
- NO WATER FLOW: Indicated by “FLO” on the control panel. When the filter pump is off, or if the water flow to the heat pump is interrupted during the heating mode, the internal water pressure switch will shut down the unit. When normal water flow resumes, the heat pump will automatically restart itself as long as there is a call for heat.
- Other analyzer codes include: “LPS”, “tSO”, “tSS” and “ESO” and “ESS”.

QUICK VIEWING OF EVAPORATOR & SOLAR SENSOR READING

- The Evaporator reading will be shown when the SELECT and UP buttons are pressed and held for 5 seconds. After 5 seconds control reverts back to show water temperature reading.
- The Solar reading will be shown when the SELECT and DOWN buttons are pressed and held for 5 seconds. After 5 seconds control reverts back to show water temperature reading.

KEYPAD LOCKOUT FEATURE

This feature will work as follows:

Setting the Lockout Code:

- Press Select menu and hold it pressed **AND** power the control up.
- Then control will show the spacing for two digits "_ _" from cover value from 00 to 99.
- The user enters the desired code and presses SELECT to save value. Factory default value is 20.

Locking Process:

- To lock the keypad user will press SELECT button for 5 seconds and display will show spacing for a two digit code "_ _"
- User presses the Up or Down buttons to enter the code saved from the setup of the lockout feature value from 00 to 99.
- User will enter the code according to the pre-set code.
- Control will be shipped with pre-set code of 20.
- User presses SELECT button and control flashes LOC 3 times then show – and switches to show water temperature.
- Each time user presses a button the control will show "LOC" for 3 seconds and then show water temperature.

Unlocking Process:

- To unlock the keypad user will press SELECT button for 5 seconds and display shows spacing for a two digit code "_ _" at the right hand side
- User enters the saved code value and presses SELECT button
- If correct code is entered then control switches to show water temperature
- If incorrect code is entered then control will flash "LOC" for 3 seconds and switch back to "_ _"
- If nothing is entered for the next 5 seconds then control will switch to show water temperature and remains locked.

Maintenance

PROTECTING YOUR HEAT PUMP

- Keep your pool filter system clean and free of restrictions to ensure proper water flow.
- Check water chemistry regularly. Misuse of chemicals will cause permanent damage to your heat pump and other pool equipment. Manufacturers can void warranties for damage as a result of poor water quality.
- Free airflow is essential. Keep the evaporator coil clean and free of weeds, leaves, glass clippings, dirt, and other debris that will decrease the airflow. Keep fences and shrubs away from air inlets (sides and back of heat pump).
- Frequent rinsing of the evaporator coil with fresh water will remove build up from its surface. Always spray the coil gently with a regular garden hose being careful not to bend the aluminum fins.
- Regular cleaning of the cabinet will improve its appearance and extend the life of the finish.

Winterizing

When the heat pump is exposed to freezing (below 32°F / 0°C) temperatures, it is essential that all water within the unit be properly drained. When water freezes it expands which can damage or cause the piping to burst.

We highly recommend that your pool be opened and closed by a pool professional.
Freeze damage, caused by improper winterizing is not a defect.
Repair of freeze damage is expensive and not covered under warranty.

- Turn thermostat settings to OFF. Turn filter pump to OFF.
- Turn power to unit OFF (i.e. pull disconnect or turn circuit breaker OFF).
- Disconnect water inlet and outlet unions at the back of the unit. (Be careful not to lose the rubber o-rings.)
- Flush the heat pump piping out with fresh water to remove any residual chemicals.
- Use low-pressure air or vacuum to remove water that has accumulated inside the piping of the heat pump.

Troubleshooting Checklist

- Check to see that the electrical power is on. Reset breakers, or replace fuses if necessary.
- Check to be sure the electric control panel is set properly. The desired temperature must be set above the actual pool or spa temperature for the heat pump to run.
- Check to make sure the evaporator coil has enough clearance and that there are no restrictions to its airflow.
- Certain ambient air conditions may cause the heat pump to go into defrost mode, displayed on the control panel as “DEF”.

NOTE: IT IS NORMAL FOR WATER TO DRIP FROM THE DRAINHOLES AT THE BASE OF THE HEAT PUMP. THE UNIT PRODUCES CONDENSATION WHEN IT OPERATES.

Often this condensation is mistaken for a leak in the unit. There are 2 quick ways to check to see if your “leak” is condensation. Check as follows:

- Use a chlorine test strip to test the water coming out of the base of the heat pump. If there is no chlorine present and it doesn’t match the water in your pool, it is condensation from the evaporator (air) coil.
- Turn the heat pump off for a few hours but continue running your filter pump. If the base of the heat pump dries up then your fluid is condensation since pool water is still running through the heat pump but is not leaking.

ANALYZER CODES:

FAILURE LOCK-OUT: This feature is for the protection of the heat pump. If the same failure occurs three (3) times within an hour, the control will not allow the unit to restart, and shall display the appropriate code (i.e. “LP3”, “HP3”). Reset to normal conditions can be accomplished by pressing any button on the control panel touch pad one time.

“FLO” (Little or No Water Flow)

- The water/filter pump is not running.
- The filter is dirty or clogged.
- Shortage of water to pump - air leak.
- Undersized pump.
- Valves not in correct position.
- Filter in backwash mode.
- Water pressure switch needs adjustment, or is defective.*

“HP5”: Compressor High Pressure Switch is Open

- Low water flow to heat pump.
- Defective high-pressure switch.*

“LP5”: Compressor Low Pressure Switch is Open

- Evaporator coil dirty.
- Fan motor not running.*
- Low refrigerant pressure.*
- Defective low-pressure switch.*
- Low ambient air temperature.

“E5O”: Evaporator Temperature Sensor Connection Opened

- Check for cut or loose sensor wiring or a defective sensor.*

“t5O”: Water Temperature Sensor Connection Opened

- Check for cut or loose sensor wiring or a defective sensor.*

“E55”: Evaporator Temperature Sensor Connection Shorted

- Check for a short in sensor wiring or a defective sensor.*

“t55”: Water Temperature Sensor Connection Shorted

- Check for a short in sensor wiring or a defective sensor.*

“DEF”: The heat pump is in defrost cycle.

If any of the above codes reappear after corrective actions have been taken and the unit has been reset then please call AquaComfort Solutions for information on an authorized service provider.

(* Call Authorized Service Provider: 888-475-7443)

Requesting Service

Please eliminate any water flow problems before calling for service.
Visit www.AquaComfort.com, click “Service and Support” and complete the Service Request form. This is the fastest and most effective way to get service.

Service performed within the warranty period **MUST BE APPROVED** by AquaComfort Solutions, LLC. prior to service being performed and only by an AquaComfort Solutions Authorized Technician.
See warranty for details.

Please have the following ready before completing your service request online:

OWNER NAME: _____

OWNER ADDRESS: _____

OWNER PHONE: _____

DATE OF INSTALLATION: _____

MODEL #: _____ **SERIAL #:** _____

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