

AquaCal®

Operation Manual P₃

HEATWAVE SUPERQUIET®



Dial Display



Important

Read this document before operating / installing this product

For additional product manuals and operation / installation procedures, please visit www.AquaCal.com

MODEL / SERIAL NUMBER

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Contacting AquaCal AutoPilot, Inc.

For further assistance, please contact the distributor or installer of this product.

If unavailable, please contact AquaCal® for a partner in your area. To better assist you, please have the heat pump model and serial number available.

- See "Identifying Model Specifications" on page 12.

Product Information:	
Website	www.AquaCal.com
Phone	(1) 727-823-5642
Hours	8-5 pm, Eastern M-F

Service Information:	
Website	www.AquaCal.com/request-heat-pump-service/

SAFETY

- 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 AquaCal.

SAFETY SIGNALS

Throughout this document, safety signals have been placed where particular attention is required.



DANGER

Failure to heed the following will result in injury or death.



WARNING

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



NOTICE

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

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



DANGER

Failure to heed the following will result in injury or death.

- The heat pump utilizes high voltage and rotating equipment. Use caution when servicing.
- Follow all National Electric Codes (NEC) and/or State and Local guidelines.

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.
- Improper water chemistry can present a serious health hazard. To avoid possible hazards, maintain pool/spa water per standards as detailed in this document.
- Prolonged immersion in water warmer than normal body temperature may cause a condition known as Hyperthermia. The symptoms of Hyperthermia include unawareness of impending hazard, failure to perceive heat, failure to recognize the need to exit the pool or spa, and unconsciousness. The use of alcohol, drugs, or medication can greatly increase the risk of fatal Hyperthermia. People having an adverse medical history, or pregnant women should consult a physician before using a hot tub or spa. Children and the elderly should be supervised by a responsible adult.
- This appliance is not to be used by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Children must be supervised and are not to play with the appliance.

NOTICE

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

- Maintain proper water chemistry to avoid damage to the pump, filter, pool shell, etc.
- Water flow exceeding the maximum flow rate requires a bypass. Damage due to excessive water flow will void the warranty.
- Failure to protect equipment against corrosive conditions will adversely affect the life of the equipment and will void equipment warranty.

SAVE THESE INSTRUCTIONS

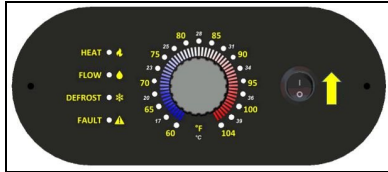
1 - Operation

IN THIS SECTION:

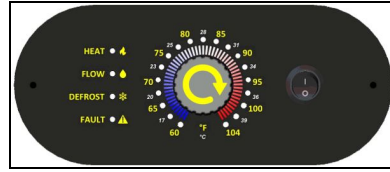
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1.1 Dial Control Panel

Set a desired temperature



Press power switch to activate heat pump,



Turn dial to desired temperature. Blinking light indicates current temperature.

1.2 Operating Heat Pump (With an External Controller)

Controller with an internal thermostat control

Activating Heat Pump

1. Set the desired temperature at the external controller.
2. Use the external controller to select either the "Pool" or "Spa" to heat.

Deactivating Heat Pump

- Set the external controller to "OFF".

Controller with 2 positions - ("Pool" and "Spa" - *no internal thermostat control*)

Activating Heat Pump

1. Set the desired temperatures on the heat pump thermostats.
2. Use the external controller to select either the "Pool" or the "Spa" thermostat.
 - *Rapid movement between thermostats without a "rest" between each change can cause a missed signal by the heat pump.*

Deactivating Heat Pump

- Go to the heat pump and set the mode to "OFF".

Controller with 3 positions - ("High", "Low", and "Off" - *no internal thermostat control*):

Activating Heat Pump

1. Set the desired temperatures on the heat pump thermostats.
2. Use the external controller and select the "High" or "Low" thermostat.
 - *When changing between thermostats, select "Off" first. Then select desired thermostat.*
 - *Rapid movement between thermostats without a "rest" between each change can cause a missed signal by the heat pump.*

Deactivating Heat Pump

- Set the external controller to "OFF".

2 - Maintenance

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2.1 Water Chemistry

Check water chemistry regularly and maintain within recommended levels. Standards vary in different residential and commercial applications. Follow all local applicable codes.

NOTICE

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

- Do not allow water to flow through the heat pump when refinishing or acid washing a pool. Use an installed bypass to route water away from the heat pump or deactivate the filter pump.
- To avoid damage to equipment, monitor and maintain chemistry within recommended levels.

CHEMISTRY LEVEL CHART (RESIDENTIAL)		
CHEMICAL	POOLS	SPAS
Chlorine	1.0 – 3.0 ppm (1 – 3 mg/L)	3.0 – 5.0 ppm (3 – 5 mg/L)
Bromine	2.0 – 6.0 ppm (2 – 6 mg/L)	2.0 – 6.0 ppm (2 – 6 mg/L)
Cyanuric Acid	30 – 50 ppm (30 – 50 mg/L)	30 – 50 ppm (30 – 50 mg/L)
pH	7.4 – 7.6	7.4 – 7.6
Total Alkalinity	80 – 120 ppm (80 – 120 mg/L)	80 – 120 ppm (80 – 120 mg/L)
Calcium Hardness	200 – 400 ppm (200 – 400 mg/L)	150 – 250 ppm (150 – 250 mg/L)
Total Dissolved Solids*	0 – 1500 ppm (0 – 1.5 g/L)	1500 (1.5 g/L) ppm above start-up of total dissolved solids in spas

* Salt from a chlorine generator is not included in Total Dissolved Solids.

2.2 Cleaning Equipment

Cleaning and polishing the heat pump regularly can protect its appearance and longevity. More frequent servicing may be required for heat pumps located in sandy or coastal areas where sand and salt spray can damage equipment.



WARNING

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

- Possible electric shock hazard - Deactivate power to all electrical devices on the pad when washing heat pump. Do not restore electrical power until equipment is completely dry.

NOTICE

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

- Do not use a pressure cleaner to wash the heat pump. Damage to heat pump components may result. If using a hose-end spray nozzle adjust the spray pattern to low strength only.
- Do not spray water directly into the interior of the heat pump; damage to components may result.
- Do not use chemicals on the display panel.

Cleaning

1. Wash cabinet using a low-pressure water hose. A high-pressure water stream will cause damage to the aluminum fins of the heat pump. This damage is not covered under the product warranty.
2. While the heat pump is still wet, use an approved cleaning agent to clean the exterior of the heat pump. **Do not use chemicals on the display panel.**
3. Use a detergent-dampened cloth to wipe the heat pump's exterior cabinet.
4. Flush all exterior with fresh water using a low-pressure water hose.
5. Dry the cabinet using a soft cloth being careful not to damage fins.

APPROVED CLEANING AGENTS*

Fantastic®

Formula 409®

Cascade®

All Power Plain Detergent (3% Solution)

Table 1 - Cleaning Agents

- The trademarks used in approved cleaning agents are the property of their owners and are not related to AquaCal®.

Polishing

1. Polish the heat pump's cabinet panels using an approved polishing agent and following the manufacturer's instructions. **Do not use chemicals on the display panel.**
2. Rinse the heat pump panels with fresh water, wipe, and buff panels using a dry soft cloth.
3. Allow heat pump interior and surrounding equipment to "air-dry" for several hours prior to restoring electrical power.

APPROVED POLISHING AGENTS*
Simoniz® Wax
Glo-Coat®
Armor All® Protectant

Table 2 - Polishing Agents

- * The trademarks used in approved polishing agents are the property of their owners and are not related to AquaCal®.

2.3 Clearances

- Proper air circulation is required for the heat pump to operate efficiently. The following diagrams show the minimum clearances required for the proper operation of the heat pump.
- Avoid placing objects near or on top of the heat pump. This includes shrubbery and lawn furniture. These objects will reduce performance and efficiency and hinder maintenance access.

2.4 Irrigation and Storm Run-Off

- Irrigation water may damage heat pump components. Direct irrigation water 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.

2.5 Water Flow Rates

Maintain water flow rates as indicated. Please note, these specifications relate to the heat pump only. Code-specified whole system turnover rates must be satisfied.

NOTICE

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

- Water flow exceeding maximum flow rates will negatively affect the total pool filtration performance and may damage the heat pump. This will not be covered under the equipment warranty.

MODEL	HEAT EXCHANGER TYPE	FLOW RATES	
		MINIMUM	MAXIMUM
SQ125	Titanium ThermoLink®	30 GPM (113.6 L/min)	70 GPM (265 L/min)
SQ145	Titanium ThermoLink®	30 GPM (113.6 L/min)	70 GPM (265 L/min)
SQ225	Titanium ThermoLink®	30 GPM (113.6 L/min)	70 GPM (265 L/min)
T035	Titanium Tube-in-Tube	20 GPM (75.7 L/min)	45 GPM (170 L/min)

MODEL	HEAT EXCHANGER TYPE	FLOW RATES	
		MINIMUM	MAXIMUM
T055	Titanium Tube-in-Tube	20 GPM (75.7 L/min)	45 GPM (170 L/min)
T075	Titanium Tube-in-Tube	20 GPM (75.7 L/min)	45 GPM (170 L/min)
T090	Titanium ThermoLink [®]	30 GPM (113.6 L/min)	70 GPM (265 L/min)
T115	Titanium ThermoLink [®]	30 GPM (113.6 L/min)	70 GPM (265 L/min)
T135	Titanium ThermoLink [®]	30 GPM (113.6 L/min)	70 GPM (265 L/min)
T170	Titanium Tube-in-Tube	30 GPM (113.6 L/min)	70 GPM (265 L/min)

PLEASE NOTE -

If minimum flow rates are not met, heat pump performance is reduced and performance will suffer. Internal safety devices may deactivate the heat pump with the following errors:

- Operate water filtration devices per manufacturer's specifications. Dirty filters can cause a reduction of water flow to the heat pump. An increase of 7-10 psi (48 to 69 kPa) higher than the clean filter pressure typically reduces flow rates. This requires the filter to be cleaned or back-washed.
- Keep baskets free of debris. A large quantity of debris in the pump and skimmer baskets can reduce water flow.
- Check for improper valve settings. A partially closed valve after the filter, or a full-open bypass around the heat pump, will cause insufficient water flow through the heat pump.
- The maximum static pressure (or operating pressure) is 50 psi (345 kPa). These specifications relate to the heat pump only.
- Code-specified whole system turnover rates must be satisfied.

2.6 Winterizing

Failure to properly winterize the heat pump as needed may result in serious equipment damage.

**DANGER**

Failure to heed the following will result in injury or death.

- Deactivate power while routing wiring to control board.
- Follow all National Electric Codes (NEC) and/or State and Local guidelines.

**WARNING**

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

- Deactivate all electrical power to heat pump before performing hard freeze procedures.

NOTICE

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

- Failure to winterize heat pump may result in serious equipment damage. Freeze damage is not covered under the heat pump warranty.
- While the plumbing connections are in the winterized condition (not fully tightened), it is imperative that water not run through the heat pump. Loss of water through loose plumbing connections may result in damage to circulation pump, pool and spa structures, and other equipment.

Light Freeze Conditions

A light freeze is when the ambient air temperature falls below 32 degrees Fahrenheit (0° C) for less than 8 hours. Typically during light freeze conditions circulating (or moving) water will not freeze. Temporarily activate the filter pump for continuous operation during light freeze conditions.

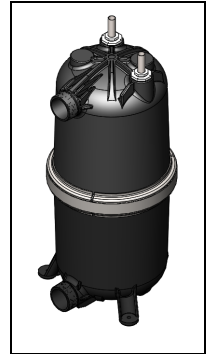
Hard Freeze Conditions

A hard freeze is when the ambient air temperature falls below 32 degrees Fahrenheit (0° C) for more than 8 hours. In areas where this condition is prevalent and sustained, the heat pump **MUST** be winterized for hard freeze conditions. Follow the correct procedure depending on the type of heat exchanger found in the heat pump.

Titanium ThermoLink[®] Exchanger (with no Drain)

1. Disconnect the plumbing to the heat pump at connection unions (removal is counter-clockwise).
2. Allow water to drain completely from the heat pump. Expect to see a lot of water drain out at first, and then a small amount to continue to drain out over a long period.
3. After heat pump has fully drained, partially reconnect plumbing connection unions.
4. Winterizing is complete.
5. When ready to use the heat pump again, hand-tighten connection unions. Reconnect electrical power, and set the operating mode on the heat pump. Activate the filter pump.

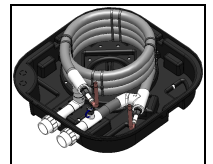
No Drain



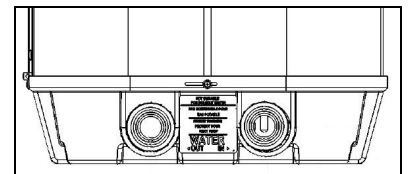
Titanium Tube-in-Tube Exchanger

1. Disconnect the plumbing to the heat pump at connection unions (removal is counter-clockwise).
2. Allow water to drain completely from the heat pump. Expect to see a lot of water drain out at first, and then a small amount to continue to drain out over a long period.

Titanium
Tube-in-
Tube



3. Place an air hose into the water inlet of the heat pump; wrap a clean rag around the hose to form a temporary seal.
4. Push all water from the water circuit using compressed air no stronger than 50 psig (446 kPa). The residual water should be forced out of the heat pump's water outlet. Allow compressed air to blow into the heat pump inlet for at least 15-20 seconds after the water stops coming out.
5. Repeat process on the outlet side of the heat pump.
6. Partially reconnect plumbing connection unions.
7. Winterizing is complete.
8. When ready to use the heat pump again, hand-tighten connection unions. Reconnect electrical power, and set the operating mode on the heat pump. Activate the filter pump.



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3.1 Adjusting Water Flow Using ΔT (Delta-T)

The Delta-T is the temperature difference between the water temperatures entering and leaving the heat pump.

The equipment can be fine-tuned for maximum performance by balancing water flow rates to maintain an ideal ΔT .

The adjustment procedure must be completed with the unit in heating mode

1. Adjust the thermostat to its lowest setting with the unit in heating mode.
2. Deactivate the water filtration pump.
3. Confirm that the filters leading to the heat pump are clean.
4. Adjust the valves controlling water headed towards the heat pump to the half-open position.
5. Adjust the valves controlling water leading away from the heat pump to a fully open position.
6. Activate the pool water filtration pump.
7. Slowly raise the thermostat temperature until the heat pump activates.
 - After a four-minute delay, the heat pump's compressor will start.
8. With the heat pump running, confirm the filtration pump is operating properly with adequate flow and no short cycling.
9. Wait for water temperatures to stabilize (approximately 5 minutes).
10. Adjust valves in the following order using the temperature chart provided.
 - a. Adjust the valve that controls water exiting the heat pump until the correct temperature differential is achieved. Match the temperature measured with a temperature probe to the chart.
 - b. Wait for water temperatures to stabilize. Then check the temperature again. Re-adjust the valve as needed.
11. Mark valves at these positions for future reference.

HEAT EXCHANGER TYPE	MODEL	TEMPERATURE
Titanium ThermoLink®	SQ125	3° to 7° F (1.7° C to 3.9° C)
Titanium ThermoLink®	SQ145	3° to 7° F (1.7° C to 3.9° C)
Titanium ThermoLink®	SQ225	4° to 9° F (2.2° C to 5° C)
Tube-in-Tube	T035	1° to 4° F (.5° C to 2.2° C)

HEAT EXCHANGER TYPE	MODEL	TEMPERATURE
Tube-in-Tube	T055	2° to 5° F (1.1° C to 2.8° C)
Tube-in-Tube	T075	3° to 7° F (1.7° C to 3.9° C)
Titanium ThermoLink®	T090	3° to 6° F (1.7° C to 3.3° C)
Titanium ThermoLink®	T115	3° to 7° F (1.7° C to 3.9° C)
Titanium ThermoLink®	T135	4° to 8° F (2.2° C to 4.4° C)
Titanium Tube-in-Tube	T170	3° to 7° F (1.7° C to 3.9° C)

Table 3 - Temperature Chart

PLEASE NOTE -

- Temperature differences are based on pool water temperatures of 69° to 75° F. (20.5° to 23.8° C)
- For water temperatures outside this range, contact AquaCal®. See "*Contacting AquaCal AutoPilot, Inc.*" on page 1.

3.2 Available Accessories

Accessories may be purchased through an authorized dealer of AquaCal® products.

Bypass Valve Kit (# STK0135)

- When high flow rates are outside recommended specifications, please use this kit or an alternative bypass valve system.
- This kit can be used to control excessive water flow through the heat pump. It provides automatic flow adjustments for most applications.



Condensation Drain Kit (# STK0202)

- Used when condensation water flow must be directed to a specific location.



Grid Flow Switch (# 0040S)

- Used for automatic pool/spa thermostat switching.
- This kit is not to be used on applications exceeding 50 PSI (345 kPa).



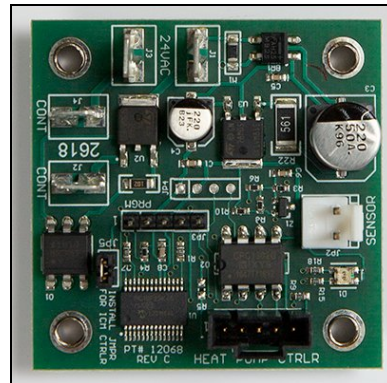
Liquid Blankets

- An invisible liquid heat barrier designed to retain heat and extend the swimming season.
- AquaCal® recommends [Lo-Chlor®](#) Aqua Blanket™.



Over Temperature Alarm Kit

- This kit is an additional safety device. It disables the heat pump if any malfunction occurs that allows the water temperature to surpass a safe level.
- This kit is strongly recommended for all spa applications.
 - Single Phase Heat Pump - (# STK0221)
 - Three Phase Heat Pump - (# STK0222)



Plumbing Unions

- 2 Inch Unions - (# PLS2627)



PoolSync® WI-FI Controller (ECP0343)

- This kit will add WiFi control capabilities to the heat pump.
- Contact installing dealer to order this product.



Temperature Port Kit (# STK0096)

- This port can be used to adjust water flow using Delta-T.
- The kit comes with port, installation components, and a temperature probe.



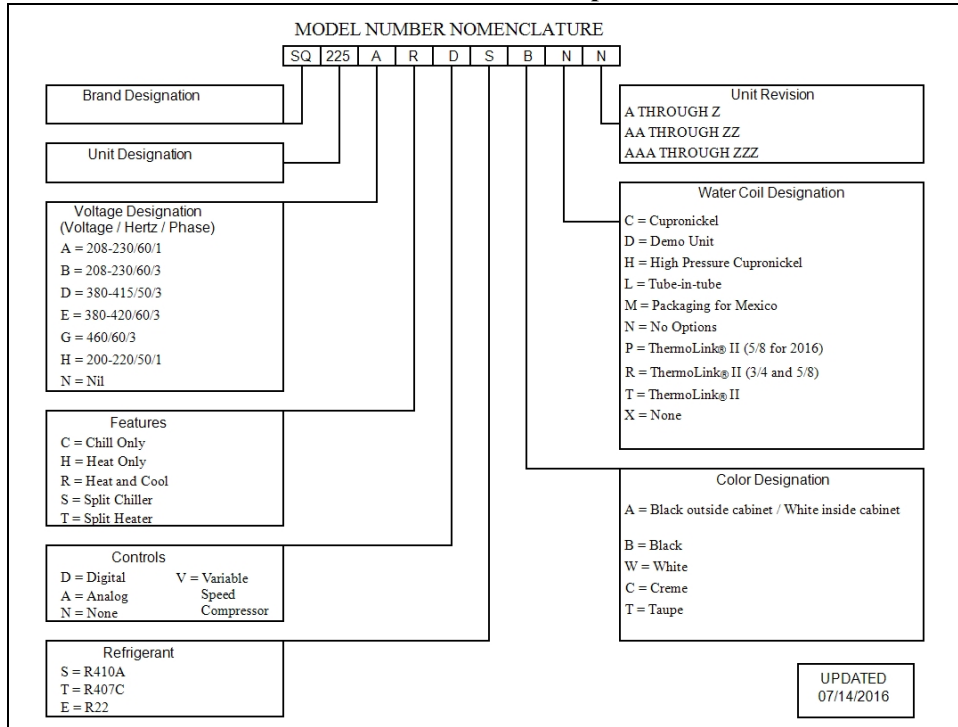
3.3 Identifying Model Specifications

1. Find Data Plate - The data plate is usually posted on the side of the equipment or the inside of the heat pump's access plate.
2. Find the model number on the data plate. The first letters and numbers indicate the model type.
3. The complete model number identifies the equipment's specifications.

Data Plate Example

MINIMUM CIRCUIT AMPACITY	<input type="text"/>	MADE IN THE USA
ELEC. SERVICE: VOLTS	<input type="text"/>	PH <input type="text"/> HZ <input type="text"/>
MAXIMUM TIME DELAY FUSE OR HACR BREAKER	<input type="text"/> 5	
COMPRESSOR VOLTS	R.L.A. <input type="text"/>	L.R.A. <input type="text"/>
FAN MOTOR VOLTS	H.P. <input type="text"/>	F.L.A. <input type="text"/>
REFRIGERANT: Circuit - Factory charged	<input type="text"/>	Only oz/Kg <input type="text"/>
Tested to	<input type="text"/> psig High side /	<input type="text"/> psig Low side
OUTDOOR UNIT		
AQUA CAL, INC. A TEAM HORNER COMPANY 2737 24 TH STREET NORTH ST. PETERSBURG, FL 33713 FACTORY SERVICE 727-823-5642	MODEL NUMBER <input type="text"/>	IIIBAR CODEIII
	SERIAL NUMBER <input type="text"/>	IIIBAR CODEIII

Model Number Example



3.4 Initial Heating Recommendations

The following recommendations will reduce the amount of time required to heat a pool. **If unsure of equipment heating capability, review equipment data plate.** See "*Identifying Model Specifications*" on the previous page.

1. Set circulation pump time clock to 24 hours.
2. Set the desired temperature "HEAT SETPOINT" for the water.
3. Use a pool cover or blanket to reduce heating time.
4. After the desired temperature has been reached, reset circulation pump time clock to normal time frame.

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4.1 Fault Codes

A fault code indicates a specific issue or condition that will require action before the equipment can resume operating.

Please perform the following troubleshooting.

If the issue reoccurs, please contact AquaCal. See "*Contacting AquaCal AutoPilot, Inc.*" on page 1.



WARNING

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

- Repairs must not be attempted by untrained or unqualified individuals.
- The heat pump contains refrigerant under high pressure. Repairs to the refrigerant circuit must not be attempted by untrained or unqualified individuals. Service must be performed only by qualified HVAC technicians. Recover refrigerant before opening the system.

NOTICE

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

- Service by unauthorized personnel will void the heat pump warranty.

FLOW LED is off**ISSUE**

Low or no water detected.

RESOLUTION

1. Confirm the filter pump is on.
2. If a multiple-speed filter pump is being used, run at a higher speed to determine if the error persists. Do not exceed the maximum flow rate for your model.
3. Confirm water is not being diverted away from the heat pump.
 - See "*Water Flow Rates*" on page 6.
 - See "*Adjusting Water Flow Using ΔT (Delta-T)*" on page 9.

DEFROST LED is on**ISSUE**

The heat pump has sensed the evaporator coil is icing up.

RESOLUTION**PASSIVE DEFROST**

When ice starts to form on the coil, the compressor will stop operating while the fan continues to operate.

- When the coil's temperature rises above 38° F, the compressor is restarted and heating or cooling resumes.
- If the coil's temperature remains below 38° F, the compressor will remain off.

FAULT LED is rapidly blinking (Control panel unresponsive)**ISSUE**

The heat pump firmware needs to be reloaded on the control board.

RESOLUTION

1. If the heat pump is connected to a PoolSync® WI-FI controller and is connected to the internet, the heat pump will automatically perform a firmware recovery.
2. If no PoolSync® WI-FI controller is connected, the heat pump will require service from a qualified technician.

FAULT LED is blinking 1 time**ISSUE**

The refrigerant system's high-pressure or low-pressure switch is showing as open.

RESOLUTION

Determine if an insufficient amount of water is being supplied to the equipment.

1. Confirm the filter pump is on.
2. If a multiple-speed filter pump is being used, run filter pump at a higher speed. Do not exceed maximum flow rate for the model.
3. Confirm water is not being diverted away from the heat pump.
 - See "*Water Flow Rates*" on page 6.
 - See "*Adjusting Water Flow Using ΔT (Delta-T)*" on page 9.

FAULT LED is blinking 2 times

ISSUE

The heat pump has locked due to five high-pressure or five low-pressure faults during one call for heating or cooling.

RESOLUTION

1. Deactivate power to heat pump, wait five seconds, then reactivate power to the heat pump to clear error.
2. Troubleshoot the high-pressure issue causing the error. See "*FAULT LED is blinking 1 time*" on the previous page.

FAULT LED is blinking 3 times

ISSUE

Incoming water temperature exceeded 110° F and the unit is locked with a high temperature fault. The heat pump will not operate until incoming water temperature drops to 100° F or lower.

RESOLUTION

1. Determine if another heat source (gas heater, solar heater, etc.) is heating water being sent directly to the heat pump. This situation will need to be corrected before continuing.
2. Rule out an incorrect reading from the water temperature sensor. Verify existing water temperature with an accurate thermometer. If heat pump's sensor is inaccurate, the water temperature sensor may require replacement.

FAULT LED is blinking 4 times

ISSUE

Shorted or open water sensor 1.

RESOLUTION

A qualified technician should replace the water sensor.

FAULT LED is blinking 5 times

ISSUE

Shorted or open water sensor 2.

RESOLUTION

A qualified technician should replace the water sensor.

FAULT LED is blinking 6 times

ISSUE

Shorted or open defrost sensor 1.

RESOLUTION

A qualified technician should replace the defrost sensor.

FAULT LED is blinking 7 times

ISSUE

Shorted or open defrost sensor 2.

RESOLUTION

A qualified technician should replace the defrost sensor.

4.2 Issues and Resolutions



WARNING

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

- Repairs must not be attempted by untrained or unqualified individuals.
- The heat pump contains refrigerant under pressure. Repairs to the refrigerant circuit must not be attempted by untrained or unqualified individuals. Service must be performed only by qualified HVAC technicians. Recover refrigerant before opening the system.

NOTICE

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

- Service by unauthorized personnel will void the factory warranty.

Please perform the following troubleshooting.

For further assistance, please contact AquaCal. See "*Contacting AquaCal AutoPilot, Inc.*" on page 1.

Display Panel Not Responding

1. If the heat pump is controlled by an external controller, confirm the external controller settings. See "*Operating Heat Pump (With an External Controller)*" on page 3.
2. If the issue is still occurring, contact the installer or manufacturer of the external control device.

Heat Pump Not Running

1. Confirm equipment is receiving power. Is the heat pump display illuminated?
 - If not, confirm the main breaker (located at the power supply panel) and the disconnect switch (located near the heat pump) are both turned on.
 - Confirm the power switch on the heat pump's display is set to on.
 - If the display still does not illuminate, it is recommended that the heat pump installer or electrician confirms heat pump is receiving power.
2. Confirm thermostat is set correctly. See "*Dial Control Panel*" on page 3.
 - When heating the water is desired, the thermostat should be set above the current water temperature.
3. If an error code is displayed, diagnose and correct the cause of the code. See "*Fault Codes*" on page 14.
4. If the heat pump is using an external controller, the heat pump may not be set correctly at the external controller.
 - See "*Operating Heat Pump (With an External Controller)*" on page 3.

Heat Pump's Tripping Breaker

1. Have an electrician confirm breakers are in good condition and properly sized for the heat pump.
2. Multiple heat pumps installed at the same site may benefit from special automatic sequencing controllers to avoid excessive power drops at start-up. See "*Automatic Sequencing Controller*" on page 1 for more information.
3. If a fault occurs immediately when the compressor starts, a qualified technician should evaluate the system.

Heat Pump Won't Shut Off

1. Confirm the heat pump has reached the desired temperature set on the thermostat. The heat pump will continue to run until the set temperature is reached.
2. If the heat pump is using an external controller, it may not be set correctly.
 - See "*Operating Heat Pump (With an External Controller)*" on page 3.

Heat Pump Is Running, Not Heating

1. If the heat pump is using an external controller, confirm it is set correctly.
 - See "*Operating Heat Pump (With an External Controller)*" on page 3.
 - If the heat pump is still not running correctly with this device, contact the installer of the external controller device or the device's manufacturer for further assistance.
3. Confirm thermostat is set to the desired water temperature.
4. Confirm valves are correctly positioned to heat the correct body of water (either the pool or the spa). If heating a spa that overflows into a pool, confirm the spa is isolated when being heated (not flowing into the pool).
5. Confirm heat pump is transferring heat into the water.
 - Measure the temperature of air discharge coming out of the heat pump fan. If discharge air is between 8° to 10° colder than the outside ambient air, the heat pump is moving heat into the water.
6. If an error code is displayed, diagnose and correct cause of code. See "*Fault Codes*" on page 14.
7. Confirm that filter pump has a sufficient run-time. The heat pump will not run (or heat the water) without water flow. Heat Pump equipment will generally be set to run 24 hours a day in commercial applications. See "*Initial Heating Recommendations*" on page 13.
8. If heating a spa, deactivate air blower or venturi (if equipped) to allow for quicker heating times. For pools, deactivate water features, such as slides, waterfalls, or fountains to allow water to retain heat. Use of a liquid pool blanket product can also compensate for excessive heat loss.
 - See Available Accessories on page 10. for more information on liquid blankets.

Ice forming on the heat pump

When conditions are too cold for proper operation, the heat pump will enter a defrost mode. This prevents ice from building up on the evaporator coil.

- The heat pump may develop a fine layer of white frost on the outside coil before entering the defrost mode. This is normal.
- If heavy ice (not frost) starts to build up, shut off the heat pump. Contact the installer or manufacturer.
- If the ambient air temperature will be falling below 32° F for more than 8 hours, winterize equipment.

Water Coming From Heat Pump

The water may be normal condensation produced as a by-product of the heat pump's refrigeration process. The heat pump can produce 8 to 10 gallons of condensation per day depending on the humidity of the ambient air. Determine if the water is condensation or a possible leak.

1. Deactivate heat pump, leaving the filter pump on. After several hours, determine if water is still coming from the heat pump.
2. If using chlorine or bromine as a pool / spa sanitizer, test the water around the heat pump using a test strip. If the test strip indicates that chlorine or bromine is present, a leak may exist.

PLEASE NOTE -

*If desired, a kit is available to re-direct condensation water away from the heat pump. See "*Condensation Drain Kit (# STK0202)*" on page 10.*

