AquaCal®
Operation Manual

TropiCool
WATER CHILLER

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

LTM0884 REV 2e

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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 chiller model and serial number available.

- See "Identifying Model Specifications" on page 16.

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 INSTRUCTIONS

- 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 chiller 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 *see "Contacting AquaCal AutoPilot, Inc." on page 1.*

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 chiller basic safety precautions must always be followed, including the following:

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

- The chiller utilizes high voltage and rotating equipment. Use caution when servicing.

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

- Installation and repairs must be performed by a qualified technician.
- The chiller 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 detailed in this document.
- Prolonged immersion in water colder than normal body temperature may cause a condition known as 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 elderly should be supervised by a responsible adult.

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

- 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.

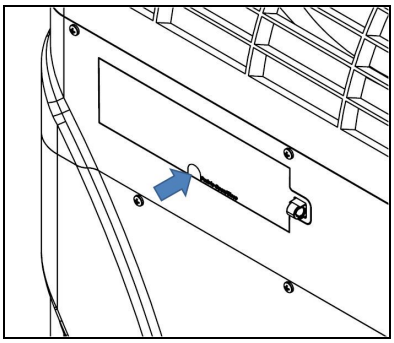
SAVE THESE INSTRUCTIONS

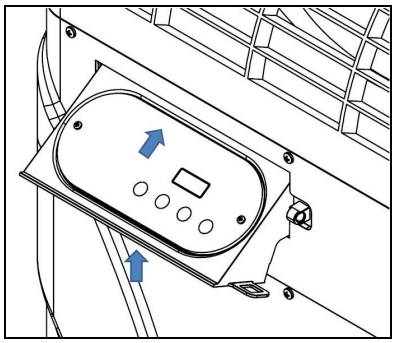
1 - Operation

1.1 Display Door

The display panel is located in a door compartment on the front of the chiller. This compartment is designed to protect the display against harsh weather. It can also be padlocked for extra security.

- Press the ***bottom*** of the panel to open the display panel door.
- To close, push the display panel up. Then press the ***bottom*** of the panel in until a clicking noise is heard.





1.2 Energizing Chiller

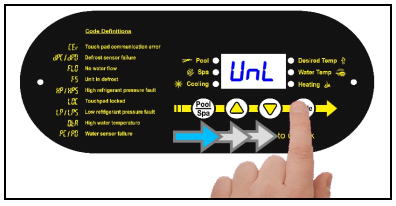
Activate power at external fuse box or the breaker box.

- The chiller performs a lamp test.
- The display reads 888.
- The chiller then displays as normal. See "Display" on page 4.

1.3 Wake Up Chiller

The chiller's control panel has a sleep mode. This is used to prevent rain that hits the display from making unwanted setting changes.

To wake up the control panel, tap a button on the display until it illuminates. Then slowly slide a finger across the buttons.

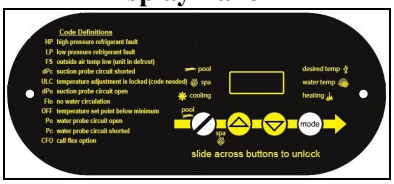


- The code UnL will briefly appear. Then either FLO or the water temperature will display.

1.4 Display Panel

The following information outlines the operation for a standard installation.

Display Panel



1.4.a Buttons

Buttons	Description
Display Lock	Sliding your finger across the buttons from left to right will temporarily disable the display lock.
Pool / Spa	Select either the pool or the spa thermostat.
Up Arrow	Used to increase temperature set point and navigate though menu options.
Down Arrow	Used to decrease temperature set point and navigate though menu options.
Mode	Select chiller's operating mode.

1.4.b Display

Display	Description
75	The chiller is on and displaying the current water temperature. In this example 75° F is displayed.
FLO	No water flow is detected. The filter pump is off or chiller is not receiving correct water flow.
OFF	The chiller has been turned off via the mode selector button or the temperature set point has been lowered below 45° F.
888	The control program is initializing. This displays only as power is applied to the chiller.
CF I	Select water temperature format (in either Celsius or Fahrenheit).
ULC	Enable chiller lockout feature.
ELC	Select pass code to lock the keyboard.
LOC	This is a Service Entry Point (not intended for use by the owner). The LOC code permits service personnel to enter a factory pass code to access adjustable calibration and site dependent setup parameters. Service adjustments are available to authorized installation and service personnel, only.

1.4.c Indicator Lights

Indicators	Description
Pool	The Chiller is referencing the pool thermostat.
Spa	The Chiller is referencing the spa thermostat.
Cooling	Indicates the unit is cooling the water. Please note - the compressor must be operating before this light will illuminate.
Water Temp	Indicates current water temperature.
Desired Temp	Indicates temperature set point is displayed. This is displayed when "UP" or "DOWN" is selected.

1.5 User Level Programming

1.5.a User Level Factory Defaults

Certain programming options have been preset at the factory. These options can be overwritten for site-specific conditions.

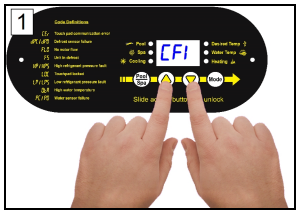
NOTICE Failure to heed the following may result in damage to equipment.

- Unauthorized adjustments in the Installer Menu (beyond the LOC menu) may void the chiller's warranty.
- For further assistance, please *see "Contacting AquaCal AutoPilot, Inc." on page 1.*

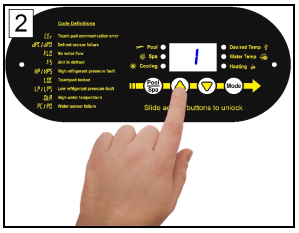
Table 1 - Factory Defaults

Code	Description	Default Value	Range
OFF	Chiller is deactivated.	OFF	
COO	Cool water to point set on thermostat.		
ACH	Set to maintain a water temperature set on the thermostat.		
CF I	Celsius / Fahrenheit Selection	1	0 = Celsius 1 = Fahrenheit
ELC	Enter Lock Code	0	0 - 99
ULC	User Lock Code	0	0 = "User Lock Disabled" 1 = "User Lock Enabled"

1.5.b Selecting Celsius or Fahrenheit



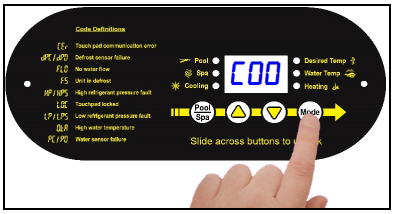
Press and Hold "UP" and "DOWN" until CF 1 displays.



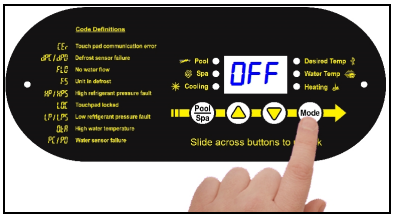
Press "UP or "DOWN" button to select.
"0" - Celsius
"1" - Fahrenheit

1.5.c Setting Operating Mode

1. Press "Mode / Enter" button until desired mode is displayed.
2. After a certain amount of time, the display will show the selected mode and current water temperature.
   - Cooling Mode - After fan and compressor starts, the blue "Cooling" light will activate.
   - Off - The chiller will indicate it is deactivated. The current water temperature will be displayed.



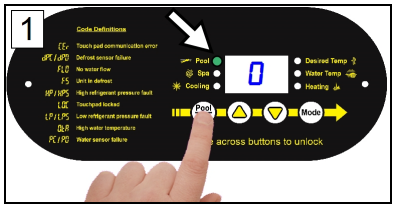
Cooling Mode



Deactivate Chiller

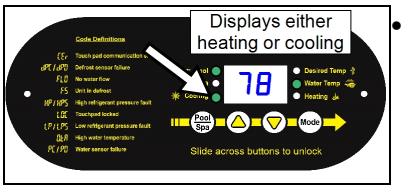
Heating / Cooling modes only available on select equipment. Confirm heat pump features before setting a mode.

1.5.d Setting Thermostats



Select "POOL" or "SPA"

Press "UP" or "DOWN" to the desired temperature.

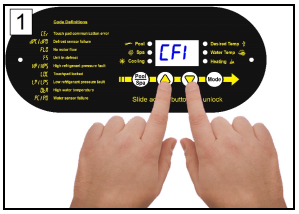


- The cooling indicator will illuminate when cooling the water.

1.5.e User Lock Option (Enable)

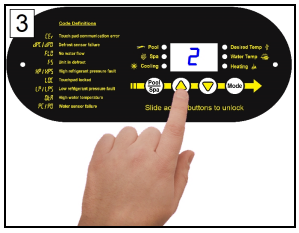
The user-lock feature allows the chiller display panel to be "locked". This can prevent unauthorized temperature adjustments in commercial applications.

- Do not confuse a user-lock with the display lock. See "Wake Up Chiller" on page 3.
- If LOC is briefly displayed, followed by a "0", the chiller is already locked.
- If the user-lock code has been misplaced, please contact AquaCal® for further assistance.

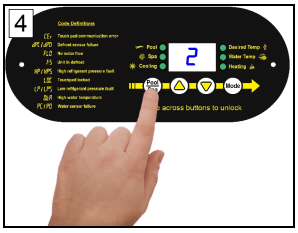


Hold "UP" and "DOWN" until CF 1 displays.

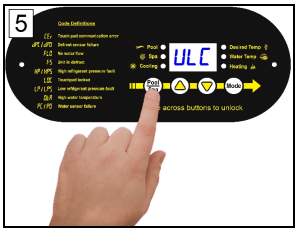
Press "POOL / SPA" button until ELC is displayed.



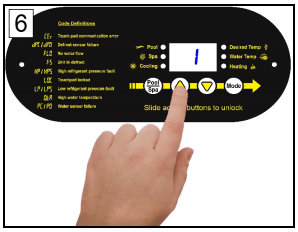
Press "UP or "DOWN" button to change or add a numerical password



Press "POOL / SPA" button to save the password.

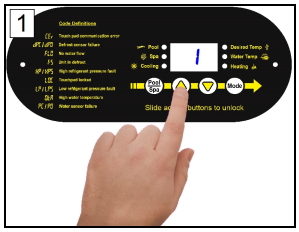


Press "POOL / SPA" button until ULC is displayed.

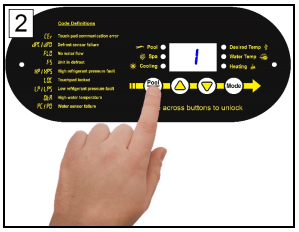


Press "Up" button till "1" is displayed to enable.

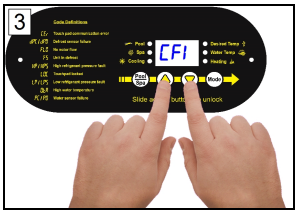
1.5.f User Lock Option (Disable)



Use "UP" button to enter existing password.

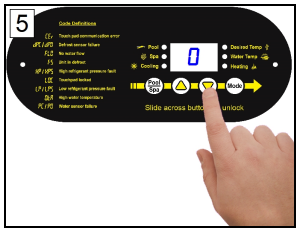


Press "Pool / Spa" button to unlock.



Hold "UP" and "DOWN" buttons until CF 1 is displayed.

Press "POOL / SPA" button until ULC is displayed



Press "DOWN" button until "0" is displayed.

1.5.g Using Pass Code to Access Chiller

If LOC is briefly displayed when attempting to change a chiller's settings followed by a "0", the chiller has the user lock enabled. A numerical pass code is required to proceed.

Press "UP" or "DOWN" arrow to enter pass code.

Press "POOL / SPA" button to unlock.

NOTE -

- After ten seconds of inactivity, the chiller's display lock will activate. See "Wake Up Chiller" on page 3.
- If the user-lock code has been misplaced, please contact AquaCal® for further assistance.

1.5.h Operating Chiller (With an External Controller)

Controller with an internal thermostat control

Activating Chiller

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

Deactivating Chiller

- Set the external controller to "OFF".

> Please note - If equipped, the chiller's cooling function **will be disabled** when using this type of controller.
> If the cooling function is needed, the chiller must be temporarily reprogrammed for local control. Check with controller installer if chiller needs to be re-programmed.

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

Activating Chiller

1. Set the desired temperatures on the chiller thermostats. See "Setting Thermostats" on page 7.
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 chiller.*

Deactivating Chiller

- Go to the heat pump and set the mode to "OFF". See "Setting Operating Mode" on page 6.

> Please note - If equipped, the chiller's cooling function **will be disabled** when using this type of controller.
> If the cooling function is needed, the chiller must be temporarily reprogrammed for local control. Check with controller installer if chiller needs to be re-programmed.

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

Activating Chiller

1. Set the desired temperatures on the chiller thermostats. See "Setting Thermostats" on page 7.
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 chiller.*

Deactivating Chiller

- Set the external controller to "OFF".

2 - Maintenance

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 chiller when refinishing or acid washing a pool. Either use an installed bypass to route water away from chiller or deactivate 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	3.0 – 5.0 ppm
Bromine	2.0 – 6.0 ppm	2.0 – 6.0 ppm
Cyanuric Acid	30 – 50 ppm	30 – 50 ppm
pH	7.4 – 7.6	7.4 – 7.6
Total Alkalinity	80 – 120 ppm	80 – 120 ppm
Calcium Hardness	200 – 400 ppm	150 – 250 ppm
Total Dissolved Solids*	0 – 1,500 ppm	1,500 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 your chiller regularly can protect its appearance and longevity. More frequent servicing may be required for chillers 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 chiller. 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 chiller. Damage to chiller components may result. If using a hose-end spray nozzle adjust spray pattern to low strength only.
- Do not spray water directly into the interior of the chiller; damage to components may result.
- Do not use chemicals on the display panel.

Cleaning

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

APPROVED CLEANING AGENTS•
Fantastic®
Formula 409®
Cascade®
All Power Plain Detergent (3% Solution)

Table 2 - Cleaning Agents

Polishing

1. Polish the chiller'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 chiller panels with fresh water, wipe, and buff panels using a dry soft cloth.
3. Allow chiller 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

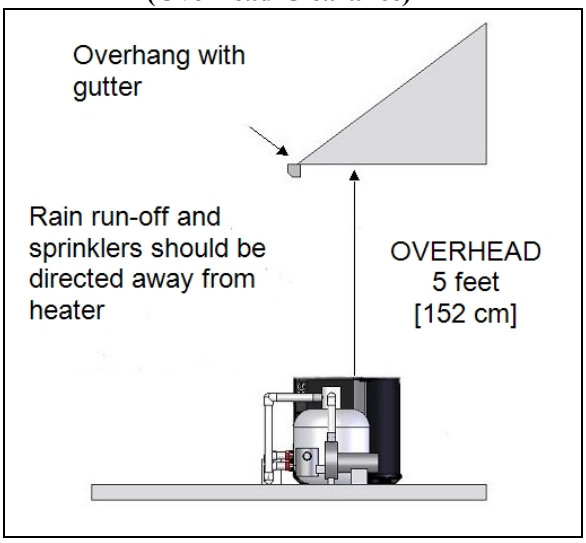
Table 3 - Polishing Agents

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

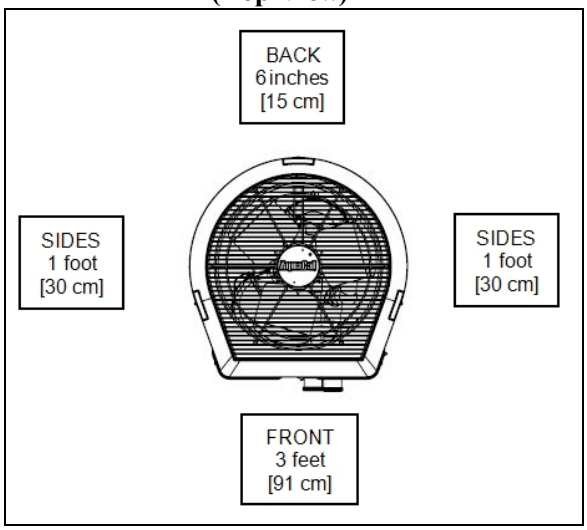
2.3 Clearances

- Proper air circulation is required for the chiller to operate efficiently. The following diagrams show the minimum clearances required for the proper operation of the chiller.
- Avoid storing chemical containers near the chiller. The chemicals can cause equipment damage.
- Avoid placing objects near or on top of the chiller. This includes shrubbery and lawn furniture. These objects will reduce performance and efficiency and hinder maintenance access.

(Overhead Clearance)



(Top View)



2.4 Irrigation and Storm Run-Off

- Irrigation water may damage chiller components. Direct irrigation water away from the chiller.
- The chiller will withstand normal rainfall. Do not allow a roof slope to direct rainwater onto the chiller. Have a gutter installed on the roof edge to direct this water away from the chiller. Or install the chiller in another location.

2.5 Water Flow Rates

Maintain water flow rates as indicated. Please note, these specifications relate to the chiller 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 chiller. This will not be covered under equipment warranty.

MODEL	HEAT EXCHANGER TYPE	FLOW RATES	
		MINIMUM	MAXIMUM
TC500	Titanium Tube-in-Tube	20 GPM	45 GPM
TC1000	Titanium ThermoLink®	30 GPM	70 GPM
TC1500	Titanium ThermoLink®	30 GPM	70 GPM

PLEASE NOTE -

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

- HP and HPS
- or (if equipped) error codes of LP and LPS

- Operate water filtration devices per manufacturer's specifications. Dirty filters can cause a reduction of water flow to the chiller. An increase of 7-10 psi 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 chiller, will cause insufficient water flow through the chiller.
- The maximum static pressure (or operating pressure) is 50 pounds-per-square-inch (PSI). These specifications relate to the chiller only.
- Code-specified whole system turnover rates must be satisfied.

2.6 Planned Maintenance

An annual inspection and maintenance program is strongly recommended starting no later than one year after installation of the chiller. In harsh environments or coastal areas a bi-annual inspection is recommended. See recommended inspection checklist.

AquaCal® can perform this service in limited areas. Contact Customer Support for more information.

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

- Annual inspection and service must be performed by a qualified chiller specialist in order to prevent physical injury or damage to equipment. For tasks requiring handling refrigerant, an HVAC license is required.

Recommended Inspection Checklist:
1. Clean Evaporator Coil
2. Clean Condenser Coil
3. Check Contactor Points
4. Check Fan Capacitor Values
5. Check Fan Blade Clearances
6. Clean Chiller Cabinet
7. Check Flow / Pressure Switch
8. Apply Rust Inhibitors (As applicable)
9. Verify / Check Air Flow Delta
10. Verify / Check Water Flow Delta
11. Check Fan Motor Amperage Draw
12. Check and Clear Condensate Drains
13. Check Compressor Capacitor Values

Recommended Inspection Checklist:
14. Check Compressor Amperage Draw
15. Check Internal Electrical Connections
16. Check Operating Refrigerant Pressures (As Applicable)
17. Check Ambient and Water Temperature Sensors
18. Check Proper Line and Control Voltage to Unit
19. Identify Insect and Rodent Issues with Unit
20. Identify Environmental Conditions of Concern (Run-Off, Sprinklers, etc.)
21. Perform Operating Orientation (As Applicable)

2.7 Winterizing

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

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

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

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

- Failure to winterize chiller may result in serious equipment damage. Freeze damage is not covered under the chiller warranty.
- While the plumbing connections are in the winterized condition (not fully tightened), it is imperative that water not run through the chiller. 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 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 for more than 8 hours. In areas where this condition is prevalent and sustained, the chiller MUST be winterized for hard freeze conditions. Follow the correct procedure depending on the type of heat exchanger found in the chiller.

Identify Exchanger:

1. Deactivate all electrical power to chiller.
2. Deactivate filter pump.
3. Remove front access panel. See "Access Panels"
4. Identify heat exchanger from illustrations in this section. Then follow procedure for the appropriate heat exchanger.

Titanium ThermoLink® Exchanger (with no Drain)

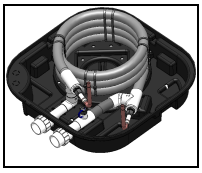
5. Reinstall front access panel.
6. Disconnect the plumbing to the chiller at connection unions (removal is counter-clockwise).
7. Allow water to drain completely from the chiller. Expect to see a lot of water drain out at first, and then a small amount to continue to drain out over a long period.
8.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

No Drain

Titanium Tube-in-Tube Exchanger

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

Titanium Tube-in-Tube

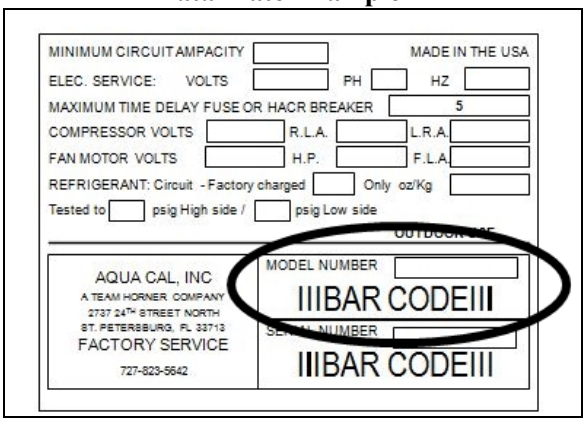


3 - Appendix

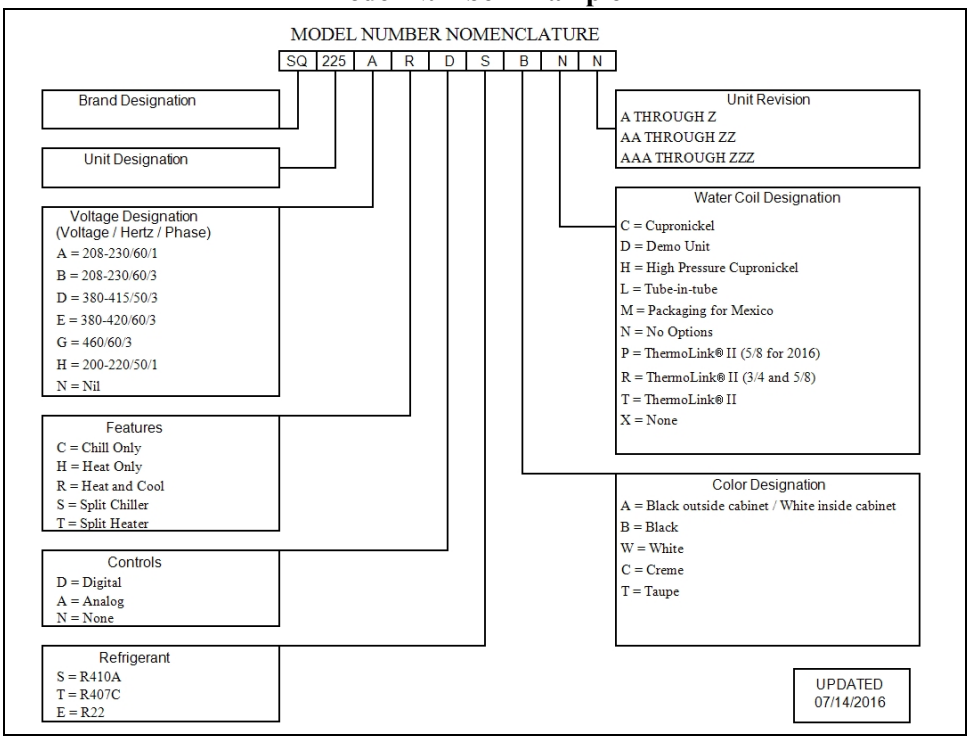
3.1 Identifying Model Specifications

1. Find Data Plate - The data plate is usually posted on the side of the equipment or the inside of the chiller'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



Model Number Example



3.2 Weights

NOTE:
Specifications subject to change.

Model Type	Model Number	Install Weight
TropiCool®	TC500	215 Pounds
TropiCool®	TC1000	285 Pounds
TropiCool®	TC1500	328 Pounds

Table 4 - Equipment Weight

3.3 Cooling Recommendations

The following recommendations will reduce the amount of time required to cool a pool or cold plunge application. **If unsure of equipment cooling capability, review equipment data plate.** See "Identifying Model Specifications" on page 16.

1. Confirm chiller mode has been set to cooling mode.
2. Set thermostat to desired water temperature.
3. Temporarily set the filter pump for continuous operation.
   - This will allow the Chiller the time required to cool the water at start-up.
   - After the water has reached the desired temperature, reset the filter pump to normal operating time-frames.

3.4 Available Accessories

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

Bypass Valve Kit (# STK0135)

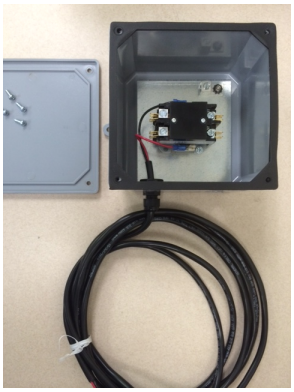
- When high flow rates are outside recommended specifications, please use this kit or an alternative bypass valve system.
- This kit can be used to control excessive water flow through the chiller. It provides automatic flow adjustments for most applications.

Condensation Drain Kit (# STK0202)

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

Call Flex Accessory (# 0030-LEDS)

- This accessory will override a circulation pump to provide water to the chiller when the set temperature is not met.



Automatic Sequencing Controller

- An Automatic Sequencing Controller (ASC) provides easy control of all units from one lead unit and prevents the simultaneous start-up of multiple chillers.
- Site voltage drop is minimized and utilities are not subjected to large in-rush demands of electrical current.
- Part number is based on number of chillers to be controlled. Call AquaCal® for assistance with correct configuration. See "Contacting AquaCal AutoPilot, Inc." on page 1.

Grid Flow Switch (# 0040S)

- Used for automatic pool / spa thermostat switching.
- This switch can also be used in place of the water pressure switch. This may be needed when the pool / spa elevation is higher than the chiller. A higher elevation of the water can cause a false signal to the chiller; indicating water is flowing through the chiller when it isn't.
- This kit is not to be used on applications exceeding 50 PSI.

Plumbing Unions

- 2 Inch Unions - (# PLS2627)

Remote Control Kit (STK0070)

- A remote (wired) control kit allows for full control of the chiller from up to 100 feet from the equipment.

4 - Troubleshooting

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 *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 chiller 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 chiller warranty.

FLO Indicator

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 maximum flow rate for your model.
3. Confirm water is not being diverted away from the chiller.
    - See "Water Flow Rates" on page 12.

FS Indicator

ISSUE

The chiller has sensed the evaporator coil is icing up.

RESOLUTION

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 cooling resumes.
- If the coil's temperature remains below 38° F, the compressor will remain off.

CEr Indicator

ISSUE

This can indicate a loose or damaged communication cable.

RESOLUTION

A qualified technician should check the cable from control board to display assembly for a loose connection or visible damage.

CSE Indicator

ISSUE

This is a control system error.

RESOLUTION

Deactivate then reactivate power to reset controls.

dPC or dPO Indicator

ISSUE

Shorted or open defrost sensor.

RESOLUTION

A qualified technician should replace the defrost sensor.

PC or PO Indicator

ISSUE

Shorted or open water sensor.

RESOLUTION

A qualified technician should replace the water sensor.

HP Indicator

ISSUE

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

RESOLUTION

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

1. Check for proper fan operation. If fan is not operating, contact AquaCal®.
2. Check for obstructed air flow around the chiller. See "Clearances" on page 12.
3. Check for dirty or blocked evaporator coil. See "Cleaning Equipment" on page 10.

HPS Indicator

ISSUE

The chiller has locked due to five HP (high-pressure) faults during one call for cooling.

RESOLUTION

1. Deactivate then reactivate power to the chiller to clear error.
2. Troubleshoot the high-pressure issue causing the error. See "HP Indicator" on page 20.

LP Indicator

ISSUE

The refrigerant system's 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 chiller.
    - See "Water Flow Rates" on page 12.
4. The water pressure switch may be incorrectly calibrated. See "Adjusting Water Pressure Switch" for more information.

LPS Indicator

ISSUE

The chiller has locked due to five LP (low-pressure) faults during one call for cooling.

RESOLUTION

1. Deactivate then reactivate power to the chiller to clear error.
2. Troubleshoot the low-pressure issue causing the error. See "LP Indicator" on page 20.

OtA Indicator

ISSUE

Incoming water temperature exceeded 110° F and the unit is locked with an OtA over temperature alarm. The chiller 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 chiller with the OtA indicator. 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 chiller's sensor is inaccurate, the water temperature sensor may require replacement.

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 chiller 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 *see "Contacting AquaCal AutoPilot, Inc." on page 1.*

Display Panel Not Responding

1. If the chiller is controlled be an external controller, confirm the external controller settings. See "Operating Chiller (With an External Controller)" on page 9.
2. If the issue is still occurring, contact the installer or manufacturer of the external control device.

Chiller Not Running

1. Confirm equipment is receiving power. Is the chiller display illuminated?
    - If not, confirm the main breaker (located at the power supply panel) and the disconnect switch (located near the chiller) are both turned on.
    - If the display still does not illuminate, it is recommended that the chiller installer or electrician confirms chiller is receiving power.
2. Confirm correct mode is selected. See "Setting Operating Mode" on page 6.
3. Confirm thermostat is set correctly. See "Setting Thermostats" on page 7.
    - When cooling the water is desired, the thermostat should be set below the current water temperature.
4. If an error code is displayed, diagnose and correct the cause of the code. See "Fault Codes" on page 19.

Chiller's Tripping Breaker

1. Have an electrician confirm breakers are in good condition and properly sized for the chiller.
2. Multiple chillers 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 18.
3. If a fault occurs immediately when the compressor starts, a qualified technician should evaluate the system.

Chiller Won’t Shut Off

PLEASE NOTE
When chiller is set to "OFF", the display will show either the water temperature or FLO.

1. Confirm the chiller has reached the desired temperature set on the thermostat. The chiller will continue to run until the set temperature is reached.
2. If the chiller is incorrectly set to HEA or ACH mode, the unit will not deactivate.
    - See "Setting Operating Mode" on page 6.
3. If the chiller is using an external controller, it may not be set correctly.
    - See "Operating Chiller (With an External Controller)" on page 9.

Chiller Is Running, Not Cooling (Reversing Models)

1. If the chiller is using an external controller, confirm the chiller is programmed properly to allow for cooling. See "Operating Chiller (With an External Controller)" on page 9.
2. Confirm the chiller mode is set to COO operating mode.
3. Confirm the thermostat is set below the current water temperature.
4. Confirm valves are correctly positioned to cool the correct body of water (either the pool or the spa). If cooling a spa that overflows into a pool, confirm the spa is isolated when being cooled (not flowing into the pool).
5. If an error code is displayed, determine and correct the condition causing the code. See "Fault Codes" on page 19.
6. Confirm chiller is transferring heat out of the water.
    - Measure the temperature of air discharge coming out of chiller's fan. If the air is between 8° to 10° warmer than the outside ambient air, the chiller is moving heat out of the water.
7. Confirm that filter pump has a sufficient run-time. The chiller will not run (or cool the water) without water flow. Chiller equipment will generally be set to run 24 hours a day in commercial applications.See "Cooling Recommendations" on page 17.

Ice Forming on the Chiller

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.

Cool Only Units

- The heat pump may enter defrost mode if the water flow rate falls below the acceptable range.
- If the ambient air temperature will be falling below 32° F for more than 8 hours, winterize equipment.

Water Coming From Chiller

The water may be normal condensation produced as a by-product of the chiller's refrigeration process. The chiller 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 chiller, leaving the filter pump on. After several hours, determine if water is still coming from the chiller.
2. If using chlorine or bromine as a pool / spa sanitizer, test the water around the chiller 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 chiller. See "Condensation Drain Kit (# STK0202)" on page 17.