Aqua Logic, Inc.
9558 Camino Ruiz.
San Diego, CA 92126
PH: 858.292.4773 Fax: 858.292.0537
Email: info@aqualogicinc.com
Website: www.aqualogicinc.com

Installation and Maintenance Manual For

Delta Star® In-Line Water Chiller

Cyclone® Water Chiller

Effective date of 2/2016

Thank you for selecting an Aqua Logic Delta Star or Cyclone water chiller. We have endeavored to manufacture the most reliable and efficient water chiller available. Our highly trained technicians use premium quality components to assemble equipment that will operate faithfully for years. You can call us or visit us on the web for technical assistance before and after the sale. We are committed to making sure that you are satisfied with your Aqua Logic chiller now—and in the future.

Please take some time to familiarize yourself with the information in this manual so that you can get the most from your chiller. Don't hesitate to contact us if we can assist you further.

Contact Information for Aqua Logic, Inc.:

Address: 9558 Camino Ruiz
San Diego, CA 92126

Telephone: (858) 292-4773
FAX: (858) 279-0537

website: www.aqualogicinc.com
email: info@aqualogicinc.com

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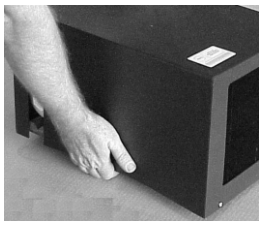
Effective date of 2/2016

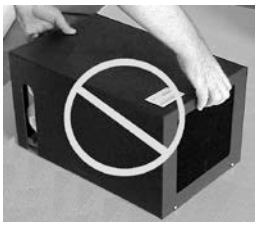
Quick Install for your Aqua Logic Delta Star Chiller

How to lift your Aqua Logic Chiller

YES



NO



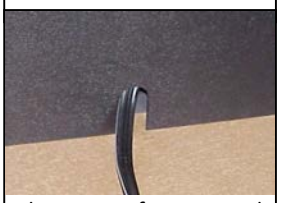
Unpack your Delta Star chiller:

- Carefully remove the chiller from the box by reaching underneath the chiller and lifting it by its base. NEVER lift the chiller by its cover to avoid personal injury or damage to the chiller (See illustration).
- Use a Phillips head screwdriver to remove the two screws on opposite ends of the cover.
- Lift the cover from the unit.
- Remove the cardboard collar from the top of the compressor.
- Make sure that the fan assembly does not contact condenser (radiator).
- Inspect the unit for possible shipping damage. (If damaged, refer to the damage claims instructions on the shipping container.)
- Unwrap the power cord and extend it through side notch in cover.
- Replace the cover and use the Phillips screwdriver to reattach the four cover screws.

Delta Star Interior View

Place your Aqua Logic water chiller:

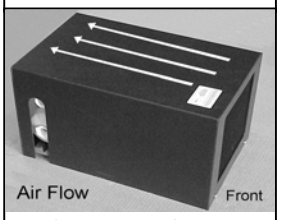
- Place the water chiller on a sturdy flat surface.
- Make sure that the unit is resting on its base to avoid damage.
- Place the unit so that it has good ventilation through the unit. For best results, allow at least 6 inches of free space in front of the unit and 12 inches behind it. Do not mount the unit so that heat from other equipment (such as a pump) is drawn through the chiller.
- If you place the chiller in a cabinet, allow at least ½" of space between the chiller and the walls of the cabinet to avoid vibration and noise.
- Do not install the chiller in a closed closet or cabinet.



Placement of power cord

Delta Star Plumbing:

- Your Aqua Logic flow-through chiller requires an external water pump (not supplied) for proper operation.
- The chiller should be the last piece of equipment in the plumbing before the water is returned to the tank or sump (after pump and filters).
- Use male-pipe-thread (MPT) fittings of the diameter below to connect your chiller to your system. Use the same or larger diameter pipe or hose for your plumbing for best water flow.
- We suggest installing unions and ball valves (not included) on the inlet and outlet of the chiller for easier installation and removal of the chiller from the system for maintenance or repair (if necessary).
- Be sure that the water flow through your Aqua Logic chiller goes into the water inlet (bottom) and out the top to prevent potential damage (see illustration).
- If you use flexible hose to plumb your system or connect your chiller, make sure that the hose is not kinked to prevent restricted flow and potential damage to your chiller.
- Avoid elbows in your plumbing to minimize flow loss through your system.
- For most efficient operation, we recommend the minimum and maximum flow rates listed below for each model.
- Do **NOT** operate the chiller without adequate water flow.



Delta Star Air Flow

Electrical Hookup:

- We suggest using a dedicated power circuit for best operation and longest life of the chiller. The circuit must be rated to handle the maximum load of the chiller.
- We highly recommend that you use a ground-fault interrupter (GFI) to avoid electrical shock. You can obtain an inline GFI from Aqua Logic, a local tropical fish store, pond shop or hardware store if the outlet in the wall does not have a GFI installed.
- Avoid using an extension cord on your chiller.
- Using a controller:
  - If you use a controller on your Aqua Logic chiller, follow the instructions included with the controller to install it.
  - Make sure that the controller is rated to handle the maximum current load of the chiller.
  - Install the sensor for the controller "upstream" (ahead) of chiller.
  - Make sure the controller is unplugged from the wall outlet.
  - Plug the chiller into the controller.
  - Plug the controller into the wall outlet.
  - Program or adjust the controller to your desired temperature.

Water Outlet & Inlet

Register your Chiller:

Please mail in your registration card or register online at www.aqualogicinc.com

Your Aqua Logic chiller is now installed and ready for operation!

Effective date of 2/2016

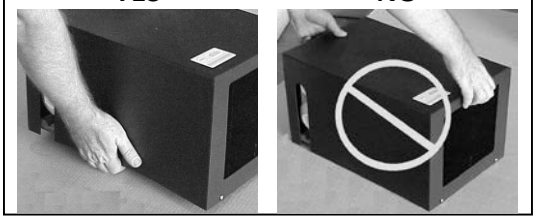
Quick Install for your Aqua Logic Cyclone Chiller

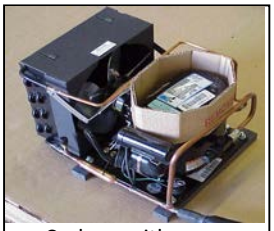
Unpack your Cyclone chiller:

- Carefully remove the chiller from the box by reaching underneath the chiller and lifting it by its base. NEVER lift the chiller by its cover to avoid personal injury or damage to the chiller (See illustration).
- Use a Phillips head screwdriver to remove the screws on both sides of the cover.
- Lift the cover from the unit.
- Remove the cardboard collar from the top of the compressor.
- Make sure that the fan assembly does not contact the condenser (radiator).
- Inspect the unit for possible shipping damage. (If damaged, refer to the damage claims instructions on the shipping container.)
- Unwrap the power cord and lay it beside the heat exchanger hose.
- Replace the cover and use the Phillips screwdriver to reattach the four cover screws.

How to lift your Aqua Logic Chiller

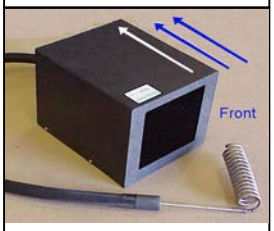
YES **NO**



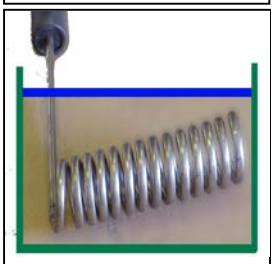


Cyclone with cover removed

Cyclone Chiller Ready for Installation



Cyclone Chiller Air Flow



Suggested Coil Placement

Place your Aqua Logic water chiller:

- Place the water chiller on a sturdy flat surface.
- Make sure that the unit is resting on its base to avoid damage.
- Place the unit so that it has good ventilation through the unit. For best results, allow at least 6 inches of free space in front of the unit and 12 inches behind it. The condenser (radiator) is at the front of the chiller (just like most cars).
- Do not mount the unit so that heat from other equipment (such as a pump) is drawn through the chiller.
- If you place the chiller in a cabinet, allow at least ½" of space between the chiller and the walls of the cabinet to avoid vibration and noise.
- Do not install the chiller in a closed closet or cabinet.

Cyclone Cooling Coil Placement:

- The cooling coil may be placed in a wet/dry sump, tank or pre-filter. The illustration to the right shows correct placement in the water.
- Make sure that the coil must **always be** completely immersed in water to avoid damage to the coil or the chiller. Install the coil at a slight angle to maximize water contact with the coil (See illustration for details).
- Make sure that all portions of the black the flexible hose remains out of the water at all times.
- Do not kink the flexible hose and do not bend the hose smaller than a 12" diameter.
- For most efficient operation, we recommend the following minimum and maximum flow rates in the table below for each model.
- Do **NOT** operate the chiller without adequate water flow.

Electrical Hookup:

- We suggest using a dedicated power circuit for best operation and longest life of the chiller. The circuit must be rated to handle the maximum load of the chiller.
- We highly recommend that you use a ground-fault interrupter (GFI) to avoid electrical shock. You can obtain an inline GFI from Aqua Logic, a local tropical fish store, pond shop or hardware store if the outlet in the wall does not have a GFI installed.
- Avoid using an extension cord on your chiller.
- Using a controller:
  - If you use a controller on your Aqua Logic chiller, follow the instructions included with the controller to install it.
  - Make sure that the controller is rated to handle the maximum current load of the chiller.
  - Install the sensor for the controller "upstream" (ahead) of chiller.
  - Make sure the controller is unplugged from the wall outlet.
  - Plug the chiller into the controller.
  - Plug the controller into the wall outlet.
  - Program or adjust the controller to your desired temperature.

Register your Chiller:

Please mail in your registration card or register online at www.aqualogicinc.com

Your Aqua Logic chiller is now installed and ready for operation!

Effective date of 2/2016

TR115SN, TR230SN, EC115R and EC230R Temperature Controller.

Operation and programming:

Step	Enunciator	Description	Display
1	F or C	Fahrenheit or Celsius	**F**
2	S1 (Blinking)	Setpoint Temperature	S1 **77**
3	DIF (Blinking)	Differential Temperature	DIF **1**
4	C1 or H1	Cooling or Heating Mode	**C1**

Liquid Crystal Display (LCD)

The LCD display provides a constant readout of the sensor temperature and indicates if the output relay is energized. When the **S1** enunciator is constantly Illuminated during operation, the relay is energized. the display is also used in conjunction with the keypad to allow the user to adjust the set point temperature, differential and heating /cooling modes.

Programming Steps and Display

The control can be programmed in four simple steps using the LCD display and the three keys on the face of the control. (See photo for display and keys.)

1. To start programming, press the **SET** key once to access the Fahrenheit/Celsius mode. The display will show the current status, either **F** for degrees Fahrenheit or **C** for degrees Celsius. Then press either the up ⇧ arrow or down ⇩ arrow key to toggle between the **F** or **C** designation.
2. Press the **SET** key again to access the set point temperature. The LCD will display the current set point temperature and the set point enunciator will be blinking on and off to indicate that the control is in the set point mode. Then press either the up ⇧ key to increase or down ⇩ key to decrease the set point to the desired temperature.
3. Press the SET key again to access the differential. The LCD will display the current differential and the **DIF** enunciator will be blinking on and off to indicate that the control is in the differential mode. Then press either up ⇧ key to increase or the down ⇩ key to decrease the differential to the desired setting (minimum 1°F, maximum 30°F).
4. Press the **SET** key again to access the chilling mode. The LCD will display the current mode, **C1** or **H1**. Press the up or down arrow to set the mode. Controller **MUST** in the **C1** mode for chilling operation. Press the **SET** key once more and programming is complete. It will return back to displaying the current water temperature.

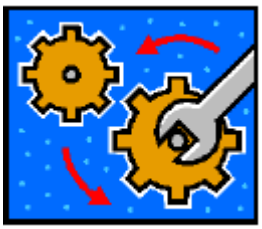
Controller will automatically drop out of "program mode" and return to "operating mode" 30 seconds after last key press.

Troubleshooting Controller Error Messages:

Display Messages

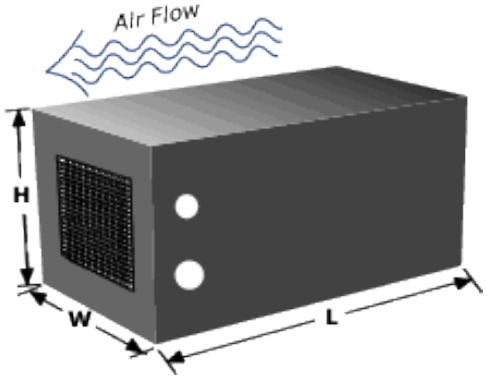
- **E1** - Appears when the up ⇧ or down ⇩key is pressed when not in the programming mode.
  To correct: If the E1 message appears even when no keys are being pressed, replace the control.
- **E2** - Appears if the control settings are not properly stored in memory.
  To correct: Check all settings and correct if necessary.
- **EP** - Appears when the probe and or flow switch is open shorted or sensing a temperature that is out of range.
  To correct: Check to see if the sensed temperature is out of range. If not, check for probe damage by comparing it to a known ambient temperature between -30°F and 220°F. Replace the probe is necessary. Also check for proper water flow through heater. If water flow is correct, flow switch.
- **EE** - Appears if the EEPROM data has been corrupted.
  To correct: This condition cannot be field repaired. Replace the control.
- **CL** - Appears if calibration mode has been entered.
  To correct: Remove power to the control for least five seconds. Reapply power. If the **CL** message still appears, replace the control.

Effective date of 2/2016



Delta Star and Cyclone chillers Specifications

AquaLogic Delta Star and Cyclone chillers features:

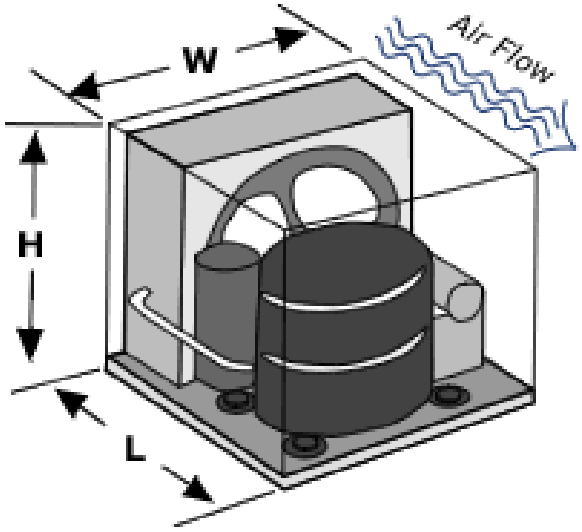


- Titanium heat exchanger for use in fresh and saltwater applications.
- Included Protective cover
- Made in the USA
- Limited 2-year warranty

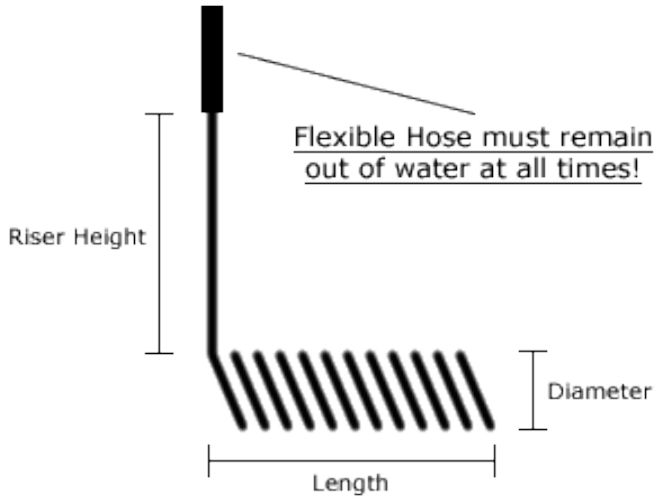
Model	*HP*	*BTU*	*Volts*	*AMP*	*Refrigerant*	*Flow* (gpm)	*I/O* FIPT	*Dimensions* (LxWxH inches)	*Weight* (lbs)
DS-2	*1/5*	*1810*	*115*	*3.4*	*R-134A*	*6-12*	*¾"*	*19 x 12 x 11*	*51*
DS-3	*1/4*	*3080*	*115*	*5.4*	*R-134A*	*8-15*	*¾"*	*19 x 12 x 11*	*65*
DS-4	*1/3*	*4050*	*115*	*7.2*	*R-134A*	*10-20*	*¾"*	*23 x 14 x 11*	*69*
DS-5	*1/2*	*6000*	*115*	*9.5*	*R-134A*	*12-25*	*1½"*	*24 x 16 x 13*	*119*
DS-6	*1/2*	*6000*	*230*	*4.8*	*R-134A*	*12-25*	*1½"*	*24 x 16 x 13*	*119*
DS-7	*3/4*	*9500*	*115*	*13.0*	*R-134A*	*15-30*	*1½"*	*25 x 21 x 15*	*150*
DS-8	*3/4*	*9500*	*230*	*7.0*	*R-134A*	*15-30*	*1½"*	*25 x 21 x 15*	*150*
DS-9	*1*	*12000*	*230*	*7.2*	*R-134A*	*20-35*	*1½"*	*27 x 24 x 15*	*160*
DS-10	*1.5*	*21000*	*230*	*10.5*	*R-22*	*25-40*	*1½"*	*31 x 26 x 19*	*220*

Effective date of 2/2016

Cyclone Specifications



Model	*HP*	*BTU*	*Volts*	*AMP*	*Refrigerant*	*Flow* (gpm)	**Coil Dims.** (L x RH x D ")	*Dimensions* (LxWxH inches)	*Weight* (lbs)
CY-2	*1/5*	*1810*	*115*	*3.4*	*R-134A*	*6-12*	*7 x 7½ x 3*	*19 x 12 x 11*	*44*
CY-3	*1/4*	*3080*	*115*	*5.4*	*R-134A*	*8-15*	*9 x 7½ x 3*	*19 x 12 x 11*	*47*
CY-4	*1/3*	*4050*	*115*	*7.2*	*R-134A*	*10-20*	*10 x 7½ x 3*	*23 x 14 x 11*	*56*
CY-5	*1/2*	*6000*	*115*	*9.5*	*R-134A*	*12-25*	*11 x 9 x 4*	*24 x 16 x 13*	*91*
CY-6	*1/2*	*6000*	*230*	*4.8*	*R-134A*	*12-25*	*11 x 9 x 4*	*24 x 16 x 13*	*91*



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When Disaster Strikes

You may have a lot of money invested in your aquarium at home or in the office. Or you may have valuable dollars invested in seafood for your store or restaurant. Unfortunately, equipment or electricity may fail at the most inopportune time. What can you do to minimize the risk in such an event? Based upon our years of experience in the aquatic life support industry, we recommend the following:

- Always have ALL of the electrical equipment connected to ground fault interrupt (GFI) circuits.
- Do not overload electrical circuits.
- Add the aquarium system and livestock to your homeowner's or renter's insurance policy if allowable.
- Monitor your system closely during the first few weeks of operation. Make sure that everything is working correctly. Call it a shakedown cruise.
- Check the condition of your equipment regularly. Keep it clean. You don't take your car on a long trip without first changing the oil, checking the tires, etc. Why would you ignore maintaining the equipment on your aquarium?
- Keep blue ice or bags of ice in the freezer. If you use ice to help maintain water temperature, leave the ice in the bag so that the water from the melting ice doesn't dilute the water solution in your aquarium.
- Turn off aquarium lights if the chiller fails. Livestock in the wild have periods of several days when they do not get intense light. There ARE typhoons that can cover an area for days at a time. Limited use of VHO and halide lamps to avoid heat build-up in the tank is far less harmful than extremely high water temperatures.
- Put a temperature controller on the lights to shut them off and to sound off an alarm if water temperature rises more than 5°F above the chiller set point.
- Keep a spare pump on hand in case your primary pump fails.
- Maintain a supply of ammonia-neutralizing chemicals such as Amquel®. You can use them to control ammonia in your system during a prolonged power outage. Be sure to follow manufacturer's dosage recommendations and compatibility with organisms in your tank.
- Stock your aquarium sparingly. Then when disaster strikes (and it usually will sooner or later), you have more time to fix the problem before you lose livestock.
- Oversize your filtration system. Water quality is the most critical element for maintaining healthy fish. On a reef tank, it is easy to invest thousands of dollars for livestock (not including how sentimental you may be attached to your livestock). Why not spend a little more up front for more life support reserve in case of a disaster?
- Have a battery-powered air pump on hand for extended power outages. It will provide aeration and move water in the absence of power.
- In most areas of the country, our electrical grid is subjected to surges, spikes, brownouts and blackouts caused by high peak usage, snowstorms, hurricanes, thunderstorms and more. A surge protector can help with the surges and spikes but they are not effective in brownouts. Furthermore, even the best surge protector can't protect against direct strikes of lightning. It takes an uninterruptible power supply (UPS) or backup generators to protect against low voltage and blackouts. And it takes a backup generator to adequately power a chiller—especially a ½-HP unit needed on a 300-gallon tank.

It is very unfortunate when equipment fails. However, a prudent aquarist should have a disaster plan and follow the motto, "Be prepared."

Maintenance and Cleaning

Your Aqua Logic chiller should provide years of efficient and reliable service with a minimum amount of maintenance. There is no scheduled maintenance and there are only two procedures that can be performed by the user.

Cleaning:

The condenser (radiator) should be cleaned occasionally to remove accumulated dust and lint. To test whether the condenser needs to be cleaned, shine a flashlight through your chiller. If you cannot see light from the other side or it is indistinct, it's time to clean it. To clean the condenser:

- Remove power from the chiller.
- Wear protective eyewear.
- Typically, use a vacuum cleaner with brush accessory to remove the accumulated dust from the condenser.
- If the condenser is extremely matted with dust and lint, you may use a soft nylon brush to dislodge the dust. Be sure to stroke the brush in the same direction as the condenser vanes (up and down) to avoid damage to the vanes.

You may also need to remove accumulated organic material or minerals from the coil (heat exchanger). Organic material may be removed by using a mild chlorine bleach solution while minerals may be removed by using a dilute muriatic acid solution, Lime-A-Way® or other hard water deposit remover.

Warning:

- Do **NOT** perform both procedures at the same time since the combination of chlorine and acid may cause serious injury or death.
- Be sure to wear appropriate protective gear.
- Use extreme caution when using caustic chemicals around your system.

To remove accumulated organics (slime):

- Remove power from the chiller.
- Wear protective eyewear, clothing and gloves.
- Mix a solution of 1 part unscented chlorine bleach to 4 parts water.
- For a Delta Star chiller, use a small pump, pail and hoses to run the solution through the heat exchanger for about 10 minutes to flush the organic materials out.
- For a Cyclone chiller, dip the coil into the solution and use a bottle brush to remove accumulated organic materials.
- Rinse the heat exchanger with clear unchlorinated water until you can no longer smell chlorine.
- Allow the heat exchanger to dry and then return the chiller to service.

To remove accumulated minerals:

- Remove power from the chiller.
- Wear protective eyewear, clothing and gloves.
- Prepare a solution according to cleaning product instructions.
- For a Delta Star chiller, use a small pump, pail and hoses to run the solution through the heat exchanger for about 10 minutes to flush the minerals out.
- For a Cyclone chiller, dip the coil into the solution and use a bottle brush to remove accumulated minerals.
- Rinse the heat exchanger with clear unchlorinated water for at least 30 minutes.
- Allow the heat exchanger to dry and then return the chiller to service.

NOTES:

If you have any questions or concerns about maintaining your Aqua Logic chiller, please call us at (858) 292-4773.

Effective date of 2/2016

Troubleshooting Your Chiller

While your Aqua Logic chiller has been designed and manufactured to provide years of reliable service, there may be an occasion where the unit does not operate correctly. The following chart provides guidelines to restore the unit to service or to provide information in helping us to diagnose and repair the chiller.

Items marked with an asterisk (*) should be performed only by Aqua Logic or a qualified electrical or refrigeration technician upon authorization from Aqua Logic. Call Aqua Logic **BEFORE** calling in a technician (See notes on the next page).

Chiller doesn't run.

Chiller is not connected to power.	Connect chiller to electrical supply.
There is no power to the chiller.	Reset circuit breaker or replace fuse.
Neither fan nor compressor operates.	Repair any loose wiring in chiller.*
Possible controller failure.	Go to next section.

Chiller doesn't run with controller but runs if plugged directly into the outlet.

Sensor not properly immersed in water.	Place sensor in water according to controller instructions.
Controller not properly programmed	Program controller according to controller instructions.
Defective controller or sensor	Troubleshoot controller using controller instructions.

Chiller runs but doesn't shut off and water temperature drops below setpoint.

Sensor not properly immersed in water.	Place sensor in water according to controller instructions.
Controller not properly programmed	Program controller according to controller instructions.
Defective controller or sensor	Troubleshoot controller using controller instructions.

Chiller appears to be running properly but water is not chilled adequately.

Poor ventilation.	Review instructions adequate air flow around chiller.
Dirty condenser (radiator).	Clean condenser per instructions on page 4.
Inadequate water flow.	Make sure any filters ahead of chiller are clean. Make sure pump is rated to provide proper flow. Make sure there are no kinks in the flexible tubing. Make sure there are no obstructions in the plumbing. Make sure that ice hasn't built up in heat exchanger or coil.
Excessive organic (slime) accumulation in heat exchanger or coil.	Remove accumulated organics using procedure on page 6.

Effective date of 2/2016

Controller indicates chiller is "ON" but chiller is shutting off (short cycles)**.**

Water temperature too high.	Use blue or ice packs to lower water temperature within normal range.
Defective compressor overload relay.	Replace compressor high-temp overload relay.*
Compressor clunks and doesn't run.	Replace defective compressor.*
Refrigerant levels may be low or gone.	Have refrigeration technician take pressure readings and inspect for leaks and recharge system in necessary.*
Compressor very noisy.	Have technician inspect for correct refrigerant pressures.*

Fan operates but compressor does not.

	Repair wiring to compressor.* Replace compressor start relay, overload or start capacitor.*

Compressor operates but fan does not.

	Repair wiring to fan.* Replace defective fan.*

Notes:

We recommend that you call Aqua Logic **(858) 292-4773** for technical assistance **BEFORE** attempting any repairs on your chiller.

In accordance with our published warranty, Aqua Logic will not pay for repairs or service on any of our chillers (in or out of warranty) without prior approval in writing or a verbal Repair Authorization (RA) issued by Aqua Logic, Inc.

Aqua Logic may or may not authorize you to return your unit for inspection and service. You must pay all shipping charges unless Aqua Logic has made prior arrangements.

TWO YEAR LIMITED WARRANTY

All **Aqua Logic Delta Star®, Cyclone®, and Trimline® Water Chillers** are warranted against defects in parts and workmanship for a period of two (2) years from the date of original end user purchase. The limited warranty covers only parts and labor based upon Aqua Logic service cost. Aqua Logic is not liable for field repair work performed without prior written or verbal agreement and a Repair Authorization (RA) number with a fixed maximum charge.

- The warranty applies only to the original purchaser and is not transferable.
- The warranty covers only the repair or replacement of Aqua Logic products and is limited to Aqua Logic's cost of defective parts.
- Once Aqua Logic determines that the defect is due to parts or workmanship and that the product is under warranty, Aqua Logic will repair or replace the product solely at their discretion.

Our warranty does not cover the following:

- Damage caused by freezing, inadequate water flow, or no water flow.
- Damage caused by improper installation or maintenance by user or their agent.
- Damage caused due to misapplication of product.
- Damage caused by corrosion, abuse, accident, alteration or improper use.
- Damage caused by flood, fire, earthquake, tornado, or other acts of God.
- Damage caused by electrical spikes, surges, brownouts, or improper voltage or amperage.
- Damage caused by failure of any third party equipment (ie. controller, pump, etc.)
- Incidental damage to other equipment, property or livestock.
- Warranty will be voided if product labels are removed or defaced.

In the event of a defect or failure of the product please contact Aqua Logic immediately for assistance. Aqua Logic will at their discretion:

- Provide user with replaceable parts to restore their unit to proper operation.
- Provide a Repair Authorization (RA) number with a specified dollar limit so that a qualified Technician can provide a field repair.
- Provide a Return Authorization (RA) number to return the chiller with original packaging to Aqua Logic, Inc., 9558 Camino Ruiz, San Diego, CA 92126 by prepaid freight. You need to include the serial number as well as proof of purchase and/or a copy of the original bill of sale along with the RA number.

COD shipments will be refused. Aqua Logic shall not be responsible for shipping damage or loss.

Effective date of 2/2016