



**AUTOPILOT**  
SALT CHLORINE GENERATORS

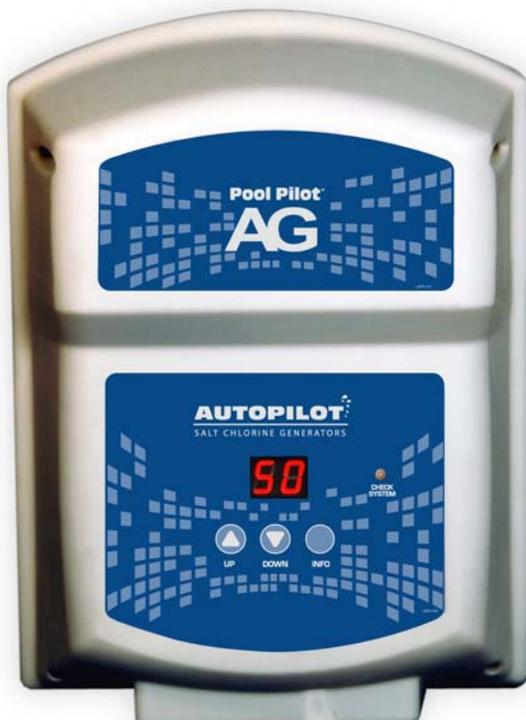
# Pool Pilot® AG

## Salt Chlorine Generator

Swimming Pool & Spa Purification System

Models: 75090, 75090-TL, and 75091

For use with RC-11 & RC-35/22 Cells, ONLY!



## Owner's Manual Installation and Operation

**IMPORTANT !**  
Read This Manual Before  
Installing or Operating

**INSTALLER: THIS DOCUMENT IS PURCHASER'S PROPERTY AND IS TO REMAIN WITH THE EQUIPMENT OWNER**

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# CONTACT INFORMATION

## What We Need to Know If You need To Contact Us...

If you should need to call AquaCal AutoPilot for questions, service, or parts, please have the following information ready:

INSTALLER - Please record the following information prior to installation:

Installer: _____	Date of Installation: _____
Control Unit Model Type: _____	Control Unit Serial Number: _____
SuperCell Model Type: RC-11 & RC-35/22 (only permitted type) _____	SuperCell Serial Number: _____
Pool Volume in Gallons: _____	
(Pool Volume in Liters:) _____	

If you have questions, please refer to our web site at [www.autopilot.com](http://www.autopilot.com) for the latest manual revisions, additional information, and helpful service advice.

You can also call us at: (727) 823-5642. We are here to serve you from 8:00 A.M. to 5:00 P.M. Eastern time, Monday through Friday. If calling after hours, our voice mail system will handle your call. Please be sure to leave your name, a complete address, and your telephone number.

You may also reach us by email at: [AutoPilotTechSupport@teamhorner.com](mailto:AutoPilotTechSupport@teamhorner.com).

Or, if you prefer, you may FAX us at: (727) 824-0847. Be certain to provide your full address and a daytime telephone number.

**Pool Pilot<sup>®</sup>**  
**AG**

Manufactured by  
AquaCal AutoPilot, Inc.  
2737 24th Street North  
St. Petersburg, Florida 33713  
U.S.A.



# SAFETY INFORMATION

## **WARNING !**

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

**RISK OF ELECTRICAL SHOCK** - Disconnect all AC power when installing or servicing this system.

## **WARNING !**

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

**RISK OF ELECTRICAL SHOCK...** Insure electrical power is disconnected before wiring the unit. Follow all state / local / NEC (CEC if applicable) electrical codes. Use copper conductors, only.

## **WARNING !**

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

**RISK OF ELECTRICAL SHOCK** - Control units configured to 115-VAC must be installed at least 10-feet (3 m) from the pool or spa wall. Control units configured to 230-VAC or 115-VAC with twist-lock connects must be installed at least 5-feet (1.5m) from the pool or spa wall.

## **WARNING !**

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

**RISK OF ELECTRICAL SHOCK** - A disconnect device, incorporated into the fixed wiring, must be included in the supply circuit (such as a time clock, relay, or circuit breaker).

## **WARNING !**

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

**CHEMICAL HAZARD...** To avoid damaging splashes, always add acid to water, never water to acid. Wear safety glasses and use other appropriate personal protection equipment.

## **WARNING !**

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

**RISK OF CHILD DROWNING OR INJURY** - Children must be closely supervised at all times around pool or spa equipment.

## **WARNING !**

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

**WATER CHEMISTRY SAFETY** - Improper water chemistry can present a serious health hazard. The proper residual chlorine level and water chemistry must be maintained. The addition of certain pool maintenance chemicals can reduce the effectiveness of chlorine. Maintain Pool / Spa water per standards detailed later in this manual.

## **CAUTION !**

Failure to heed the following may result in equipment damage.

The AquaCal AutoPilot Chlorinator must be installed and operated as specified. Failure to do so will void the equipment warranty.

## **CAUTION !**

Failure to heed the following may result in equipment damage.

DO NOT let water level fall below level of Above Ground Manifold cell. Damage to cell and power supply can occur if unit is run without water flow.

## **CAUTION !**

Failure to heed the following may result in equipment damage.

To permit proper air circulation, the Control Unit must be mounted at least 1-foot (300 mm) off ground level.

# SPECIFICATIONS

## Input Power:

Model 75090 .....: 110-120 VAC, 2.0 Amp Maximum, with standard 115 VAC plug

Model 75090-TL .....: 110-120 VAC, 2.0 Amp Maximum, with twist-lock plug

Model 75091 .....: 220-240 VAC, 1.0 Amp Maximum

## Chlorine Output:

SuperCell Type	Water Chemistry	Max lbs/day	Max kg/day
RC-11	Standard Pool Salt	0.40	0.18
RC-35/22	Standard Pool Salt	0.80	0.36
RC-11	E4Aqua - low salt	0.21	0.10
RC-35/22	E4Aqua - low salt	0.42	0.19

## Manifold Flow Requirements for 75094 Manifold:

Minimum Flow Rate.....: 20-gallons per minute (gpm) (76 liters/minute (L/m))

Maximum Flow Rate.....: 100-gallons per minute (gpm) (379 liters/minute (L/m))

Maximum Op. Pressure.....: 85-psi

## Agency Approvals:

Tested to conform to the following specifications:

UL1081.....: Standard for Safety for Swimming Pool Pumps, Filters, and Chlorinators

CAN/CSA-E60335-1.....: Safety of Household and Similar Electrical Appliances

## How Your Chlorine Generator Works

The system requires a low concentration of dissolved salt (sodium chloride) in the water. The salt concentration level is normally maintained below the taste threshold. The AG automatically converts the salt into chlorine, which your pool/spa requires to remain sanitized and algae free. The chlorine reverts back to salt after treating the water. Since the salt is constantly recycled, there is minimal loss during a swimming season. However, salt can be lost due to filter backwashing, rain water overflow, leaks, or bather splashing/carry out... but not through evaporation.

The AG is designed to handle the purification needs of residential swimming pools and spas. The amount of chlorine required for proper sanitization will vary based on the pool size and various factors such as water temperature, bather load, exposure to direct sunlight, and special water features.

The floating convection cells and return jet manifolds do not require the circulation pump running to operate. For all other cells the water circulation pump must be operating for your AG to produce chlorine, so run time is one of several key components to maintaining the proper sanitizer levels.

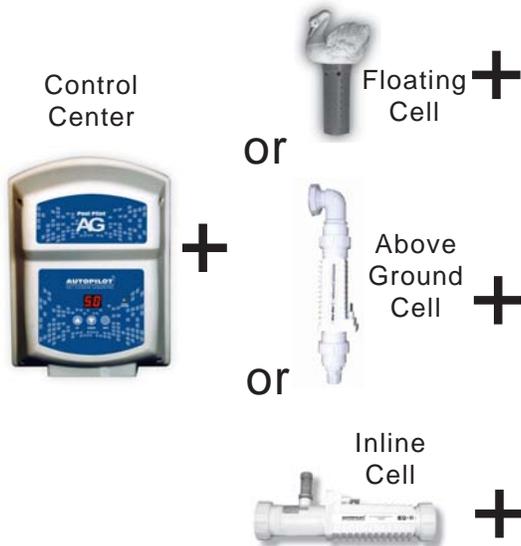
**Most installations require a minimum of eight (8) hours-per-day pump run time** to properly filter and sanitize the water.



# SPECIFICATIONS

## What is included:

Although the manifold assembly may be sold separately, both a manifold and an AG Control Center are required for a complete installation. The standard cell & manifold assembly is available with the RC-11 or RC-35/22 residential cell. Before attempting the installation, verify the following items have been included with the Control Center:



### 75092 (FLOATING CELL PARTS)

Quantity	Item Description
1	Flow Switch Plug
4	Plastic Anchors
4	Mounting Screws

### 75093 (ABOVE GROUND CELL PARTS)

Quantity	Item Description
1	Cell Cord
1	Flow Switch Plug
1	Cell Cord Cap
4	Plastic Anchors
4	Mounting Screws

### 75094 (INLINE CELL PARTS)

Quantity	Item Description
1	Flow Switch Cord
1	Cell Cord Cap
4	Plastic Anchors
4	Mounting Screws
1	Cell Cord

## Three Available Water Manifold Assemblies:

### ***Floating-Cell Manifold Assembly (#75092)***

The 75092 floats in the pool. It does not need the circulation pump and produces its own flow by convection.

- Replacement Parts:
- RC11-ML - CC25 (Cell with grate)
  - 19088 (Swan and Canister)



### ***Above Ground Cell Manifold Assembly (#75093)***

The 75093 manifold is inserted in the circulation return to the pool or spa.

- Replacement Parts:
- RC11 (Cell) or RC-35/22 (Cell)
  - APK0018 (Manifold Assembly)
  - (2) - 312-G - 1 1/4" or 1 1/2" flex hose OR
  - (2) - 312-D - Standard 2" PVC



### ***Inline-Cell Manifold Assembly (#75094)***

The manifold is connected into the plumbing after all other equipment. Water from the pool/spa is moved through the manifold by the circulation pump.

- Replacement Parts:
- RC11 (Cell) or RC-35/22 (Cell)
  - APK0019 (Manifold Assembly)
  - (2) - 312-G - 1 1/4" or 1 1/2" flex hose OR
  - (2) - 312-D - Standard 2" PVC



# INSTALLATION

## Basic System Overview:

The AG unit is a salt chlorination system for pool or spa purification, and is designed to operate in the following configurations:

***Shown with Floating-Cell Manifold Assembly***

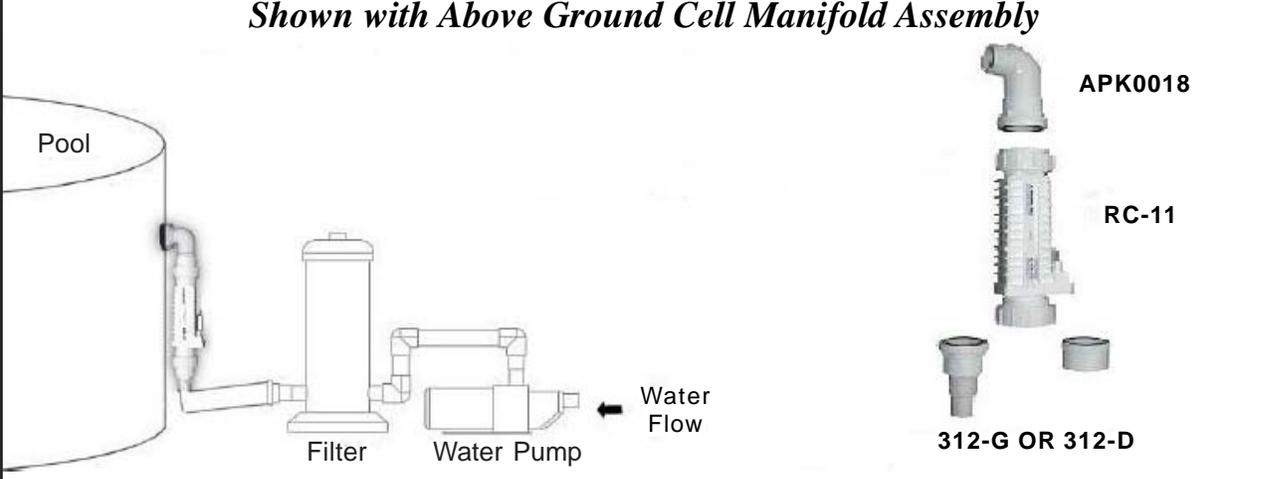


Good news, no plumbing required for this type of manifold assembly

**WARNING !** Failure to heed the following may result in permanent injury or death.

**RISK OF ELECTRICAL SHOCK** - Remove floating cell from pool before swimming in pool.

***Shown with Above Ground Cell Manifold Assembly***



Water Flow

APK0018

RC-11

312-G OR 312-D

***Shown with Inline-Cell Manifold Assembly***



Water Flow

312-G OR 312-D

APK0019

RC-11

312-G OR 312-D

**CAUTION !** Failure to heed the following may result in equipment

DO NOT let water level fall below level of Above Ground Manifold cell. Damage to cell and power supply can occur if unit is run without water flow.

# INSTALLATION

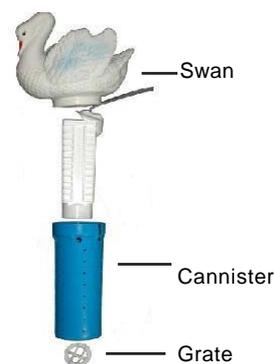
## Plumbing the Floating-Cell Manifold Assembly (75092):

**STEP-1:** Select the area where you would like the swan to float:

- Confirm floating cell's cable will still reach power center as swan floats in pool. The cell cable is 25' long.
- Make sure that cord will not become a tripping hazard when in pool.

**STEP-2:** Assemble swan as shown:

- 1 Unscrew the GRATE from the bottom of the RC-11 Cell  
(The grate is included with the cell as Part # RC-11-ML-CC25)
- 2 Unscrew the CANISTER from the SWAN  
(The Cannister is included with the Swan as Part #19088)
- 3 Insert the RC-11 CELL into the CANISTER, lining up the cable with the notch on the side of the CANISTER and the hole in the bottom
- 4 Line the GRATE up on the outside of the CANISTER and screw it into the RC-11 cell
- 5 Screw the SWAN assembly into the top of the CANISTER
- 6 Place SWAN assembly into pool
- 7 Attach cable to AG Control Unit
- 8 Plug in AG and enjoy!



## Plumbing the Above Ground Manifold Assembly (75093):

**STEP-1:** Select the location for installing the manifold:

- It is recommended the manifold be installed prior to installation of the Control Unit. The Control Unit must be installed close enough to the Manifold Assembly to allow the SuperCell sufficient slack to enable component service and maintenance. The cables are 12' long.
- The direction of the water flow through the manifold must be as indicated for the system to operate properly.

**STEP-2:** Lower the water level below the return line.

**STEP-3:** Install the 75093 into the return line hole and tighten the nut inside the pool wall.

**STEP-4:** Connect the return pipe to the bottom of the cell. Adaptors are supplied for:

- 2" PVC (312-D) or
- 1 1/2" flexible hose or 1 1/4" flexible hose (312-G)

**STEP-5:** Add water to bring the level above the return line.

## Plumbing the Inline-Cell Manifold Assembly (75094):

The Manifold Assembly is typically plumbed into the pool return line; and, if applicable, after the heater and spa return diverter valve. Adaptors are supplied for 2" PVC (312-D) or 1 1/2" flex hose (312-G).

**STEP-1:** Select the location for installing the manifold:

- It is recommended the manifold be installed prior to installation of the Control Unit. The Control Unit must be installed close enough to the Manifold Assembly to allow the SuperCell and flow switch cables sufficient slack to enable component service and maintenance. The cables are 12' long.
- The direction of the water flow through the manifold must be as indicated for the system to operate properly.
- For a Pool/Spa combination, the manifold must be located as the last component in the POOL RETURN LINE (to avoid over-sanitization of the spa).

# INSTALLATION

**STEP-2:** The manifold will accept an RC-11 or RC35/22 residential cell; use of any other cell may damage the power supply and the equipment warranty will be voided.

**CAUTION! Use RC-11 or RC-35/22 cell ONLY.** Install the cell into the manifold. Tighten the unions by hand for a watertight seal.

## **Flow Rates:**

- The manifold can be directly plumbed into the system (as shown in the diagrams on the prior page).
- If the flow rate for the system is less than 20-gpm (76 L/m), a larger pump must be installed (or steps taken to improve flow rate).

*Note: Insure flow rates for two-speed pump can provide sufficient flow at low speed.*

## **Mounting the Control Unit:**

*All electrical connections should be made by a licensed electrician or certified electrical contractor.*

The AG power center is suitable for indoor or outdoor mounting.

When connected to 230-VAC, the power center must be installed at least 5' (1.5 m) horizontal distance from the pool or spa wall.

When connected to 115-VAC with a standard plug (Model 75090) power supply must be mounted at least 10' from the pool or spa wall. Model 75090-TL has a twist-lock plug, and must be mounted at least 5' from the pool or spa. Both options must include a GFCI (Ground Fault Circuit Interrupter).

When using the Inline-Cell (75094) the control unit should be wired load-side to ensure the control unit is powered on and off with the circulation pump.

**To avoid damage to wiring and connectors, thoroughly read the following section before proceeding:**

1. Hold the power center chassis in the selected mounting location. Through the top, narrow portion of mounting slots, mark the wall for the four (4) mounting holes.
2. Plastic anchors and screws have been provided for concrete or stucco walls; anchors are not required when mounting to wood or composite materials. Drill and install the plastic anchors (as applicable). Using a screwdriver, run the screws into the anchors, leaving a ¼" gap between the wall and the underside of the screw heads.
3. Holding the power center slotted openings to the screw heads, allow the screw heads to pass through the larger portion of the mount holes; hang the power center on the four (4) mounting screws; using a long shaft screwdriver, tighten the screws.



# INSTALLATION

## Electrical Connections:

All electrical connections should be made by a licensed electrician or certified electrical contractor.

The AG 75090 and 75090-TL have been configured for 115-VAC operation. The AG 75091 has been factory configured for 230-VAC operation. The configuration can be changed in the field.

The reconfiguration from 110 to 230-VAC requires removal of the power cord, and changing jumpers inside the unit. Also, the fuse has to be changed: 1-amp slow blow for 230-VAC (110-VAC units use a 2-amp slow blow fuse).

The control center uses both high (line) and low voltage connections. Line-voltage connections are intended as electrical input to the power center. Low-voltage cables connect to the Flow-Switch and SuperCell.

## **WARNING !**

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

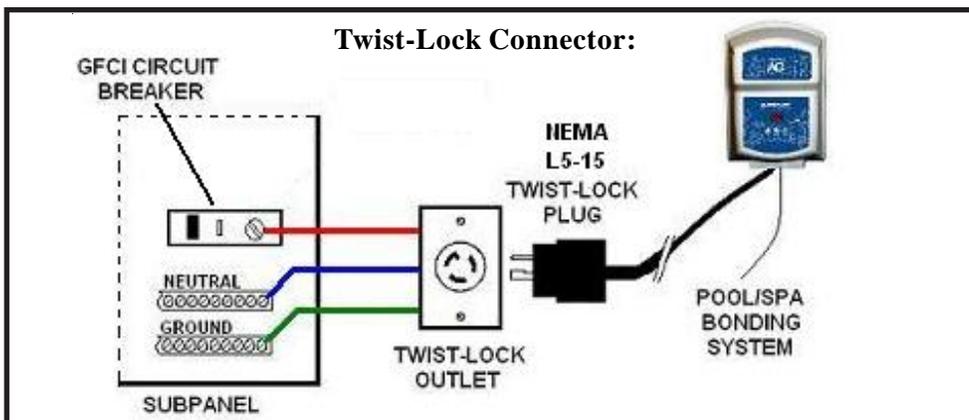
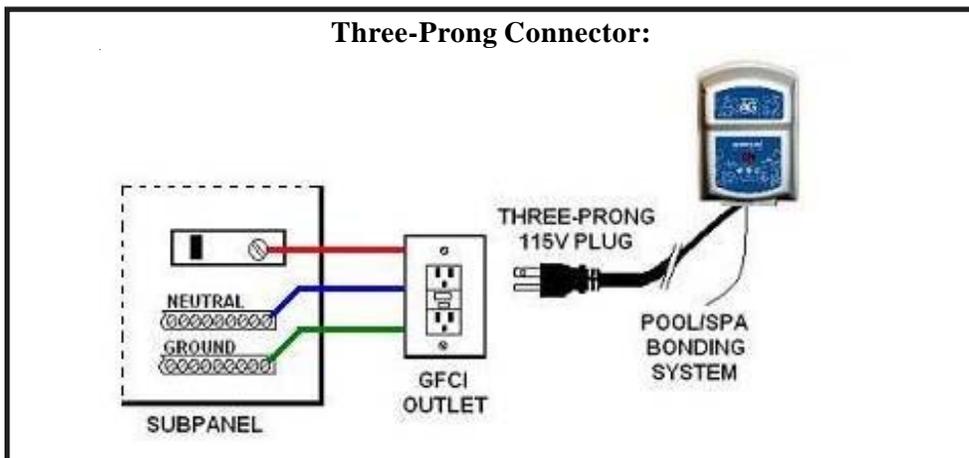
**RISK OF ELECTRICAL SHOCK...** Insure electrical power is disconnected before wiring the unit. Follow all state / local / NEC (CEC if applicable) electrical codes. Use copper conductors, only.

## Grounding and Bonding:

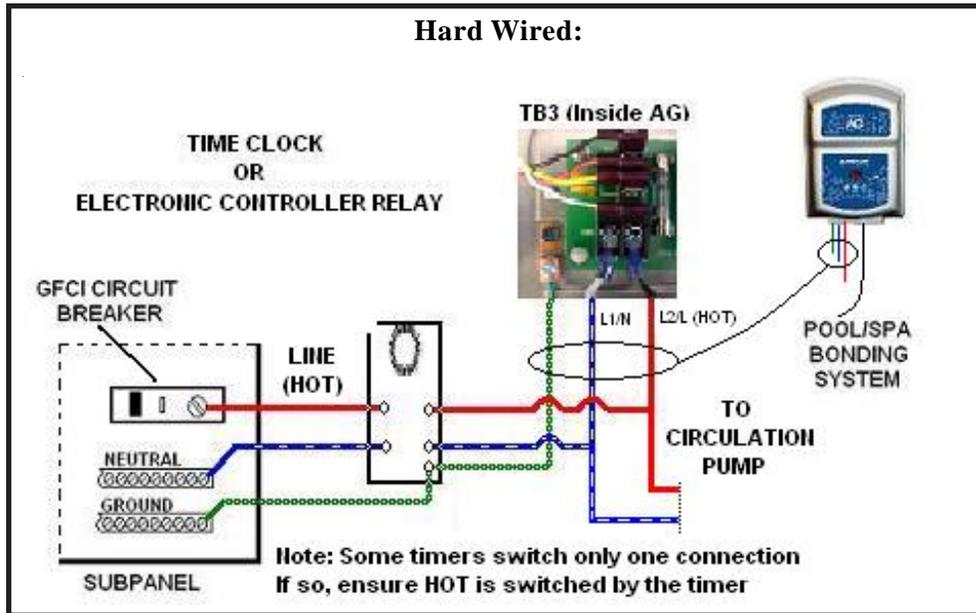
The AG must also be connected to the pool/spa bonding system with an 8-AWG (6-AWG for Canada) wire. A bonding lug is provided at the bottom, exterior of the control center.

## High Voltage Wiring:

Determine what type of connector is to be used when installed the AG power supply. (Three-Prong connector, Twist-Lock connector, or hard wired to the electrical panel) then connect as show on diagram below.



# INSTALLATION



## Low Voltage Wiring:

1. The SuperCell cable connector (75093 & 75094 only) is keyed and must be aligned to connect properly. Line up the cell cord and plug into the cell cord connector located on the bottom right of the AG base plate.
2. The other end of the SuperCell cable will have a red weather plug located in one of the three (3) contact holes. The SuperCell will have two (2) electrical terminals:
  - As the SuperCell has two (2) electrical contact terminals, the red weather plug will seal the unused contact in the cable.
  - Position the SuperCell plug to align the two open holes with the two mating cell terminals: push gently, but firmly, to connect.
3. The Flow Switch cable is used with the 75094 "Inline-cell manifold system". This cable connector is also keyed and must be aligned to connect properly.



A Flow Switch Jumper has been provided with your AG system to disable the water flow switch when used with the 75093 and 75092 manifold systems. These manifold systems do not use a flow switch to monitor water flow. Do not use this jumper with the 75094 "Inline-cell manifold system".



## CAUTION !

Failure to heed the following may result in equipment damage.

DO NOT use a flow switch jumper to circumvent the inline manifold systems flow switch. Damage to the cell and power supply can occur if the unit is run without water flowing through the 75094 manifold system.

# PREPARING THE POOL WATER

## Installer Please Note:

When properly sized to the site, the AG will meet the sanitizer “maintenance” requirements of the pool/ spa. The AG is *not* designed to chlorine shock treat, or build up a chlorine residual, when starting with a zero or very low chlorine level.

Before starting the AG, the water must be properly balanced, and the chlorine level must be adjusted to between 1-to-3 ppm free chlorine. More on adjusting water balance, and start-up chlorine levels, follows below.

## Steps to Prepare Water:

1. Calculate Pool Volume: See next section, below.
2. Adjust Water Chemistry: (Via saturation index... consider pH, total alkalinity, hardness, and water temperature; also adjust stabilizer level). See Reference sections on pages 17-22.
3. Add Initial Chlorine Dosage: Use liquid chlorine (sodium hypochlorite), as obtained from pool supply center, to achieve 1-3 ppm free chlorine.
4. Add salt to water (test the water for salt level, first). Adjust to 3000 - 3500 ppm. See salt chart on page-17.

## Calculating Pool Volume:

$$\text{Average Depth} = \frac{\text{depth of deep end} + \text{depth of shallow end}}{2}$$

Gallons (pool size measured in feet)

$$\text{Rectangular} = \text{Length} \times \text{Width} \times \text{Average Depth} \times 7.5$$

$$\text{Round} = \text{Diameter} \times \text{Diameter} \times \text{Average Depth} \times 5.9$$

$$\text{Oval} = \text{Length} \times \text{Width} \times \text{Average Depth} \times 5.9$$

Liters (pool size measured in meters)

$$\text{Rectangular} = \text{Length} \times \text{Width} \times \text{Average Depth} \times 1000$$

$$\text{Round} = \text{Diameter} \times \text{Diameter} \times \text{Average Depth} \times 785$$

$$\text{Oval} = \text{Length} \times \text{Width} \times \text{Average Depth} \times 785$$

Calculated pool volume is: \_\_\_\_\_

*Enter Pool Volume figure in the information section, page-4.*

# PREPARING THE POOL WATER

## Using Standard Pool Salt

### Adding Salt:

#### Type of Salt to Add...

It is important to use Sodium Chloride (NaCl) salt that is greater than 99% pure. Acceptable types of salt include granular food grade, water softener pellets, or solar salt flakes; these are usually available in 25-lb to 80-lb bags at local pool or building supply outlets. Water softener and solar salt will have a slower dissolve rate than food grade salt. Rock salt and Granular Salt with Iodine or Rust Preventatives should not be used, as these mixtures contain high levels of impurities and may cause staining.

#### Note:

While not recommended, granular salt containing anti-caking additives such as YPS (Yellow Prussiate of Soda) or Sodium Ferrocyanide *can* be used. However, these mixtures—if not mixed and dissolved immediately— may cause a localized tint to the water or yellow staining of the pool/spa finish.

#### Determine Amount of Salt Required (and salt level to maintain)...

*FIRST... Test the water for current salt content !!!*

The ideal salt range is 3000 - 3500 ppm (2500 minimum) (2.5 - 3.5 g/l). However, if so desired, the AG *can* operate with salt levels in excess of 35,000 PPM (35.0 g/l). Salt levels above 6000 PPM are not normally recommended, as corrosion issues may result. Salt levels below 2500 ppm will reduce the efficiency of the AG, and will result in low chlorine production and shorten the life of SuperCell. Please see the reference table, on page-17 for information on amount of salt to be added relative to the gallons of water to be treated vs. existing salt level.

### **CAUTION !**

Failure to heed the following may result in equipment damage.

Do not allow granular salt to pile up in one location, without brushing, as staining may occur.

#### Add Salt to Pool Water...

How to add the salt (or remove it if too much)...

The object is to have the salt fully dissolve into the water.

Start the water circulation pump and set to operate in continuous mode (24/7). Add salt directly to pool (or spa, if a spa-only installation), and over the main drain (If main drain is present). If there is no main drain, a vacuum head may be used to encourage salt circulation. Distributing the salt through brushing is also helpful; brush the salt toward the main drain (if one is present). Set pump operation to normal run time after salt has fully dissolved into water.

If the salt level becomes undesirably high, the only way to remove excess salt is to partially drain the pool/spa and refill with fresh water.

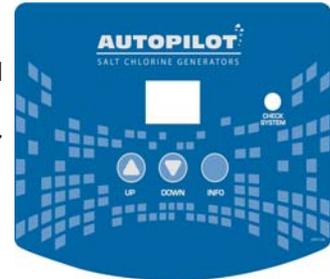
# OPERATION

## ***Adjusting Chlorine Output:***

- 1 Start with prepared pool water as described in prior section.
- 2 Test pool water for free chlorine.
- 3 If free chlorine level is not at least 1 ppm, add liquid chlorine to insure a 1 -3 ppm free chlorine residual.
- 4 Add the proper amount of salt as described on next page, and run the circulation pump continuously for 24-hours allowing the salt to be fully mixed and dissolved into the pool.
- 5 Use the UP and DOWN arrow buttons to set the purifier percentage to 50%, and then allow the pool to operate normally. Display will show P=50 (scrolling) once output is adjusted.
- 6 For the first two weeks, test the water chemistry parameters every 3-4 days. Adjust output percentage as needed to maintain free chlorine reading. After the optimal output percentage (%) has been determined, this setting will not normally require further adjustment.

## ***Getting Unit Information:***

- 1 Press INFO button.
- 2 Presses of INFO cycles through the information displays.
  - A = xx (Measured current sent to the SuperCell, where xx is assumed to have a decimal point. i.e. "A=49" = 4.9 Amps.
  - U = xx (Measured voltage sent to the SuperCell, i.e. "U=17" = 17 Volts.
  - Lr = xxx ( Percentage of Cell Life remaining based on 28800 Amp Hours)
  - x.xx (The current software version)
- 3 The displays will time out and return to the Purified Output display.



## ***Normal Operation:***

- The AG will revert to the normal display if there is no activity on the keypad for ten (10) or more seconds.
- The "Check System" light will show solid green when generating chlorine and flash red if an error condition exists. See "Troubleshooting" section if an error condition exists.
- The solid green light cycles on and off as it periodically stops generating to achieve the correct percentage output.

Note: If water temperature falls below 55 degrees F, the AG should be unplugged to avoid over-chlorination and/or damage to the cell.

# REFERENCE SECTION

## Standard Pool Salt

### *Salt Addition Chart:*

To use this chart:

1. Find current salt level (ppm or g/l) in the left column.
2. Find pool/spa volume in the second row (Gallons or Liters).
3. Find the amount of salt needed to bring pool to the ideal level by finding the intersection of the row and column.

For volumes other than what is shown, use combinations of various columns.

Example:

An 11,000 gallon pool with a salt level of 500-ppm

- The column value for 1000 gallons is 21 pounds
- The column value for 10,000 gallons is 209 pounds.
- The total of 230 pounds of salt is needed to reach pool salt level of 3000-ppm.

The salt is constantly recycled during normal operation. Loss of salt during a swimming season should be minimal. Filter backwashing, draining due to rain water overflow, splashing and bathing suit drag out, and leaks (excessive salt loss in a short span of time) are typical ways salt is lost. Salt does not leave the pool when water evaporates.

**Pounds(kilograms) of Salt needed to attain 3000 ppm (mg/l)**

Current level of salt ppm (mg/l)	Pool/Spa Volume in Gallons (Liters)								
	1,000 (3,786)	2,500 (9,465)	5,000 (18,930)	7,500 (28,395)	10,000 (37,860)	12,500 (47,325)	15,000 (56,790)	17,500 (66,255)	20,000 (75,720)
<b>0</b>	25 (11)	63 (28)	125 (57)	188 (85)	250 (114)	313 (142)	376 (170)	438 (199)	501 (227)
<b>250</b> <b>(0.25)</b>	23 (10)	57 (26)	115 (52)	172 (78)	230 (104)	287 (130)	344 (156)	402 (182)	459 (208)
<b>500</b> <b>(0.50)</b>	21 (9)	52 (24)	104 (47)	157 (71)	209 (95)	261 (118)	313 (142)	365 (166)	417 (189)
<b>750</b> <b>(0.75)</b>	19 (9)	47 (21)	94 (43)	141 (64)	188 (85)	235 (106)	282 (128)	329 (149)	376 (170)
<b>1,000</b> <b>(1.0)</b>	17 (8)	42 (19)	83 (38)	125 (57)	167 (76)	209 (95)	250 (114)	292 (133)	334 (151)
<b>1,250</b> <b>(1.25)</b>	15 (7)	37 (17)	73 (33)	110 (50)	146 (66)	183 (83)	219 (99)	256 (116)	292 (133)
<b>1,500</b> <b>(1.5)</b>	13 (6)	31 (14)	63 (28)	94 (43)	125 (57)	157 (71)	188 (85)	219 (99)	250 (114)
<b>1,750</b> <b>(1.75)</b>	10 (5)	26 (12)	52 (24)	78 (35)	104 (47)	130 (59)	157 (71)	183 (83)	209 (95)
<b>2,000</b> <b>(2.0)</b>	8 (4)	21 (9)	42 (19)	63 (28)	83 (38)	104 (47)	125 (57)	146 (66)	167 (76)
<b>2,250</b> <b>(2.25)</b>	6 (3)	16 (7)	31 (14)	47 (21)	63 (28)	78 (35)	94 (43)	110 (50)	125 (57)
<b>2,500</b> <b>(2.5)</b>	4 (2)	10 (5)	21 (9)	31 (14)	42 (19)	52 (24)	63 (28)	73 (33)	83 (38)
<b>3,000</b> <b>(3.0)</b>	<b>Ideal</b>								
<b>3,500</b> <b>(3.5)</b>	<b>OK</b>								
<b>35,000</b>	OK for Pool Pilot Operation - (salt water would need to be diluted to lower salt level)								

# REFERENCE SECTION

## Standard Pool Salt

### *Basic Water Chemistry - Salt:*

The AG unit is designed to produce chlorine on a daily basis. To monitor the system's efficiency, the water chemistry ranges, and schedule of periodic checks—per below—should be followed.

<b>CAUTION !</b>	Failure to heed the following may result in equipment damage.
Excessively high chlorine levels can cause premature cell failure and corrosion damage to pool fixtures and equipment.	

<b>CAUTION !</b>	Failure to heed the following may result in equipment damage.
Always follow the instructions on the manufacturer's label whenever handling or using chemicals.	

CHEMICAL or FACTOR	IDEAL RANGE	IDEAL TEST SCHEDULE	EFFECT OF LOW/HIGH LEVELS	CORRECTIVE ACTIONS
<b>Free Chlorine</b>	1 to 3 ppm	Weekly	<p><u>Low free chlorine:</u> Not enough residual chlorine to safely sanitize pool water.</p> <p><u>High free chlorine:</u> Corrosive to metallic fixtures in pool water. Can bleach swimwear and hair.</p>	<p><u>Low free chlorine:</u> Check for combined chlorine level and shock as necessary. Increase purifier output to maintain a 1-3 ppm residual reading.</p> <p><u>High free chlorine:</u> Decrease purifier output. Let chlorine dissipate normally until 1-3 ppm is achieved. In extreme cases, pool water can be diluted with fresh water or a chlorine neutralizer added. (Diluting will reduce salt and CYA. Check and adjust as needed.)</p>
<b>pH</b>	7.2 to 7.8 ppm	Weekly	<p><u>Low pH:</u> (acidic) Equipment corrosion, eye/skin irritation, plaster etching, rapid chlorine consumption</p> <p><u>High pH:</u> (basic) Scale formation, cloudy water, eye/skin irritation, poor chlorine effectiveness</p>	<p><u>Low pH:</u> Add sodium carbonate or soda ash</p> <p><u>High pH:</u> Add muriatic acid or sodium bisulfate.</p>
<b>Total Alkalinity</b>	80 to 100 ppm	Monthly	<p><u>Low TA:</u> Eye irritation, pH "bounce", stained/etched plaster and metal corrosion.</p> <p><u>High TA:</u> Constant acid demand, difficulty in maintaining pH, and contributes to scale formation or cloudy water conditions.</p>	<p><u>Low TA:</u> Add sodium bicarbonate.</p> <p><u>High TA:</u> Add muriatic acid often, a little at a time (may take a week or more to lower the TA).</p>
<b>Salt</b>	3000 to 3500 ppm	Monthly	<p><u>Low Salt:</u> Below 2,500 ppm causes premature cell failure and reduces chlorine production</p> <p><u>High Salt:</u> Above 6,000 ppm can cause corrosion of metallic fixtures and will taste salty. Note: Cubby can safely operate with salt levels up to 35,000.</p>	<p><u>Low Salt:</u> Add salt according to digital display on Pool Pilot unit or salt chart.</p> <p><u>High Salt:</u> If undesirably high, partially drain and refill the pool with fresh water. (Diluting will reduce CYA. Check and adjust as needed.)</p>
<b>Calcium Hardness</b>	200 to 400 ppm	Monthly	<p><u>Low CH:</u> Etching of plaster, equipment corrosion</p> <p><u>High CH:</u> Scale formation, cloudy water. Rapid buildup of scale may exceed the system's self-cleaning capability and require manual cleaning of the SuperCell.</p>	<p><u>Low CH:</u> Add calcium chloride flakes.</p> <p><u>High CH:</u> Partially drain and refill pool with fresh water to dilute. (Diluting will reduce salt and CYA. Check and adjust as needed.)</p>
<b>Cyanuric Acid (CYA) - Stabilizer</b>	60 to 80 ppm <i>Outdoors</i>  30 to 50 ppm <i>Indoors or Colder Climates</i>	Monthly	<p><u>Low CYA:</u> destruction of chlorine by the UV rays from the sun.</p> <p><u>High CYA:</u> Requires more chlorine to maintain proper sanitizer levels. <b>Note: CYA not needed for indoor or bromine pools.</b> CYA can be reduced to 30 - 50 ppm for AG in colder climate regions.</p>	<p><u>Low CYA:</u> Add cyanuric acid(1 lb/5000 gallons increases CYA 25 ppm)</p> <p><u>High CYA:</u> Partially drain and refill pool with fresh water to dilute. (Diluting will reduce salt. Check and adjust as needed.)</p>

# REFERENCE SECTION

## Standard Pool Salt

### *Saturation Index (SI) - Salt:*

The Saturation Index is a formula used to predict the calcium carbonate saturation of water, that is, whether your water will precipitate, dissolve, or be in equilibrium with calcium carbonate.

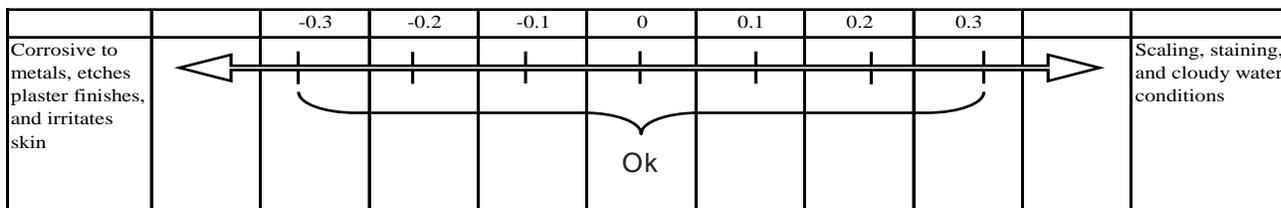
Water is properly balanced if the SI is  $0 \pm 0.3$ . If SI is greater than 0.3, scaling and staining will occur. If SI is less than -0.3, then the water is corrosive to metallic fixtures and aggressive to plaster surfaces and vinyl liners.

A high or low SI can cause premature damage to the cell, equipment or pool finish. As a general rule, higher concentrations of calcium, total dissolved solids, pH, and alkalinity all promote a greater tendency for scale. Scaling potential also increases with increasing temperature.

Use the chart below to determine your overall water balance. Test water for pH, water temperature, Calcium Hardness, Total Alkalinity, Salt Level, and use the equivalent Factors (TF, CF, AF, Constant) from the chart below to determine your Saturation Index. Adjust chemicals to maintain balanced water.

$$\text{pH} + \text{TF} + \text{CF} + \text{AF} - \text{SC} = \text{SI}$$

Temperature		TF	Calcium Hardness	CF	Total Alkalinity	AF	Salt Level	SC
60 F	15.6C	0.4	150 ppm	1.8	75 ppm	1.9	0 - 1000 ppm	12.1
66 F	18.9C	0.5	200 ppm	1.9	100 ppm	2.0	1001 - 2000 ppm	12.2
76 F	24.4C	0.6	250 ppm	2.0	125 ppm	2.1	2001 - 3000 ppm	12.3
84 F	28.9C	0.7	300 ppm	2.1	150 ppm	2.2	3001 - 4000 ppm	12.4
94 F	34.4C	0.8	400 ppm	2.2	200 ppm	2.3	4001 - 5000 ppm	12.5
103 F	39.4C	0.9	600 ppm	2.4	250 ppm	2.4	5001 - 6000 ppm	12.6



### Examples:

**Water Test Results #1**

pH = 7.4 .....: pH = 7.4  
 Water Temperature = 84 F .....: TF = 0.7  
 Calcium Hardness = 400 ppm .....: CF = 2.2  
 Total Alkalinity = 125 ppm .....: AF = 2.1  
 Salt Level = 3000 ppm .....: SC = 12.4

$7.4 + 0.7 + 2.2 + 2.1 - 12.4 = 0$   
 (Water is perfectly balanced)

**Water Test Results #2**

pH = 7.8 .....: pH = 7.8  
 Water Temperature = 84 F .....: TF = 0.7  
 Calcium Hardness = 600 ppm .....: CF = 2.4  
 Total Alkalinity = 200 ppm .....: AF = 2.3  
 Salt Level = 3000 ppm .....: SC = 12.4

$7.8 + 0.7 + 2.4 + 2.3 - 12.4 = 0.8$   
 (Water is scale forming)

# REFERENCE SECTION



## ***Adding E4aqua:***

The following instructions and chart should be used for seasonal start up of an above ground pool using the AG in conjunction with E4aqua<sup>®</sup> additive package. E4aqua<sup>®</sup> additive is used in applications where a lower salt concentration is desired. Note that lower salt will result in lower chlorine output.

The AG unit is designed to produce chlorine on a daily basis. To monitor the system's efficiency, the water chemistry ranges, and schedule of periodic checks—per below—should be followed. Note that in this section “salt” refers to standard pool salt; E4aqua will be referred to as “E4aqua” or “additive”.

### **For Fresh Water / New Pool Start up:**

- 1 Fill pool to desired water level.
- 2 Start circulation pump.
- 3 Follow E4aqua<sup>®</sup> addition chart below for the correct amount of additive package addition.  
*Allow to dissolve completely before step 4*
- 4 Begin operating Pool Pilot AG chlorine generator as directed.

### **For Winterized / Existing Pool Water Start up:**

- 1 Measure current salt level (ppm or mg/l) by testing the water.
  - If current salt level is 0 to 250ppm, proceed to step 2.
  - If current salt level is 250 to 500ppm, drain half of pool water, refill to desired level, then proceed to step 2.
  - If current salt level is 750ppm or higher, drain entire pool, and refill with fresh water and proceed to step 2.
- 2 With desired water level, begin circulation pump.
- 3 Follow E4aqua<sup>®</sup> addition chart below for the correct amount of additive package addition.  
*One bag equals 19 pounds. Allow to dissolve completely.*
- 4 Begin operating Pool Pilot AG chlorine generator as directed.

For volumes other than what is shown, use combinations of various columns.

Example:  
An 11,000 gallon pool

- The column value for 1000 gallons is 1 bag (19lbs).
- The column value for 10,000 gallons is 10 bags (190lbs).
- The total of 11 bags or 209 pounds of E4aqua<sup>®</sup> is needed to reach pool salt level of 3000-ppm.

## ***E4aqua Addition Chart:***

**1 bag of E4aqua = 19 pounds**

	Pool / Spa Volume in Gallons or <i>Liters</i>							
Gallons	1,000	2,000	2,500	5,000	7,500	10,000	13,500	15,000
<i>Liters</i>	4,000	8,000	9,500	19,000	28,000	38,000	51,000	57,000
Amount of E4aqua <sup>®</sup> needed (in bags)	1	2	3	5	8	10	14	15

# REFERENCE SECTION



## Basic Water Chemistry - E4aqua:

<b>CAUTION !</b>	Failure to heed the following may result in equipment damage.
Excessively high chlorine levels can cause premature cell failure and corrosion damage to pool fixtures and equipment.	

<b>CAUTION !</b>	Failure to heed the following may result in equipment damage.
Always follow the instructions on the manufacturer's label whenever handling or using chemicals.	

CHEMICAL or FACTOR	IDEAL RANGE	IDEAL TEST SCHEDULE	EFFECT OF LOW/HIGH LEVELS	CORRECTIVE ACTIONS
<b>Free Chlorine</b>	1 to 3 ppm	Weekly	<p><u>Low free chlorine:</u> Not enough residual chlorine to safely sanitize pool water.</p> <p><u>High free chlorine:</u> Corrosive to metallic fixtures in pool water. Can bleach swimwear and hair.</p>	<p><u>Low free chlorine:</u> Check for combined chlorine level and shock if necessary. Increase purifier output to maintain a 1-3 ppm residual reading.</p> <p><u>High free chlorine:</u> Decrease purifier output. Let chlorine dissipate normally until 1-3 ppm is achieved. In extreme cases, pool water can be diluted with fresh water or a chlorine neutralizer added. (Diluting will reduce salt and CYA. Check and adjust as needed.)</p>
<b>pH</b>	7.2 to 7.8 ppm	Prior to swimming every few days	<p><u>Low pH:</u> (acidic) Equipment corrosion, eye/skin irritation, plaster etching, rapid chlorine consumption</p> <p><u>High pH:</u> (basic) Scale formation, cloudy water, eye/skin irritation, poor chlorine effectiveness</p>	<p><u>Low pH:</u> Add sodium bicarbonate</p> <p><u>High pH:</u> Add sodium bisulfate.</p>
<b>Total Alkalinity</b>	80 to 120ppm	Monthly	<p><u>Low TA:</u> Eye irritation, pH "bounce", stained/etched plaster and metal corrosion.</p> <p><u>High TA:</u> Some difficulty in maintaining Ph.</p>	<p><u>Low TA:</u> Add sodium bicarbonate.</p> <p><u>High TA:</u> Add sodium bisulfate to correct for pH. Do not add muriatic acid. Do not add sodium bisulfate to a point where the pH drops below 7.2.</p>
<b>E4aqua Additives; Standard Pool Salt</b>	3.0 – 4.0 mS (conductivity)  750 – 1250 ppm Salt	Monthly	<p><u>Low Salt:</u> Below 3 mS leads to insufficient power to the cell. May read "Check/clean cell" Salt less than 750 ppm may decrease chlorine production efficiency.</p> <p><u>High Salt:</u> Above 4.0 mS leads to inefficiency of chlorine production. Salt greater than 1500 ppm may encourage corrosion of pool parts.</p>	<p><u>Low Salt:</u> Add E4aqua by whole bag increments if the conductivity is low. If only Salt levels are low, adjust to 1000 ppm with pool salt only.</p> <p><u>High Salt:</u> If the conductivity and/or salt levels are high, partially drain the pool and refill with fresh water to appropriate levels. If the conductivity lowers to appropriate levels and the salt is too low, add pool salt appropriately.</p>
<b>Calcium Hardness</b>	200 to 400 ppm	Monthly	<p><u>Low CH:</u> Etching of plaster, equipment corrosion</p> <p><u>High CH:</u> Scale formation, cloudy water. Rapid buildup of scale may exceed the system's self-cleaning capability and require manual cleaning of the SuperCell.</p>	<p><u>Low CH:</u> Add calcium chloride flakes.</p> <p><u>High CH:</u> Partially drain and refill pool with fresh water to dilute. (Diluting will reduce salt and CYA. Check and adjust as needed.)</p>
<b>Cyanuric Acid (CYA) - Stabilizer</b>	Colder Climates 30 to 50 ppm Warmer Climates: 60 to 80 ppm Outdoors Only 100 ppm Max	Monthly	<p><u>Low CYA:</u> Destruction of chlorine by the UV rays from the sun.</p> <p><u>High CYA:</u> Requires more chlorine to maintain proper sanitizer levels. <b>Note: CYA not needed for indoor or bromine pools.</b></p>	<p><u>Low CYA:</u> Add cyanuric acid(1 lb/5000 gallons increases CYA 25 ppm)</p> <p><u>High CYA:</u> Partially drain and refill pool with fresh water to dilute. (Diluting will reduce salt. Check and adjust as needed.)</p>

# REFERENCE SECTION



## ***Saturation Index (SI) - E4aqua:***

The Saturation Index is a formula used to predict the calcium carbonate saturation of water, that is, whether your water will precipitate, dissolve, or be in equilibrium with calcium carbonate.

Water is properly balanced if the SI is  $0 \pm 0.3$ . If SI is greater than 0.3, scaling and staining will occur. If SI is less than -0.3, then the water is corrosive to metallic fixtures and aggressive to plaster surfaces and vinyl liners.

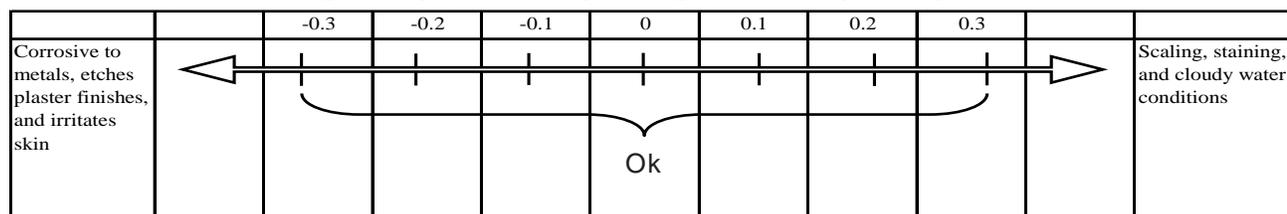
A high or low SI can cause premature damage to the cell, equipment or pool finish. As a general rule, higher concentrations of calcium, total dissolved solids, pH, and alkalinity all promote a greater tendency for scale. Scaling potential also increases with increasing temperature.

Use the chart below to determine your overall water balance. Test water for pH, water temperature, Calcium Hardness, Total Alkalinity, Salt Level, and use the equivalent Factors (TF, CF, AF, Constant) from the chart below to determine your Saturation Index. Adjust chemicals to maintain balanced water.

Note: The E4aqua additive package utilized with the AG will operate at the higher end of the alkalinity range, as well as the lower end of the salinity range. Be careful to maintain the pH close to 7.2 with sodium bisulfate pH reducers to keep the SI in an acceptable range.

$$\text{pH} + \text{TF} + \text{CF} + \text{AF} - \text{SC} = \text{SI}$$

Temperature		TF	Calcium Hardness	CF	Total Alkalinity	AF	Salt Level	SC
60 F	15.6C	0.4	150 ppm	1.8	75 ppm	1.9	0 - 1000 ppm	12.1
66 F	18.9C	0.5	200 ppm	1.9	100 ppm	2.0	1001 - 2000 ppm	12.2
76 F	24.4C	0.6	250 ppm	2.0	125 ppm	2.1		
84 F	28.9C	0.7	300 ppm	2.1	150 ppm	2.2		
94 F	34.4C	0.8	400 ppm	2.2	200 ppm	2.3		
103 F	39.4C	0.9	600 ppm	2.4	250 ppm	2.4		



### **Examples:**

**Water Test Results #1**

pH = 7.2 .....: pH = 7.2

Water Temperature = 84 F .....: TF = 0.7

Calcium Hardness = 150 ppm .....: CF = 1.8

Total Alkalinity = 250 ppm .....: AF = 2.4

Salt Level = 1 - 1000 ppm .....: SC = 12.1

$7.2 + 0.7 + 1.8 + 2.4 - 12.1 = 0$   
(Water is perfectly balanced)

**Water Test Results #2**

pH = 7.8 .....: pH = 7.8

Water Temperature = 84 F.....: TF = 0.7

Calcium Hardness = 200 ppm .....: CF = 1.9

Total Alkalinity = 250 ppm .....: AF = 2.4

Salt Level = 1 -1000 ppm .....: SC = 12.1

$7.8 + 0.7 + 1.9 + 2.4 - 12.1 = 0.7$   
(Water is scale forming)

# MAINTENANCE

## *Fuse Location and Ratings:*

### **WARNING !**

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

**ELECTRICAL SHOCK HAZARD...** Turn off the electrical power to unit before servicing.

To inspect or service fuse:

- Disconnect power to power supply.
- Take a straight screw driver as indicated and turn counter clockwise to loosen fuse holder on bottom of unit.
- Gently pull out fuse holder. Replace fuse as shown on chart below and reconnect fuse holder.

Board	Fuse Specification	Description
Main Power Board 75090	250 Vac 2 Amp Slow Blow	Main AC Power Fuse
Main Power Board 75090-TL	250 Vac 2 Amp Slow Blow	Main AC Power Fuse
Main Power Board 75091	250 Vac 1 Amp Slow Blow	Main AC Power Fuse



## **Testing the Flow Switch (for Inline Manifold system)**

The flow switch is a critical component to the 75094 Inline Manifold system . When water flow has stopped, to prevent damage to the cell or system, it is important power to the SuperCell be automatically turned OFF. The water flow switch performs this function.

In order to test that this component is working properly:

1. Turn off circulation pump.
2. Confirm that the AG system is still receiving power. (Some AG systems will be installed to turn off when the water pump is off). Please follow all safety codes when routing power to the unit. DO NOT use an extension cord to provide power to the unit.
3. Verify that the red "Check System" light is flashing. The AG system will also display "no Flo" in a scrolling message. This means it has no water flow. If the check system light does not turn on, please verify that the flow switch jumper is NOT installed, then have the unit serviced.
4. Turn on the water pump. The red "Check System" light should turn off showing the unit has water flow.
5. Turn off water pump and route power back to normal.

# MAINTENANCE

## Servicing the SuperCell

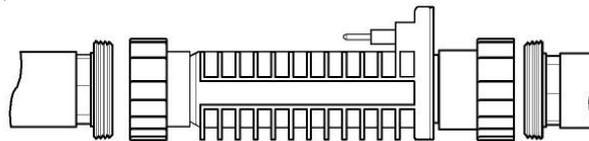
**REMEMBER:** the AG system is to be used ONLY with an RC-11 or RC-35/22 cell. Use of any other cell may cause equipment damage and void warranty.

The SuperCell may require removal for periodic visual inspections, or for servicing when debris or calcium mineral deposits develop. The need to inspect and service the cell may be indicated by the “Check System” light flashing red and the message, “Lo Flo”, P = OFF, or A = “Lo”.

### ***Removal of the SuperCell...***

The SuperCell is installed with Unions on each end to allow quick and easy installation and removal.

1. Turn off pump and shut off all power.
2. Detach the SuperCell cable from the SuperCell.
3. Unscrew the unions at both ends of the SuperCell.
4. Slide the SuperCell out of the Manifold Assembly.

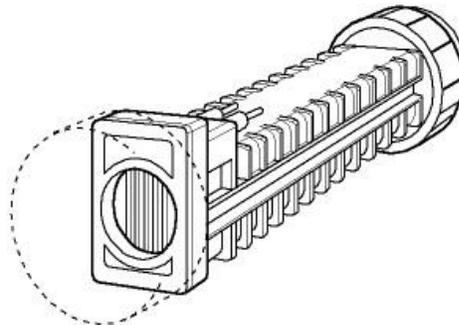


SUPERCELL AND UNIONS – (SIDE VIEW)

### ***Visual Inspection of the SuperCell...***

Remove the SuperCell from the Manifold Assembly, following the directions in the previous section. The SuperCell titanium blades, seen inside the cell body, should be straight and clear of any debris on the ends or between the blades.

A white flaky or crusty calcium build up on the edge or between the blades will shorten the life of the cell.



END VIEW OF THE SUPERCELL  
LOOKING AT THE BLADES

Clean the cell immediately, and determine the cause of scaling. See “Basic Water Chemistry,” and “Using the Saturation Index” ... on pages 18-19 for salt, and pages 21-22 for E4aqua . Also see “Manual Cleaning of the SuperCell” ... on next page.

Your AG is designed to automatically self-clean calcium scale build up that may form on the blades during normal operation. However, unbalanced water chemistry can cause a heavy scale build up exceeding self-cleaning capabilities... thus; periodic manual cleaning may be necessary. The simplest way to avoid this extra work is to maintain the water chemistry at the levels recommended.

## **CAUTION !**

Failure to heed the following may result in equipment damage.

For maximum cell life, maintain water in a balanced condition. Water maintained in a scaling condition will shorten cell life and may render the chlorinator inoperative. Damage and/or service calls, caused by improper water balance, will NOT be covered under the equipment warranty.

# MAINTENANCE

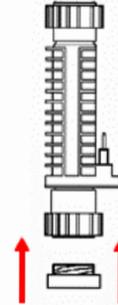
## *Manual Cleaning of the SuperCell...*

### **CAUTION !**

Failure to heed the following may result in equipment damage.

Scraping or scratching the titanium blade's edge or surface **will** damage the blade catalyst coating and cause premature failure of the cell... warranty will be voided. Never use any sharp or metallic objects to remove scale.

1. Turn off circulator pump.
2. Remove the cell and place a cap or plug on the end of the cell as shown. Plugs are available at any pool supply warehouse or home improvement store. Ask for a 1.5" MPT clean out plug.



### **WARNING !**

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

**CHEMICAL HAZARD...** To avoid damaging splashes, always add acid to water, never water to acid. Wear safety glasses and use other appropriate personal protection equipment.

3. Fill the capped cell with water 2-inches from the top of the cell blades.
4. Fill the rest of the cell with Muriatic Acid. This allows for an approximate 1-to-4 solution. Always add the acid to the water. If you do it the other way around, it can cause the solution to spray back at you causing serious injury.
5. Allow the solution to sit in the cell for up to 20-minutes.
6. Safely dispose of the solution; pouring it into the pool is recommended.
7. Remove the cap and rinse the cell with light water pressure; reinspect the cell, and repeat acid cleaning if the cell is still scaled.
8. Once the cell has been cleaned, dry off the cell electrical terminals; reassemble the manifold, and return the system to service. **CAUTION: The electrical terminals must be completely dry** to avoid corrosion and failure of the cell or cable.

## *Installing a SuperCell...*

1. Clean and dry the electrical terminals on the SuperCell. The contacts must be completely dry to avoid corrosion and failure of the SuperCell or cable.
2. Tighten the unions by hand for a watertight seal.
3. The SuperCell will have two (2) electrical terminals.
4. The SuperCell cable has three (3) electrical contact terminals, the red weather plug will seal the unused contact in the cable. Position the SuperCell plug so the two (2) open holes align with the two mating terminals and push gently, but firmly, to connect.
5. Turn on the system.
6. Check for leaks and proper operation of the chlorinator.

# MAINTENANCE

## **Important Information Critical to the Survival of Your Chlorinator**

### **Winterizing**

#### **CAUTION !**

Failure to heed the following may result in equipment damage.

Special measures are required in the event of freezing conditions. Your Pool Pilot may be damaged if measures are not taken in advance of freezing conditions. Equipment damage due to freezing conditions is NOT covered under the equipment warranty.

Just as pool plumbing will be, the AG Manifold (including the SuperCell) will be damaged by freezing water. In areas that experience severe cold weather, or extended periods of freezing temperatures, the system should be winterized by draining all water from the Manifold Assembly (SuperCell), pump, filter, supply and return lines prior to freezing weather. The Control Unit is not affected by the cold and does not need to be removed.

### **Spring Start-Up**

It is recommended the water be manually chlorine-shocked when first starting up the pool in the springtime. Test water, and add the appropriate chemicals to balance the pool water per the levels recommended in the reference section on pages 17-22. Be sure to check salt and cyanuric acid (stabilizer), bringing those readings up to the recommended levels. It is also a good idea to inspect the cell, manifold screen, and test the flow switch (75094 only) ; clean and/or replace those items as necessary.

# TROUBLESHOOTING

Message Displayed	Problem	Typical Solution
no FLO on 75094  (Scrolling)	Chlorine generation has stopped due to insufficient water flow.	<ol style="list-style-type: none"> <li>1. Turn on the circulation pump.</li> <li>2. Turn the control valves to the correct position to allow water flow through the manifold.</li> <li>3. If a suction type vacuum cleaner is used, then clean if clogged.</li> <li>4. Check and clean the skimmer basket.</li> <li>5. Check and clean the pump basket.</li> <li>6. Check and clean or backwash the main circulation filter.</li> <li>7. Clean the manifold screen of trash or debris. For instructions to clean the screen, test the flow switch, see Maintenance section of manual.</li> <li>8. Clean the SuperCell if plugged with debris or calcium scale (See Maintenance section of manual.)</li> <li>9. Check for leak at pump basket O-ring, leaking valve or fitting.</li> <li>10. If the pump is a 2-speed pump, is it on low speed? The low speed may not create enough flow for the manifold.</li> </ol>
no FLO on 75092 and 75093	Chlorine generation has stopped due to lack of flow switch jumper	Flow switch jumper must be installed for 75092 and 75093.
A = Lo P = OFF on 75094 and 75093 and 75092 in water  (Scrolling)	Cell is completely clogged from calcium scale, has failed, or the cell cord is loose or damaged.	<ol style="list-style-type: none"> <li>1. Check cell for calcium scale buildup. Clean as needed.</li> <li>2. Check for visual wear on the edges of the terminal blades.</li> <li>3. Check the cell cord for tight connections on the cell and on the power supply. Check the plug for burns. Tighten or replace as needed.</li> <li>4. Replace cell if depleted.</li> </ol>
	The cell cord is disconnected	Verify cell cables are inserted fully into the AG base cell connector.
	The cell is heavily scaled.	Remove and acid wash as described in Maintenance section of manual.
	If this is a new installation...	Verify that the incoming voltage matches the voltage of the Control Unit. (See Specifications and Installation sections of manual.)
	Cell is not receiving the expected Amps.	<p>Use the "INFO" button to get cell volts and amps.</p> <ul style="list-style-type: none"> <li>• If the volts are 24-26, then the problem is usually caused by low salt, improperly connected, disconnected or loose cell cord, water less than 65°F (18.3°C), a scaled cell, or cell near end of life. Correct as appropriate.</li> <li>• If the volts are less than 20, then contact Autopilot Systems for assistance.</li> </ul> <p><b>Installer:</b> If the unit is configured for 230-VAC operation, then verify the input AC voltage is not 115-VAC. Supply correct voltage, or reconfigure the unit as appropriate.</p>
A = Lo P = OFF on 75092  (Scrolling)	Cell has been removed from the pool for swimming.	When 75092 cell is returned to the pool, cycle power and normal operation should commence. If power is not cycled, up to 15 minutes may be required for normal operation.

# TROUBLESHOOTING

Message Displayed	Problem	Typical Solution
Normal display	There are no warning messages on the display but the chlorine level is too low. Water quality looks dirty or cloudy.	<ol style="list-style-type: none"> <li>1. Check pool chemistry parameters. (See <i>Water Balance &amp; Chemistry Recommendations</i> in the Owner's Quick Start section of manual.) The cyanuric acid level may be low and the chlorine is being consumed quickly by the UV from the sun.</li> <li>2. The chlorine output needs to be increased. <ul style="list-style-type: none"> <li>• Use the up arrow key to increase the chlorine output setting.</li> <li>• Increase the pump run time so the chlorinator is generating chlorine for a longer period of time.</li> </ul> </li> <li>3. Test water for high phosphate levels. Use a product such as LoChlor Starver to reduce phosphates if the phosphate level is higher than 22-ppm (22 mg/l).</li> <li>4. For Standard Salt Obtain a salt sample reading and add salt, if needed.</li> <li>5. For E4aqua application obtain a salt sample reading with a test strip and use a TDS meter to check the conductivity. If either is low adjust either salt or additive as directed.</li> </ol>
	There are no warning messages on the display. The chlorine level is too low but the pool water looks fine.	<ol style="list-style-type: none"> <li>1. The test kit reagents or strips may be old or have been exposed to sunlight. Replace the kit or reagents and retest.</li> <li>2. There is too much chlorine in the pool. The chlorine is bleaching the test kit reagents. Dilute the water sample with distilled water and retest. Lower the chlorine output setting with the down arrow button if the chlorine level is too high.</li> <li>3. Sodium bromide may have been introduced into the pool by using a bromine-based algaecide. The DPD (red color) chlorine test reagent will give false readings if bromine is in the water. The OTO (yellow color) test kit must be used which can test for bromine and chlorine.</li> </ol>
Blank display	The Pool Pilot Display is blank.	<ol style="list-style-type: none"> <li>1. If the display is in bright sunlight, then shade the display to read.</li> <li>2. Verify external time clock has not turned off power to Control Unit. (Temporarily override the time clock, if desired, to check the AG.)</li> <li>3. Verify local shut off switch and/or main circuit breaker for Control Unit is turned on.</li> <li>4. If power is provided to unit by an external control device, verify power is provided to and from the device.</li> <li>5. Fuse may be blown. See "Maintenance" for information on fuse replacement.</li> <li>6. Check whether the GFCI breaker tripped and reset.</li> </ol>
LED alternates red & green flashing	Unit is not generating Chlorine	<p>Internal temperature of unit has exceeded shut off temperature. Will turn off chlorine generation for five (5) minutes or until temperature decreases.</p> <ol style="list-style-type: none"> <li>1. Wait until unit cools down.</li> <li>2. Move control unit to a shaded area if too hot.</li> </ol>
Racetrack Pattern	Screen saver is active	The screen saver activates if there are no warnings and no activity is detected for > 30 minutes. Chlorine generation continues.

# APPENDIX

## Declaration of Conformity

<b>Declaration of Conformity</b> (according to ISO/IEC Guide 22 and EN 45014)	
<b>Manufacturer's Name:</b>	Aquacal Autopilot Inc.
<b>Manufacturer's Address:</b>	2737 24 <sup>th</sup> Street North, St. Petersburg, Florida USA 33713.
<i>declares that the product:</i>	
<b>Product Name:</b>	Pool Pilot AG
<b>Model Number:</b>	75091
to which this declaration relates, <b>meets the essential health and safety requirements</b> and is in conformity with the relevant EU directives listed below:	
<b>EU EMC Directive 89/392/EEC</b> <b>EU Low Voltage Directive 73/23/EEC</b>	
using the relevant sections of the following EU standards and other normative documents:	
EMC:	EN55014-1:2000 + A1 + A2:2002 EN55014-2:1997 + A1:2001 EN61000-3-2:2006 EN61000-3-3:1995 + A2:2005
Safety:	EN 60335-1-2002 + A11.2004 + A1.2004 IEC 60335-1.2002 + A1.2004
Fort Lauderdale, Florida USA. March 10th 2010. (Place and date of issue)	 Peter Maitland, BSc(Eng), CEng.

## FCC Compliance:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.







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