

# CPSC/CPA SERIES

Salt Water Chlorine Generator  
By Compu Pool Products

## Commercial & Domestic



*'Technology in Harmony with Nature'*

### In-ground Model

## SAFETY INSTRUCTIONS:

Congratulations on your recent purchase of a Compu-Pool Products Salt Water Chlorine Generator. Please take a moment to read through the entire manual before installing your new unit. Your generator must be installed and operated as specified.

IMPORTANT SAFETY INSTRUCTIONS. READ AND FOLLOW ALL INSTRUCTIONS. SAVE ALL INSTRUCTIONS.

- **WARNING:** To reduce the risk of injury, do not permit children to operate this device
- **WARNING:** Heavy pool (and/or spa) usage, and higher temperatures may require higher chlorine output to maintain proper free available chlorine residuals
- If additional chlorine is required due to heavy bather loads, use (sodium hypochlorite) to maintain an appropriate chlorine residual in the water
- Maintaining high salt and chlorine levels above recommended range can contribute to corrosion of pool (and/or spa) equipment.
- The life of the electrolytic cell is 12,500 hours, under normal use conditions
- **DO NOT** add pool (and/or spa) chemicals directly to the skimmer. This may damage the cell.
- Check the expiration date of the test kit as test results may be inaccurate if used after that date.
- When replacing the cell, only use replacement cells having a label that clearly states that it is the replacement cell for the chlorine generating device.
- One bonding lug is provided on the external surface. To reduce the risk of electric shock, connect the local common bonding grid in the area of the swimming pool or spa to these terminals with an insulated or bare copper conductor not smaller than 8AWG US / 6 AWG Canada.

- All field metal components such as rails, ladders, drains, or other similar hardware within 10 feet off the pool or spa shall be bonded to the equipment grounding bus with copper conductors not smaller than 8AWG US / 6 AWG Canada.
- Follow all aspects of the local and National Electrical Code(s) when installing Compu-Pool, model CPSC/CPA Series.
- Note: For outdoor pools, chlorine residuals can be protected from destruction by sunlight by addition of stabilizer (cyanuric acid).
- For proper sanitation, spas must be completely drained periodically. The number of days between COMPLETE SPA DRAINAGE is equal to the volume of spa water in gallons, divided by 10 times the maximum number of daily spa users. Refill spa with water and repeat DIRECTIONS FOR USE of the device.

#### **Health and Hyperthermia warnings for spa devices:**

- People with a medical condition should consult a physician before entering pool or spa water.
- Maximum spa water usage temperature is 104°F. Bathing in spa water at 104°F should not exceed 15 minutes.

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# COMPU-POOL

## CPSC/CPA Series OWNERS MANUAL

### • IN-GROUND MODEL •

#### OPERATION:

The chlorinator Power Unit is to be mounted at least 3 feet above ground level and if possible protected from direct weather. The Chlorinator Electrolytic Cell is to be plumbed in the return to pool line after the pump and filter. Water flow through the cell can be in either direction and ideal installation is horizontal. The cell lead plug from the power unit is to be connected to the head of the cell.

The unit has been designed to run off a salinity concentration of 3500 PPM.

#### THE CHEMISTRY INVOLVED:

The CPSC/CPA Series chlorine generator, by electrolysis, produces sodium hypochlorite ( $\text{NaOCl}$ ). In water, sodium hypochlorite dissociates into sodium ( $\text{Na}^+$ ) and hypochlorite ( $\text{OCl}^-$ ) ions.

It is the hypochlorite ions that form with the hydrogen ( $\text{H}^+$ ) ions (from the water) to form hypochlorous acid ( $\text{HOCl}$ ), the active agent that destroys bacteria and algae, and oxidizes organic matter.

## MAINTENANCE:

### SALT AND CHEMICALS IDEAL POOL CHEMISTRY READINGS:

	Swimming Pools	Spas
<b>Free Available Chlorine</b>	1.0 – 3.0 ppm	3.0 – 5.0 ppm
<b>pH</b>	7.2 – 7.8	7.2 – 7.8
<b>Total Alkalinity</b>	100 – 120 ppm	100 – 120 ppm
<b>Calcium Hardness</b>	200 – 300 ppm	150 – 200 PPM
<b>Stabilizer (Cyanuric Acid)</b>	30 – 60 ppm	30 – 60 ppm

#### 1. Chlorine Stabilizer (cyanuric acid):

Chlorine Stabilizer is needed to maintain proper levels of chlorine. Most unstable chlorine is destroyed by the UV radiation from the sun within 2 hours. Chlorine stabilizer must be maintained between 30 – 60 PPM.

#### 2. Nitrates:

Nitrates can cause extremely high chlorine demands and will deplete chlorine from your swimming pool. In some cases Nitrates may even lower your chlorine levels to zero. Your local pool professional can test for Nitrates. Make sure Nitrates are not present in your pool.

#### 3. Metals:

Metals can cause loss of chlorine. Also, metals can stain your pool. Have your local pool professional check for metals and recommend methods of removal.

#### 4. Chloramines:

Chloramines should not be present in pool water. When organic materials combine with Free Chlorine, Chloramines are formed. This ties up the Free chlorine in your pool and does not allow the chlorine in your pool to disinfect. Chloramines also cloud pool water and burn the eyes. (Super Chlorinate (shock) to remove Chloramines at the initial startup of the pool).

#### 5. pH Levels:

pH produced by the Chlorinator is close to Neutral pH. However, other factors usually cause the pH of the pool water to rise. Therefore, the pH in a pool chlorinated by the Chlorinator tends to stabilize at approximately 7.8. This is within national standards. If the pool pH rises above 7.8 have a pool professional test to see if other factors such as high Calcium Hardness or Total Alkalinity are the cause and then balance accordingly.

#### 6. Total Dissolved Solids (TDS):

Adding salt to pool water will raise the TDS level. While this does not adversely affect the pool water chemistry or clarity, the pool water professional testing for TDS must be made aware salt has been added for the chlorinator system. The individual performing the TDS test will then subtract the salinity level to arrive at the correct TDS level.

## USING THE FRONT CONTROL PANEL:

### MAIN SWITCH

*Refer to Figure 1 (Page 6) for a visual diagram of the front panel*

#### 1. On / Off:

For normal operation, the Main Switch should be left in the "On" position. In this position the Compu-Pool CPSC/CPA will produce chlorine according to the desired output %. Simply press the button again to turn the unit off.

#### 2. Select Button:

This button will allow access to the timer settings. When using this function the button needs to be pushed in for 3 seconds before the select button will respond, this is provided as a safety device.

#### 3. SuperChlor:

When you have an abnormally high bather load, a large amount of rain, a cloudy water condition which needs a large amount of purification to be introduced, simply press the SUPERCHLOR button. This electronically "super chlorinates" the water for 24 hours or until the power has been turned off.

#### 4. Winter Mode:

When you are not using your pool during the winter months, it is advisable to activate the winter mode. Press the WINTER MODE button. The Winter Mode will reduce the output of chlorine to



50% of set output, for example, output is 80% winter mode 40%. Reducing the chlorine output during periods when the pool is not in use will help maximize the life of the cell.

### **5. Manual Pump Override:**

To override the time clock, switch the unit off, via the power button. Once the unit is off, simply press the right chlorine output button. This will allow the filter pump to continually run without chlorination.

### **6. Chlorine Output Levels:**

Pressing the arrow button left or right will change the CHLORINE PRODUCTION in 10% increments.

### **7. Setting The Time:**

There are two timer functions to allow two filtration cycles per day. Set the timer cycles to meet your desired running time via the chlorinator menu which is accessed by pressing the select button for 3 seconds. When setting the timer use the up and down arrow keys to move the cursor and select the correct time.

### **8. Manual Override:**

To manually start the unit, simply press the superchlor button. When you have finished with the manual operation press the superchlor button again to switch back to automatic operation.

## INDICATOR's LED's

### Power:

When illuminated, the Compu-Chlor unit has input power activate.

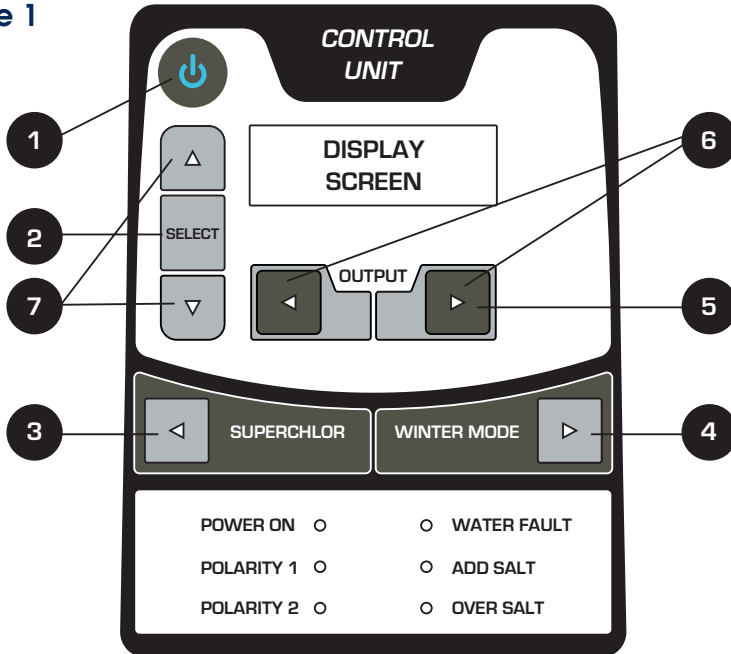
### Polarity 1&2:

When illuminated, it indicates which side of the cell is producing.

### Water Fault:

When illuminated, the flow switch has detected no water flowing and the Compu-Chlor unit has stopped generating chlorine. The display screen will read...

Figure 1



**Over Salt:**

When illuminated, the salt level is too high. The Compu-Chlor unit has a built-in regulating system that enables it to continue to produce chlorine with the increased salt content. At this point do not add any further salt and allow the salt content to return to desirable levels.

**Add Salt:**

When illuminated, the salt level is too low and the unit is generating at low efficiency. Further salt is required, it is advisable to have your salt level professionally checked.

**ADDING SALT (sodium chloride) TO POOL OR SPA**

**DO NOT** add pool/spa chemicals directly to the skimmer. This may damage the cell. Maintaining high salt levels above the recommended range can contribute to corrosion of pool/spa equipment. If the chlorinator has already been installed, it should be turned off before adding salt. Compu-Pool CPSC/CPA Series is recommended to run at a salt concentration of 3500 ppm.

For pools it is best to empty the required salt into the shallow end of the pool and run the filter and pump simultaneously while the Compu-Pool chlorinator is off or in manual mode to circulate the water and dissolve the salt. Do not throw the salt bag into the pool or spa as chemicals and inks on the bag can interfere with the water balance.

If the pool has no main drain at the bottom, place a vacuum hose head in the deep end, and sweep the salt toward the vacuum head. The other end of the vacuum hose should be placed in the skimmer box. Run the filter and pump with the Compu-Pool chlorinator OFF to circulate the undissolved salt in the water. Quality pool and spa salt, sodium chloride (with low levels of iron and other impurities) should be used, with finer grades of salt usually dissolving faster. Salt may take 24 - 48 hours to dissolve in summer and longer in winter.

### **TYPE OF SALT TO USE**

The purer the salt the better the life and performance of the electrolytic cell. Use a salt that is at least 99.8% pure NaCl. The preferred salt is an evaporated, granulated, food quality, non-iodized salt. Consult your salt supplier.

- Avoid using salt with anti-caking agents (sodium ferrocyanide, also known as YPS or yellow prussiate of soda) that could cause some discoloration of fittings and surface finishes in pool.
- Water conditioning salt pellets are compressed forms of evaporated salt and may be used but will take longer to dissolve.
- Do not use calcium chloride as a source of salt. (Use sodium chloride only.)
- Do not use Rock salt (insoluble impurities mixed with the rock salt can shorten the life of the unit).

## SALT LEVEL

Use the chart, marked Chart 1 (Page 11) to determine how much salt in Kgs needs to be added to reach the recommended levels. Use the equations below (measurements are in feet/gallons and meters/litres) if pool size is unknown.

### Pool and/or Spa Volume Table – Working Out How Much Salt is Required

	Gallons (pool size in feet)	Litres (pool size in meters)
<b>Rectangular</b>	Length x Width x Average Depth x 7.5	Length x Width x Average Depth x 1000
<b>Round</b>	Diameter x Diameter x Average Depth x 5.9	Diameter x Diameter x Average Depth x 785
<b>Oval</b>	Length x Width x Average Depth x 6.7	Length x Width x Average Depth x 893

The ideal salt level is 3500 ppm. If the level is low, determine the number of gallons in the pool and add salt according to Chart 1. A low salt level will reduce the efficiency of the chlorinator and result in low chlorine production. A high salt level can cause a salty taste to your pool. In addition, operating the unit outside of the recommended salt range will rapidly reduce the longevity of the cell. The salt in your pool/spa is constantly recycled and the loss of salt throughout the swimming season should be small. This loss is due primarily to the addition of water

because of splashing, backwashing, or draining (because of rain). Salt is not lost due to evaporation.

If salt content is too high you will need to reduce the level of water in your pool/spa and refill the pool/spa with fresh water that has not been diluted with salt.

To Initially start a pool with the correct amount of salt,

**Add Salt to the pool at the rate of:**

**0.14 ounces / 0.03 Pounds of salt for every 1 US Gallon of water.**

or

**.3.5 grams / 0.003.5 Kilograms of salt for every 1 Litre of water**

or

**.035 Pounds of salt for every imperial Gallon**

## **WINTERIZING**

The electrolytic cell will be damaged by freezing water just as your pool plumbing would. In areas which experience severe or extended periods of freezing temperatures, be sure to drain all water from the pump, filter, and supply and return lines before any freezing conditions occur. The electronic control is capable of withstanding any winter weather and does not need be removed.

**Note:** Check salt levels of pool water before adding salt. Existing pool water may contain salt.

**CHART 1**  
Kg of Salt Needed to Obtain 3500 ppm in Pool or Spa (Litres)

Salt Concentration Before Addition (ppm)	1000	5000	10000	15000	20000	30000	40000	50000	60000	70000	80000	90000	100000	110000	120000	130000	140000	150000
0	3.5	17.5	35.0	52.5	70.0	105.0	140.0	175.0	210.0	245.0	280.0	315.0	350.0	385.0	420.0	455.0	490.0	525.0
500	3.0	15.0	30.0	45.0	60.0	90.0	120.0	150.0	180.0	210.0	240.0	270.0	300.0	330.0	360.0	390.0	420.0	450.0
1000	2.5	12.5	25.0	37.5	50.0	75.0	100.0	125.0	150.0	175.0	200.0	225.0	250.0	275.0	300.0	325.0	350.0	375.0
1500	2.0	10.0	20.0	30.0	40.0	60.0	80.0	100.0	120.0	140.0	160.0	180.0	200.0	220.0	240.0	260.0	280.0	300.0
2000	1.5	7.5	15.0	22.5	30.0	45.0	60.0	75.0	90.0	105.0	120.0	135.0	150.0	165.0	180.0	195.0	210.0	225.0
2500	1.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	110.0	120.0	130.0	140.0	150.0
3000	0.5	2.5	5.0	7.5	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0	60.0	65.0	70.0	75.0
3500	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal

## INSTALLATION:

### INSTALLING THE POWER UNIT

The CPSC/CPA Series unit is to be mounted at least 3 feet above ground level and if possible protected from direct weather.

Locate the power unit as close to the pump and filtration system as possible. Make sure the 6 feet DC power cord can reach the section of pipe selected for the cell. **Do not install the Power Unit within 10 feet of the pool edges.**

Use the equipment provided and mount the Power Unit at eye level. Once holes are drilled into the wall and screws are tightly secured lift the Power Unit onto the bracket ensuring that it is secure on the wall.

### INSTALLING THE CELL

1. Be sure pool pump is turned off
2. The cell is to be fitted into the return to pool line after the pump and filter. Water flow should come from the filtration system through the hole marked "inlet" and back out through the hole marked "outlet".
3. Ensure barrel unions are tightened to the cell. Then glue (pressure solvent cement) piping to the barrel unions.
4. The cell is to be mounted horizontal with the inlets and outlets facing down. If required the cell can be mounted vertically.



## WIRING

Refer to the wiring diagram below to determine correct wiring connections. The CPSC/CPA Series is shipped from the factory with the configuration jumpers in 240VAC position. If using 120VAC, move the jumpers as shown below. For Canadian models, the CPSC/CPA Series shall be connected to a circuit protected by a class A ground fault interrupter. Be sure to connect the ground wire to the green ground screw terminal located on the bottom of the enclosure.

Power must be shut off at the circuit breaker before performing any wiring. Be sure to follow local and NEC/CEC electrical codes. The Compu-Pool CPSC/CPA Series has been designed to easily wire into typical in-ground pool systems. To provide safe operation the unit must be properly grounded and bonded.

**Figure 2.1 Internal Transformer Connections - 115VAC Connections**

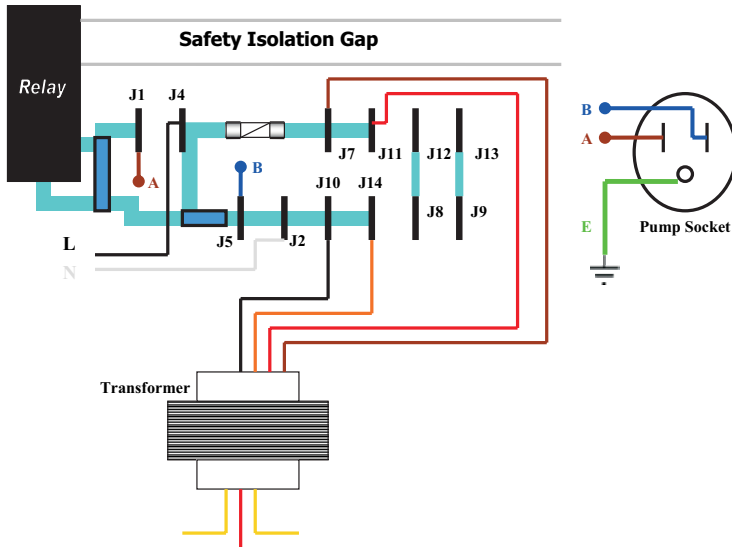
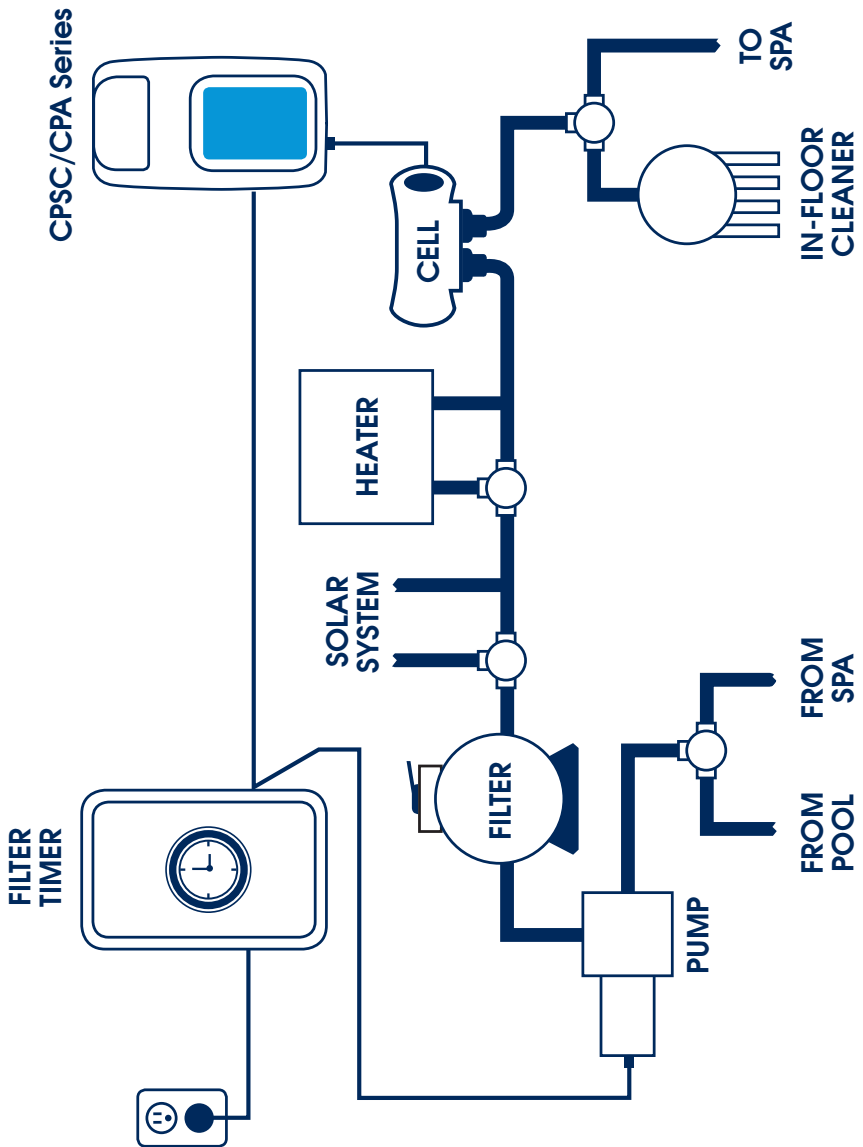


Figure 2.2 WIRING



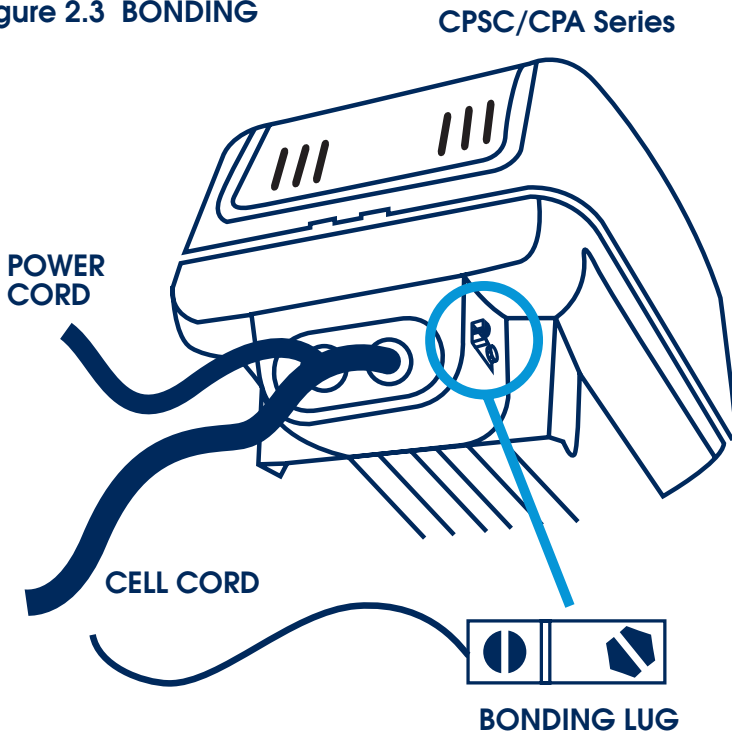
## INPUT POWER

The Compu Pool CPSC/CPA Series comes with a terminated power cord that should be plugged directly into the external time clock unit. For Canadian installations: Connect to a circuit protected by a Class-A ground fault interrupter.

## BONDING

A lug for bonding is attached to the bottom of the Compu-Pool CPSC/CPA Series enclosure. Connect to the pool bonding system using minimum 8 AWG copper wire if required by code.

Figure 2.3 BONDING



## ELECTROLYTIC CELL

The Cell operates most efficiently when it is clean, so the auto cell cleaning will keep the cell free of the white calcium build up common to standard chlorinators. However checking and possibly cleaning any foreign buildup every six months will maintain full chlorine output and prolong cell life.

### DISMANTLING THE CELL

When removing the cell for cleaning or replacement:

1. Turn all AC power off
2. Remove the cell plug connecting the cell to the power unit
3. Loosen the barrel unions, connecting the cell to the PVC piping. Loosen by turning in an counter clock wise direction. Once the barrel unions are loosened remove the cell enclosure containing the cell.
4. Remove the outer blue cover by holding upside down with the cell head facing away from you. Then simply pull the two blue outer covers apart.
5. To remove the cell, loosen and remove the grey PVC locking ring.
6. Remove cell from clear housing.

### CLEANING THE CELL

To clean the Cell, if any foreign buildup is visible, immerse the cell plates into a solution of five parts water and one part hydrochloric acid. Leave for a few minutes then hose off until cell plates are clean. **Do not submerge cell head when cleaning.**

## **WARNING:**

**For quality and value - insist your chlorinator is only serviced with genuine replacement parts available from the manufacturer - Compu Pool Products**

## **INSTALLATION CHECK LIST:**

Your Compu Pool Salt Water Generator installation is complete when the following have been completed:

- Barrel unions installed and glued into pipe work
- Barrel unions connected to the cell housing
- Cell is properly placed into the cell housing
- The metal backing bracket is affixed to the wall or backing
- The power unit is mounted in place to the metal backing bracket
- Cell cord is connected to the power unit and is also plugged into the cell
- Sufficient salt is dissolved into pool water
- You have checked and confirmed that your power unit switches ON and OFF coincidentally with the filter pump
- You have checked all connections and joints for leaks

## HELPFUL HINTS

When the chlorine output is at 100% and the Cell is clean, then the chlorinator is producing chlorine. However, if the pool remains cloudy or the chlorine residual tests low, then the chlorine being produced is lost due to high chlorine demand.

To reduce the chlorine demand, check the pH reading and check for low or high stabilizer reading. If tests show correct, then a shock treatment is advised with an oxidizer agent.

Generally, superchlorination is not necessary if the pool is maintained at correct levels.

### DEFINITIONS:

#### **Algae**

Plant-like organisms which grow in water. Especially active in summer conditions, where chlorine disinfectant level is too low to destroy them. Algae may be green, brown or black (Black Spot) in color.

#### **Chlorine Demand**

The amount of chlorine that should be added to the water to provide proper bacteria and algae control.

#### **Chlorine Residual**

The amount of chlorine left over, after the "demand" has been met.

#### **Combined Chlorine**

Weak chlorine which is combined with the contaminants in

the water.

### **Free Chlorine**

Active chlorine in the water with the potency to destroy contaminants.

### **Shock Treatment**

The removal by means of oxidation of those materials that have chlorine demand.

### **Superchlorination**

An extra large amount of chlorine added to the water.

## **RECOMMENDATIONS AND HELPFUL HINTS:**

### **Recommended List**

- Read and keep your manual in a safe place.
- Increase Chlorine Production when temperature goes up.
- Increase Chlorine Production when number of guests goes up.
- Use Stabilizer (Cyanuric Acid) to Protect Chlorine in Pool.
- Mount Power Unit in shade or out of the direct sunlight whenever possible.
- Decrease Production when temperature goes down. For example winter.
- Take pool water sample to Pool Professional once per month.

### **Not Recommended List**

Do not get fertilizer in your pool. Fertilizers contain nitrates which cause a high chlorine demand on pool water.

Never use dry acid to adjust pH in arid geographic areas with

excessive evaporation and minimal dilution of pool water with fresh water. A build up of by products can damage the electrolytic cell.

Do not add any pool water balancing chemicals (including salt) unless the Chlorinator is turned off.

Do not let Chlorine Stabilizer drop below 3000 PPM.

## TROUBLE SHOOTING

- **Power LED and LCD screen not turning on**

Check to make sure either 120VAC or 240VAC input power is connected to the proper screw terminals at the control. Verify input voltage with a voltmeter. If there is input power, the fuse may have blown. The CPSC/CPA Series is protected by a 3.5 amp mini ATO fuse located on the bottom of the power circuit board.

- **Water Fault LED illuminated**

The CPSC/CPA Series has sensed a no flow condition and has stopped generating chlorine. Check that there is water in the cell enclosure. If there is adequate flow and the LED is still on, check that salt has been added to the pool. If no salt has been added the water fault light will be illuminated. If the LED is still illuminated check the connection between the cell plug and the brass terminals is tight.



**PROBLEM**

**POSSIBLE CAUSE**

**(1 ) CHLORINE RESIDUAL**

LOW or NIL

- Insufficient running times
- pH too high
- Insufficient stabilizer
- Cell needs cleaning
- Check chlorine production

**(2) CHLORINE PRODUCTION**

LOW or NIL

- Chlorine dial turned down
- Salt content below 0.25%
- Cell needs cleaning
- Check Cell connections at junction box under unit
- Check fuse on power unit
- Check filter pump running
- Check water flow through Cell is sufficient

**(3) WATER FLOW THROUGH CELL IS LOW**

- Check for air in system
- Check operation of pump
- Check filter is clean
- Check water level of pool
- Check for blockage in System

## WARRANTY:

The Compu-Pool automatic salt water generator model CPSC/CPA Series carries the following warranty should fault occur due to faulty manufacturing or materials.

Compu Pool Products warrants the original purchaser of the unit for a period of 2 full years and 1 year pro rata or 8,000 hours of operation on the power unit and on the cell from the date of purchase by the original owners, should examination disclose to its satisfaction the unit has failed due to faulty manufacturing or materials.

### **The warranty may be void if the following occurs:**

1. Damage to the unit beyond Compu Pool Product's control.
2. If correct pool chemistry is not maintained.
3. The Power Unit and Cell are not installed correctly by any person other than a person authorized to do so by Compu Pool Products or its agent.
4. All wearing parts which must be regularly checked and replaced when naturally worn.
5. The Electrolytic Cell is not cleaned regularly or cleaned by any other method other than by the method recommended by the manufacturer.
6. The Chlorinator Power Unit and Cell is serviced by any other person other than a person authorized to do so by Compu Pool Products or its agent.

This warranty is applicable to workmanship and materials only. Compu Pool Products or its agent will replace at no charge all parts return freight paid, which display faulty workmanship or materials.

Compu Pool Products or its agent accept no responsibility for loss, damage or injuries to person or property arising from warranty failure of equipment, or installation of that equipment, unless with the authority of Compu Pool Products or its agent. This warranty shall not extend to any expenditure otherwise incurred.

### **REPLACING THE CELL**

When replacing the cell, only use replacement cells having a label that clearly states that it is a genuine replacement cell for the Compu-Pool CPSC/CPA Series.



*'Technology in Harmony with Nature'*

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