CircuPool® SJ

Saltwater Chlorination System - Installation and Operation Guide

Models: **SJ20A** **SJ35A** **SJ45A** **SJ55A**

SJ Series Salt Systems

Advanced Swimming Pool Sanitation

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SAFETY INSTRUCTIONS

IMPORTANT SAFETY INSTRUCTIONS. Read and follow all instructions. Ensure all owners / operators of this equipment have access to these instructions. Save all instructions. When installing and using this electrical equipment, basic safety precautions should always be followed, including the following.

WARNING: Follow all aspects of local and National Electrical Code(s) when installing the CircuPool SJ Series. Disconnect all electrical power during installation & service.

WARNING: To reduce the risk of injury, do not permit children to operate this device. Service should only be attempted by a qualified professional.

WARNING: Heavy pool (and/or spa) usage and higher temperatures may require higher chlorine output to maintain proper free available chlorine residuals. The actual amount of chlorination required by your pool can change, and varies according to factors not limited to bather load, rain, temperature, dirt, debris, and chemical balance.

WARNING: Safe operation of the electrolytic Cell requires a minimum water flow rate of 20 gpm. Never operate the unit when the flow of water is restricted. Always turn unit off when operating any plumbing control valves such as for backwashing, water exhaust, or during operation of spa or water features. If operation restricts water flow to the Cell, a build-up of flammable gases will result in hazardous conditions.

WARNING: We strongly recommend against the use of isolation valves. If full pump pressure is applied to an isolated component, it may be prone to rupture. Turn off all pumps before changing valve positions. Prevent water pressure spikes at Electrolytic Cell.

- Before installation, ensure that materials and equipment used in and around the pool are compatible with the use of chlorinated water and salt. Avoid high chlorine and high salt levels (above the recommended range); it is possible that certain materials and pool (and/or spa) equipment may be susceptible to damage.
- Ensure that the chlorinator operates only when the circulation pump is operating. When installed with a pool equipment timer or control system, wire the Control Module (wall unit) to the load side of the timer clock or control relay.
- If additional chlorine is required (due to heavy bather loads, for example), use Sodium Hypochlorite to maintain an appropriate chlorine residual in the water.
- DO NOT add acid or other concentrated chemicals directly to the skimmer. This may damage the Cell.
- Check the expiration date of any test kits 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 for this SJ Series model.
- Proper pool chemistry must be maintained at all times. For outdoor pools, chlorine residuals can be protected from destruction by sunlight by addition of stabilizer (cyanuric acid).
- The use of dry acid may damage the salt Cell and is not recommended. When using liquid acid, always add acid to water, never water to acid.
- For proper sanitation, spas must be completely drained periodically. The number of days between COMPLETE SPA DRAINAGE is equal to the volume of the spa water in gallons, divided by 10 times the maximum number of daily spa users. Refill spa with water and repeat initial startup instructions on pages 6-8 of this manual.
- Ensure that the SJ Series installation does not constitute a cross connection with the local potable water supply. Consult local plumbing codes.
- Note: Some local codes may require external grounding source. Check your local ordinances.
- To reduce the risk of electric shock, the ground wire (green wire) on the power cord must be connected to the grounding means provided in the electric supply service panel.
- One bonding lug for US models 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, spa, or hot tub to these terminals with an insulated or bare copper conductor not smaller than 8 AWG US.

SJ Series Owner's Manual

INTRODUCTION

Congratulations on your recent purchase of a ***CircuPool SJ Series*** Electronic Chlorine Generator. CircuPool's high performance systems offer escape from the routine of manual pool chlorination and sanitization. The SJ Series uses a low level of salt in the pool water to continuously create free chlorine, killing bacteria and algae in the water and thereby helping to maintain a sparkling clean pool. Please take a moment to read through the entire manual before installing your new unit. Your generator must be installed and operated as specified.

GETTING STARTED

READ ENTIRE MANUAL FIRST - To ensure consistent & reliable operation, the pool and equipment must be used and maintained as specified. Most issues are easily avoidable with correct maintenance.

Before installation or operation, please take the time to read this entire manual, compare package contents with the parts list, and gather tools required. Improper installation may void the warranty and create unnecessary hazards. This manual contains step-by-step instructions to help ensure that your installation meets the recommended standards. Spending the time to understand your system and its functions will assure successful, trouble-free operation.

As with any electrical device, it is very important that the installation and service of this equipment be performed by a qualified person with the skills and experience required to do it safely and correctly. Improper installation or service can result in severe electrical shock to the installer or user of the equipment or pool. Please choose your installer with great care! Be sure to familiarize yourself with the pool chemistry requirements and maintenance procedures.

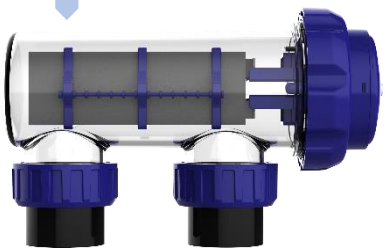
Please visit www.circupool.com/help for more information, tips, and troubleshooting assistance.

SJ SERIES SYSTEM OVERVIEW

The ***CircuPool SJ-Series*** system comes with three main components:

Control Module

Electrolytic Cell



Flow Switch

Control Module:

This component supplies power to the Cell and allows you to customize the system's operation in order to meet your pool's unique needs.

Electrolytic Cell:

This component creates chlorine as the water inside passes through and returns to the pool. The Electrolytic Cell ("Cell") contains a bipolar set of titanium plates that use a low level of DC electrical power to generate chlorine from salt in the water.

Flow Switch & Temperature Sensor:

This component ensures that there is adequate water flow for the Cell to activate. It also contains additional sensors that ensure optimal operation of the Cell.

Cleaning Tool:

This component is unique to the ***CircuPool SJSeries*** and allows for simple acid-free maintenance of the Cell.

Additional Items Required For Installation (Not Included)

PVC Cement, PVC Primer, Hacksaw or Pipe Cutters, Screwdrivers, Permanent Marker, 2x 90° Elbows

Preparing the Pool Water

It is important that the pool's water chemistry is balanced before the ***SJ-Series*** is powered on and used. In order for the system to be able to work, there must be a minimum level of salt in the pool water, see "Salt Levels" below. In order to achieve normal pool operation, water chemistry needs to be balanced according to the national standards listed under "Ideal Chemistry Levels" on page 8.

DO NOT add chemicals or salt directly to the skimmer. This may damage the Cell. If the system has already been installed, it should not be turned on before adding salt. Additionally, leave the salt chlorinator off any time there is a chance of recently added chemicals going through the salt Cell in a concentrated form.

For New Pools / Remodels: wait 30 days or longer if specified by your builder for plaster to cure before adding salt.

For Biguanide (Non-Chlorine) Pools: ensure any Biguanide-based chemicals have been removed prior to startup.

Ideal Salt Levels & Pool Size

The ideal salt level for operation is about 3500 ppm (parts per million), and it is suggested to keep the salinity between 3000-4000 ppm. To achieve this level of salinity, use the chart on page 7, which will help you add approximately 30 lbs of salt for every 1000 gallons of water (or 3.6 Kilograms of salt for every 1000 Liters). If you are unsure of the number of gallons in your pool, double-check with the following equations.

Calculating Gallons (Dimensions in Feet)

Rectangular Pool
Pool Width x Pool Length x Average Depth x 7.5 = Pool Gallons

Round Pool
Pool Diameter x Pool Diameter x Average Depth x 5.9 = Pool Gallons

Oval Pool
Pool Width x Pool Length x Average Depth x 6.7 = Pool Gallons

Example – 15' x 30' Rectangular Pool with 3' shallow end and 6' deep end.

15' wide x **30'** long x **4.5'** Average Depth x **7.5** = **15187 Gallons**

Adding Salt

IMPORTANT: Before adding salt at any time, ALWAYS perform an independent water test to measure pre-existing salt levels.

If your pool holds this many gallons…	If the salt level (PPM) in your pool is currently…								
	0	500	1000	1500	2000	2500	3000	3500	4000
4,000	117	100	83	67	50	33	17	0	OK
6,000	175	150	125	100	75	50	25	0	OK
8,000	234	200	167	133	100	67	33	0	OK
10,000	292	250	209	167	125	83	42	0	OK
12,000	350	300	250	200	150	100	50	0	OK
14,000	409	350	292	234	175	117	58	0	OK
16,000	467	400	334	267	200	133	67	0	OK
18,000	525	450	375	300	225	150	75	0	OK
20,000	584	500	417	334	250	167	83	0	OK
22,000	642	550	459	367	275	183	92	0	OK
24,000	701	600	500	400	300	200	100	0	OK
26,000	759	651	542	434	325	217	108	0	OK
28,000	817	701	584	467	350	234	117	0	OK
30,000	876	751	626	500	375	250	125	0	OK
32,000	934	801	667	534	400	267	133	0	OK
34,000	992	851	709	567	425	284	142	0	OK
36,000	1051	801	751	600	450	300	150	0	OK
38,000	1109	951	792	634	475	317	158	0	OK
40,000	1168	1001	834	667	500	334	167	0	OK
42,000	1226	1051	876	701	525	350	175	0	OK
44,000	1284	1101	917	734	550	367	183	0	OK
46,000	1343	1151	959	767	575	384	192	0	OK
48,000	1401	1201	1001	801	600	400	200	0	OK
50,000	1460	1251	1043	834	626	417	209	0	OK

After measuring for any existing salt content in the pool, add salt according to the chart above. The chart allows you to cross-reference your existing salt level and your pool size to estimate the number of pounds of salt required to achieve 3500 ppm. Without the right amount of salt, the result will be reduced efficiency and a low level of chlorine production. In addition, operation at low salt levels will reduce the longevity of the Cell.

When adding the salt to the pool, it is best to empty the required salt into the shallow end of the pool and run the filter and pump simultaneously in order to circulate the water and dissolve the salt (the ***SJ-Series*** is to remain off during this time period). Do not throw the salt bag into the water as chemicals and inks on the bag can interfere with water balance. **Salt may take 24 - 48 hours to dissolve** in summer, and longer in winter. Finer granules of salt will dissolve faster than compressed pellets.

The salt in your pool is constantly recycled and does not normally need to be replenished frequently. The loss of salt throughout the swimming season should be small, and is due primarily to the addition of extra water to replace water lost from splashing, backwashing, and draining. Salt is not lost due to evaporation.

Use only evaporated, granulated, non-iodized salt (Sodium Chloride). The more pure the salt (at least 99%), the better the life and performance of the Electrolytic Cell. Water Softener salt (also known as Water Conditioning pellets) is an economical way to buy large quantities of salt. However, only salt that is at least 99% pure NaCl can be used. Pellets are compressed forms of evaporated salt that may take longer to dissolve. Avoid using salt with anti-caking agents (Sodium Ferrocyanide, also known as YPS or Yellow Prussiate of Soda) that could cause discoloration of fittings and surface finishes in pool. Do not use Calcium Chloride as a source of salt. Do not use Rock Salt; insoluble impurities mixed with the rock salt can shorten the life of the unit.

TIP: When adding *large* quantities of salt, independently test existing salt level and add in portions, retesting at each stage.

Ideal Water Chemistry Levels

It is important to maintain these chemistry levels in order to ensure that the pool can be enjoyed safely, to minimize the amount of effort required to sanitize the water, and to prevent corrosion or scaling. The only unique requirement for a pool with a chlorine generator is the low level of salt (salinity) to be maintained in the water. It may be helpful to provide this manual to any pool professional that you may have performing chemical testing or service, as requirements may vary from brand to brand.

	Swimming Pools	Spas
Free Available Chlorine	1.0 - 3.0 ppm	3.0 - 5.0 ppm
Salinity	3000 - 4000 ppm	3000-4000 ppm
pH	7.2 - 7.8	7.2 - 7.8
Total Alkalinity	80 - 120 ppm	80 - 120 ppm
Calcium Hardness	200 - 400 ppm	150 - 450 ppm
Stabilizer (Cyanuric Acid)	30 - 50 ppm	30 - 50 ppm
Saturation Index (LSI)	-0.2 to +0.2 (0 Best)	-0.2 to +0.2
Phosphates & Nitrates	None (0 Best)	None
Metals	None	None
TDS	<1200	<1200

CHEMISTRY TIPS:

Chlorine Stabilizer (Cyanuric Acid)
Stabilizer is needed to maintain proper levels of chlorine; the sun's UV radiation can destroy unstabilized chlorine in as quickly as 2 hours. Stabilizer should not typically be kept above 50 ppm, as excessive levels can also reduce chlorine effectiveness.

Nitrates and Phosphates
These chemicals are very common and can cause extremely high chlorine demands and can easily deplete your free chlorine levels to zero. Your local pool professional can test for Nitrates and Phosphates, levels should be at zero.

Saturation Index (LSI)
A calculated number used to predict the calcium carbonate stability of water. If the index is higher than +0.2, it can cause quick and excessive calcium scaling on the salt Cell. If the index is lower than -0.2, it can cause the water to be corrosive and damaging to metals and minerals in the water, such as the titanium inside the Cell.

Metals
Metals can cause the loss of chlorine. Also, metals can stain your pool and tint your water. Have your local professional test and recommend methods of removal. Be sure to use a phosphate-free metal remover.

Chloramines / Combined Chlorine
Chloramines should not be present in pool water. When organic materials are not fully oxidized by 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.

pH Levels
pH produced by the Electrolytic Cell is close to neutral pH. However, other factors usually cause the pH of the pool water to rise. Therefore the pH in a saltwater pool tends to stabilize at approximately 7.8. This is within national standards. **pH levels above 7.8 drastically reduce the effectiveness of the chlorine**, and can also contribute to excessive mineral scaling. If high, 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.

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 professional testing for TDS must be made aware that salt has been added. The individual performing the TDS test will then subtract the salinity level to arrive at the correct TDS level.

OPERATION

How it works

Think of the ***SJ-Series*** as a chlorine generator; set it to create a steady supply of chlorine for the pool, instead of buying and adding chlorine by hand.

How it works: Using electrolysis, it creates chlorine from the salt molecules (NaCL) in your water in order to sanitize your pool. A small electric charge is applied across a set of titanium plates inside the Electrolytic Cell. This produces Sodium Hypochlorite (NaOCl). In water, Sodium Hypochlorite dissociates into sodium (NA+) and hypochlorite (OCl-) ions. It is the hypochlorite ions that form with the hydrogen (H+) ions (from the water) to form hypochlorous acid (HOCl), which is the active agent that destroys bacteria and algae, and oxidizes organic matter. This form of chlorine works quickly in the pipe, leaving only a mild residual in the pool. In addition, the Electrolytic Cell continuously "shocks" the incoming water-burning off any oils, organic matter, or other particles that need to be oxidized. Best of all, the process continuously recycles the salt: after cleaning the pool, the original molecules reform and the whole process begins again. The salt doesn't get used up!

Initial Start Up

Before starting the system for the first time, verify **that the pool water is chemically balanced** (see page 8) and **that all installation items are completed** (see page 20)

Apply power to the pool pump switch (or timer controls). This should activate the system, and the Chlorine Output LED indicators will display the selected level, and one of the Polarity LED indicators will be lit. The Polarity lights will automatically alternate every six hours of run time, which minimizes the amount of mineral build up that may occur and prolongs the life of the Cell.

Once powered on, you'll want to set its power level (Chlorine Output). To find the optimum Chlorine Output setting, start at a setting of approximately 75% and adjust as needed over the initial start up period. Measure your available chlorine in the pool after two to three days, and adjust the Chlorine Output level accordingly. If the available chlorine is too high, lower the Output level; if the available chlorine is too low, raise the Output level. It will take a few adjustments to find the ideal setting for your pool. Once set for the pool's current needs, it should only take minor adjustments of the system's power level and/or pump run times throughout the season.

General Operation

By familiarizing yourself with the operation of the ***SJ-Series***, you can achieve the maximum performance for your pool. There are three main factors that you can control which directly impact the resulting free chlorine level in the pool:

1) **The chosen percentage of Chlorine Output** on the Control Module
2) **Hours of pump run-time each day**
3) **Water chemistry balance**
   - Including the amount of salt in the pool and chemicals that affect chlorine demand, such as chlorine stabilizer, phosphates, nitrates, and more. See "Ideal Chemistry Levels" on page 8 for more important information.

After making the initial adjustments to your chosen Chlorine Output level, additional adjustments are typically only necessary due to changing seasonal temperatures, or changes in pool use and bather load. Like any pool, ensure that your pump runs long enough for all the pool water to pass through the filter 1.5x to 2x a day (usually at least 8 hours). This amount of time is typically more than sufficient for chlorination of the pool, but if the pool has high chlorine demand, running the pool pump longer allows for more chlorination. Measure your water chemistry and chlorine level on a regular basis.

As you use the system throughout the season, **make sure that you clean the Cell as frequently as needed** (see page 12). Once the system detects that the Cell needs to be cleaned, it will display the "Cell" LED light, and then will not be able to create more chlorine until all mineral scaling has been removed from the Cell.

Using the Control Module

CONTROLS:

1) **Chlorine Output Level**: Press the "-" or "+" buttons to adjust the current level of chlorine output (the rate of chlorine production). Displayed on the LED indicators in the graph above, this is the system's power setting that you will choose in order to customize operation for your pool's needs.

2) **Boost**: After raising the chlorine output graph to full, pressing the "+" again will activate the Boost Mode. This will raise the chlorine output to max (an additional 20%) for 72 hours of run time, after which the system will automatically return to its previous setting.

3) **Polarity**: These LED will alternate automatically every 6 hours of run time as part of the system's self-cleaning feature. These lights do not require any action and do not need to be monitored.

4) **Salt**: The LED indicator will be illuminated green normally. If this light becomes red, the system is unable to operate and there may be insufficient salinity, see pages 22-23 for troubleshooting.

5) **Cell**: The LED indicator will be illuminated green normally. If this light becomes red, the system is unable to operate and the cell may require service or cleaning, see pages 22-23 for troubleshooting.

   Note: the Salt & Cell indicators will be typically be lit within about 2 minutes of cell generation.

6) **Low Water Temp**: If this light is illuminated red, the system has detected that the water temperature is too low for chlorine generation. This may be a normal occurrence with seasonal temperatures.

7) **Generate**: This light will illuminate when the system is actively generating chlorine. **IMPORTANT**: The Generate light will NOT always be on. It will be on less frequently the lower you set the chlorine output setting (example: at 50% output, the Generate light will be on 3 hours and then rest for 3 hours).

8) **Flow**: The LED indicator will be illuminated green when the system detects sufficient water flow to be able to operate correctly. If this light becomes red, the system is not operating and has detected air or insufficient water flow, see pages 22-23 for troubleshooting.

On/Off Switch: Press to activate or deactivate main system power.

SAFETY TIP: Always disconnect power at the circuit breaker prior to attempting any service procedure.

Using the Control Module (Continued)

The SJ-Series is designed to be unrivaled in its easy operation and minimal maintenance. Leave the Control Module switch in the "On" position, so that it activates when power is engaged by the pool pump timer or controls. When doing so, the Control Module returns to operation with its last settings.

During normal operation, you can select the Chlorine Output Level by pressing button (+) to increase or (-) to decrease output one increment. Upon each adjustment, the LED on the Output Control button will illuminate, which indicates activation of the control system, followed by the corresponding change to the Chlorine Output Level LED's.

A long as you maintain your pool's salinity above the minimum level, and occasionally clean the cell when necessary, the system's chlorine generation performance is assured! The system verifies that it is operating normally when its Generate LED indicator stays lit solidly, and if there is an issue, one of the service LED indicators will illuminate to alert you if you need to add salt, clean the cell, check water flow, or if the system has automatically entered its winter operation mode when cold water conditions exist (see pages 22-23).

IMPORTANT: after an error light has occurred on the unit, be sure to restart the unit and set the chlorine output.

BOOST MODE:

Generally, it is not necessary to "shock" a saltwater pool. Occasionally however, a large amount of sanitizer may be required to contend with rising chlorine demand, such as high bather loads, heavy rainfall, or other water conditions. In this case, simply activate the Boost Mode. Press (+) to boost the Chlorine Output Level past 100%. The Boost LED will illuminate, and your system will begin to "super chlorinate" the water for 72 hours of run time. At the end of the SUPER CL boost period, the Output will reduce back to 100%; be sure to re-check your pool's water chemistry and make any necessary adjustments.

MAINTENANCE

Expected Maintenance

Monitor your pool's salinity level as frequently as you check your other water chemistry levels.

After the system has run for a time, your cell will eventually need to be cleaned due to natural mineral scaling. The system will notify you of this by turning on the "Cell" LED light. Visually check the cell for white mineral scaling, then follow the cleaning instructions below.

IMPORTANT: The frequency of cleaning depends on your water chemistry and the Saturation Index of the water. For most people, cleaning is only necessary a handful of times per season. More rapid mineral build up is sure sign of a chronically high Saturation Index; it is possible for imbalanced chemistry to cause scaling to occur quite rapidly. Consult a pool professional for additional help.

IMPORTANT: AFTER AN ERROR LIGHT OCCURS for the salt level or cell cleaning, restart the unit and set the chlorine output.

Cleaning the Electrolytic Cell

As a natural result of the electrolytic process which creates chlorine from salt molecules, a white mineral build-up is attracted to the titanium plates in the Cell. The reverse polarity self-cleaning feature helps to inhibit such build-up and scaling. However, the attraction of minerals is inevitable, and eventually it must be removed. To do so, follow these steps:

Note: Cleaning the Cell is only necessary to remove an excessive build-up of minerals on the plates. A light coating of minerals does not impede performance.

WARNING: Other than the supplied cleaning tool, do not insert anything or use metal or other hard objects to clean the cell, this will void the warranty.

CAUTION: When cleaning the Cell always wear adequate protection, such as rubber gloves and eye protection. Always add acid to water, do not add water to acid. Always work in a well-ventilated area. Splashing or spilling acid can cause severe personal injury and/or property damage.

WARNING: Do not insert anything or use metal or other hard objects to clean the cell, this will void the warranty.

When removing the Cell for cleaning or replacement:

1) Turn off all power, close supply line valves if applicable.
2) Unplug the Cell cable connecting the Cell to the Control Module.
3) Disconnect the Cell by unscrewing the Threaded Collars around the unions where the Cell attaches to the plumbing.
4) Remove entire Cell from between the unions.

To clean the Cell of mineral buildup:

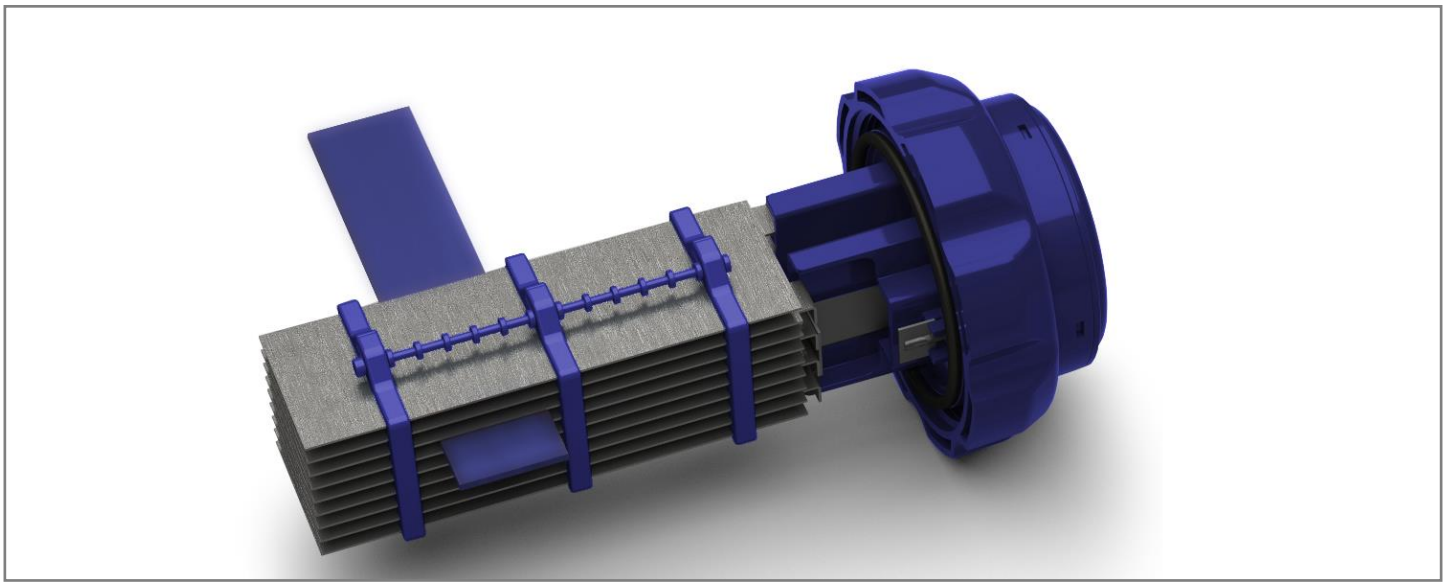
OPTION 1:

1) Orient the removed cell so that the inlet and outlet point towards the sky. Place on the ground and stabilize so as to remain upright and prevent spilling.
2) In a separate bucket, mix one part muriatic acid into four parts water. Pour this weak acid solution directly into cell.
3) Allow solution to soak for NO MORE THAN TEN MINUTES.
4) Properly dispose of acid solution and use a hose to generously rinse the cell.
5) Reinstall cell into PVC return line, and ensure Cell cable connection is clean and tight on all three terminals.

IMPORTANT: If mineral build-up is severe, more than one cleaning may be necessary to dissolve remaining solids. If you can see any remaining scaling, debris, or physical blockages through Cell, flush the cell well with a garden hose nozzle. Repeat the cleaning process if needed. **Note**: Cleaning this cell is only necessary to remove an excessive build-up of minerals on the plates. A light coating of minerals does not impede performance. Unnecessary cleaning will reduce lifespan of the cell.

OPTION 2:

1) Unscrew Cell Cap (around the Cell cable) from the Cell Housing.
2) Slide Cell Plate Assembly away from the Cell Housing. DO NOT pull or hold the Cell Plate Assembly by its cable. Slide the cleaning stick between titanium plates and connection brackets to loosen and dislodge any mineral buildup or scale. Hose off debris with a strong garden-hose nozzle. There should be no solids bridging gaps or connection between plates.
3) Ensure that the O-Ring and its channel are clean and securely seated.
4) Reinstall Cell into Cell Housing, carefully aligning the Cell's raised key into the Housing's matching slot. Reattach Cell Cap only hand-tight (do not use wrench).
5) Reinstall cell into PVC return line, and ensure Cell cable connection is clean and tight on all three terminals.



IMPORTANT: Other than the supplied cleaning tool, do not insert anything or use metal or other hard objects to clean the cell, this will void the warranty.

REMINDER: If the cell has been cleaned after an error light has occurred on the unit, be sure to restart the unit and set the chlorine output.

General Maintenance

Winterizing

Very little chlorine is necessary at low temperatures. The ***SJ-Series*** will automatically reduce its chlorine output in cold water conditions, and will not produce chlorine at very cold temperatures. Below approximately 60° F, the "Low Water Temp" LED indicator will be illuminated. This feature extends the lifespan of the Cell. Additionally, housing end-caps are available, which allow you to continue to run water through the plumbing without the Electrolytic Cell in place. (sold separately, available at www.circupool.com).

If you "close" your pool for the winter, you can continue to follow all standard procedures for your local area.

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, supply and return lines before any freezing conditions occur. The Control Module is capable of withstanding any winter weather and does not need to be removed.

Spring Start-up

When opening the pool after a period of inactivity, do not power on and use the chlorine generator until the pool's water chemistry has been balanced and brought to ideal levels. Salt must be added if water has been drained over the winter.

Replacing the Cell

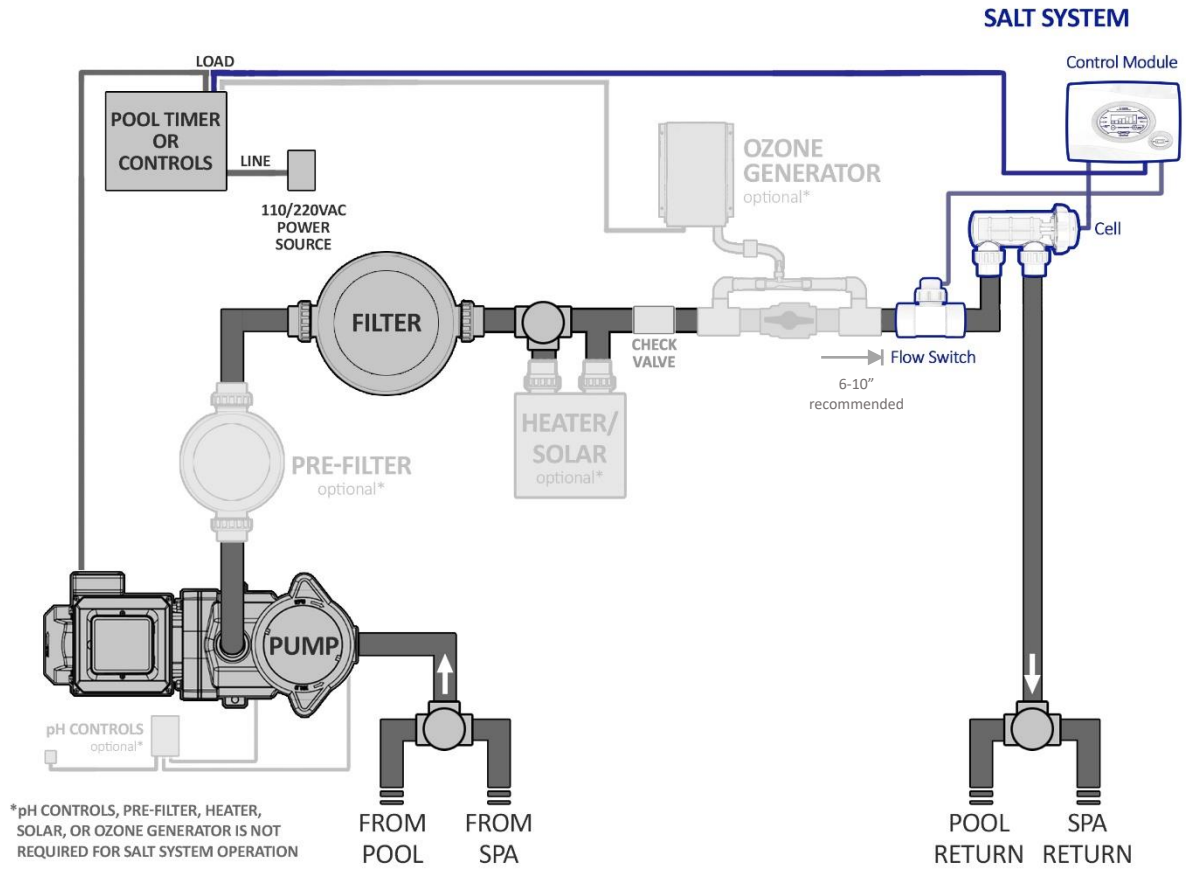
When the titanium blades inside the Electrolytic Cell have reached the end of their lifespan, replacements are readily available so that the whole system does not have to be replaced. Replacements are easily switched out. To ensure quality and value, only genuine CircuPool replacement parts may be used.

INSTALLATION

IMPORTANT: If you haven't already done so, it is necessary to balance the pool's water chemistry before the ***SJ-Series*** is powered on and used. See pages 6 - 8 for more information.

The following are guidelines for the typical installation using 2" plumbing, which should be performed by a qualified individual. If 1.5" plumbing is present, reducers (not included) can be used to adapt the system; be sure to note the changes to any listed measurements or dimensions that the addition of reducers may cause. Your installation may vary depending on space available and your specific arrangement of equipment. Double check each measurement before cutting.

Overview



CAUTION: Ensure that the pool pump and all electrical power are turned off before installation.

TIP: Lay out your equipment and wiring to confirm placement and measurements first before cutting and gluing.

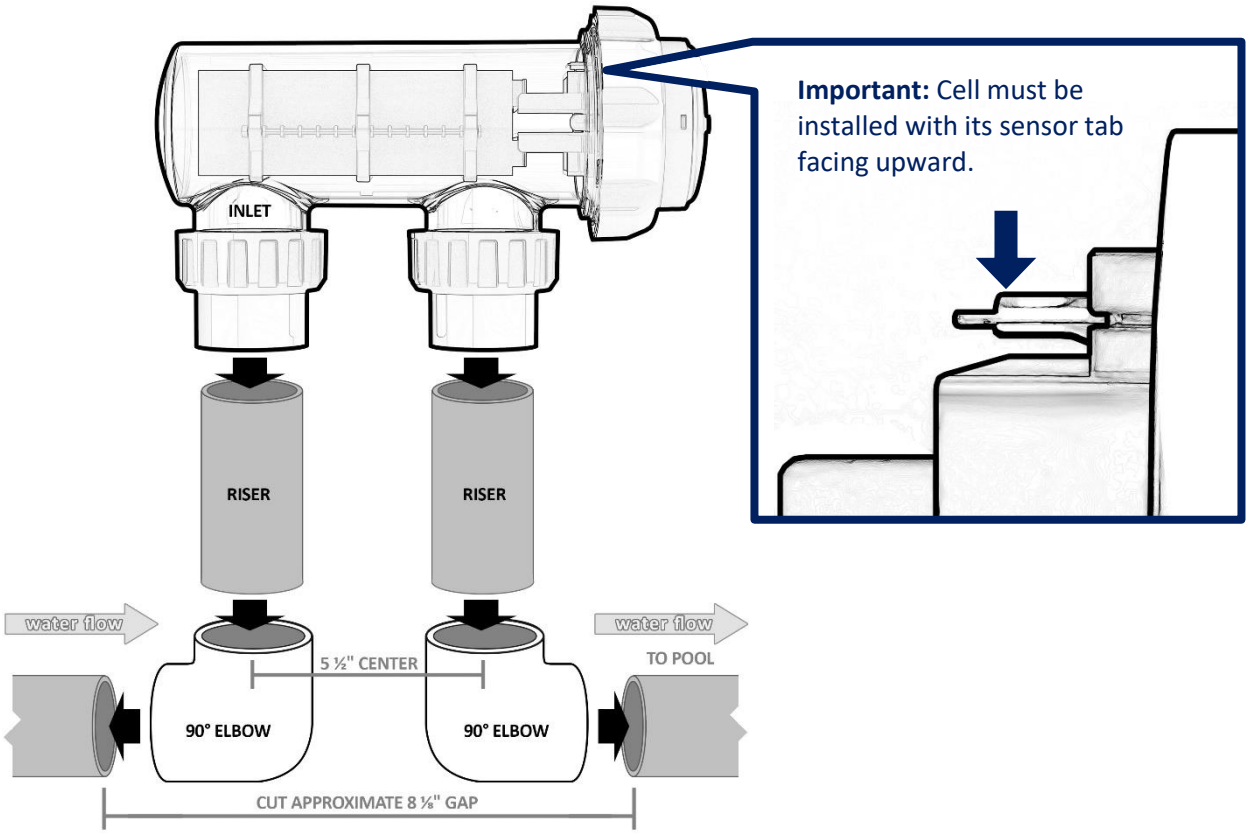
TIP: Be sure to clean & smooth cut pipe. Clean all parts with PVC Primer. When gluing PVC, parts will slip in place easier once glue is applied. Be sure to apply firm, constant pressure between both glued parts for up to a minute to prevent potential slippage. Allow for glue to dry after each step.

IMPORTANT: These instructions are for 2" plumbing (typical). For installations using 1 ½" plumbing, you can simply use 2"-to-1 ½" reducers (not included) to adapt the ports of the Cell Housing. For 1 ½" installations, be sure to note any new or additional measurements before cutting pipe.

Installing the Electrolytic Cell and Flow Switch

The Cell and Flow Switch are to be fitted into the return line as the last pieces of equipment the water passes through before returning to the pool: always after the pump, filter, heater (if applicable), etc. If a heater is present, all equipment must be a minimum distance away, per heater manufacturer recommendations.

The Cell should be installed in the return line using two 90° elbows (not included) and two straight pieces of PVC pipe as risers (not included). The Cell must be installed horizontally with ports facing down; as the highest point of the plumbing this forms a natural gas trap, a secondary safety feature to prevent gas buildup in the system. When positioning the Cell, the inlet side of the Cell Housing is imprinted with an arrow pointing up. The Flow Switch can be installed horizontally or vertically, in close proximity to the Cell; it is recommended to provide 6-10" of straight plumbing before the Flow Switch. Ensure that the arrow on the Flow Switch faces in the correct direction of water flow. Lay out your equipment to ensure adequate pipe space, and that the Cell cable (10') can reach back to where the Control Panel will be installed.



1) After determining the section of plumbing to install the Cell, measure out and mark the selected area. Cut a gap in the plumbing, so that you will be able to glue two 90° elbows on either side of the gap with a center-to-center distance of 5 ½". Using standard 2" elbows, usually this gap is approximately 8 ⅛".
2) Glue each 90° elbow to the end of each pipe stub on either side of the cut gap; ensure correct center-to-center distance. **TIP**: dry-fit riser pieces into Housing, and use the ends of the risers as a guide to align 90° elbows.
3) Glue each riser into top of 90° elbows.
4) Glue Cell Housing assembly (including unions and collars) down onto risers, ensuring that Cell is level.
5) Ensure that all O-Rings are seated into their receiving channels in the Cell Housing. Slide the Cell into the Cell Housing, **making sure to carefully align the raised key** on the plastic head of the Cell with the matching slot in the clear Cell Housing. For a watertight seal, slide the Cell Cap into place and tighten it and the inlet/outlet ports by hand- **do not use tools or over-tighten, do not use lubricants on O-Ring**

Installing the Control Module

Mount the Control Module as close to the pump and filtration system as possible. For safety concerns, do not install the Control Module within 10 feet of the pool edges, and follow all applicable codes. Verify that the Cell cable can reach the Control Module from the section of pipe selected for plumbing.

Using the mounting template as a guide, install screws at a comfortable level on a wall or vertical support, at least 3 feet above ground level. Once the screws have been secured, align the holes on the back of the Control Module and mount to the screws. The Module is fully rated for outdoor use; common sense considerations such as minimizing direct exposure to rain, sunlight, water runoff, and lawn sprinkler systems will enhance longevity. As with most electronics, avoid placing the controls in tightly enclosed spaces to avoid a build-up of excess heat. Do not mount above heater, if present.

TIP: Do not operate unit until all salt is dissolved in pool water and salinity is verified between 3000-4000 ppm.

Wiring

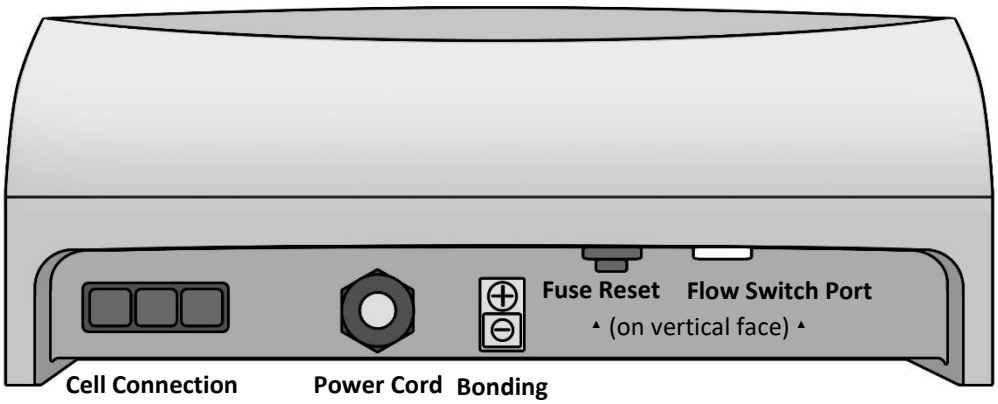
CAUTION: **Power must be shut off at the circuit breaker before performing any wiring.** Be sure to follow local and NEC/CEC electrical codes. The system has been designed to easily wire into typical in-ground pool systems. To provide safe operation, the unit must be properly grounded and bonded.
For operation, the Control Module must be wired into the pump's power source so that both turn on and off together (see diagram on page 18). For variable speed pumps, use a timer to coordinate SJ run time with full-flow pump operation.

Electrolytic Cell Connection:
The Cell cable has a plug-in connector, which attaches easily to the Control Module. Press plug in firmly to ensure that connector clicks in to place across the length of the plug. Refer to the diagram below for the location of these connections.

Bonding:
A lug used for bonding is attached to the bottom of the SJ-Series Control Module. The Control Module must be bonded with an 8 AWG bare copper wire to the pool bonding system.

Fuse Reset Button (Located on the inside vertical face)**:**
For protection, the Fuse Reset will trip in the event of a power surge. If the power switch is in the On position, but the controls are not illuminated, depress the rubber cover of the Fuse Reset Button until you feel a click.

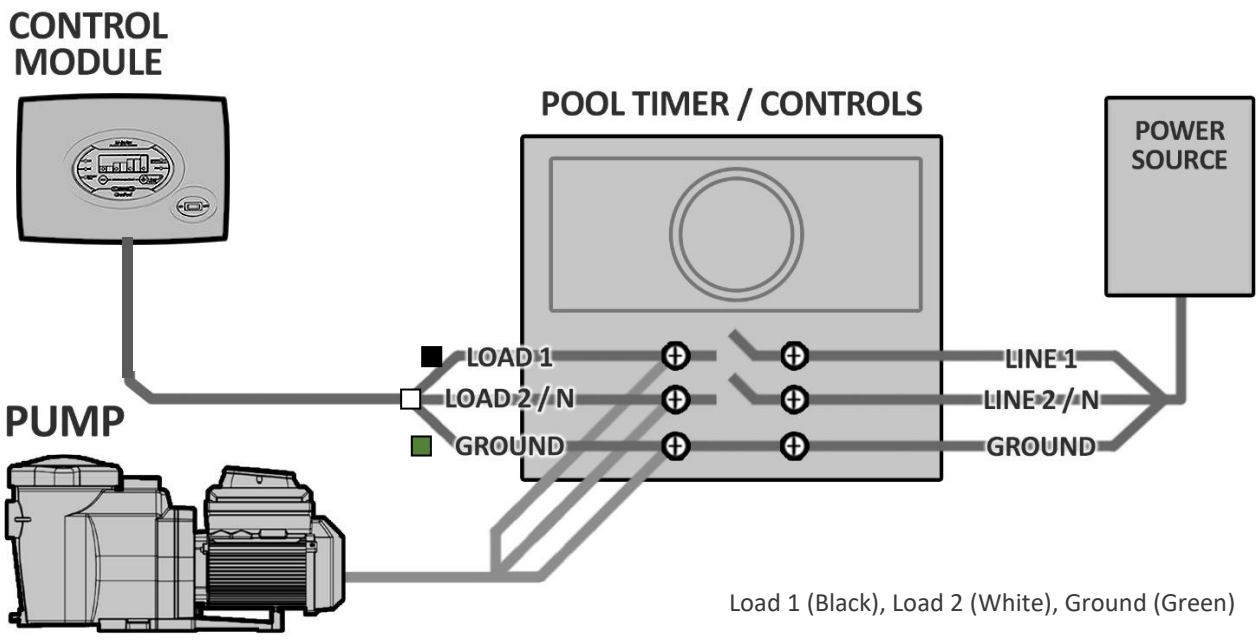
Flow Switch Connection Port (Located on the inside vertical face)**:**
Press the flow switch's connector into the female port until you feel a click.



Wiring (Continued)

Wiring to Power Source:
The Control Module uses a switch-mode power supply designed to automatically accept either 120VAC or 220VAC (no internal adjustments are needed).

The Control Module comes with an un-terminated Power Cord (AC Input) which must be connected to an external timer, which will turn the pump and Control Module on and off together. Have the Control Module wired to the load side of the timer by a qualified person. See the following diagram for typical wiring.



Load 1 (Black), Load 2 (White), Ground (Green)

In some parts of the United States and Canada, the Control Module must be connected to a circuit protected by a Class A ground fault interrupter (GFI). Check local codes before connecting.

For use with Variable Speed Pumps: When used with variable-speed or other electronically controlled pumps, use a timer to coordinate SJ run time with full-flow pump operation.

Power Protection Mechanism:
The Control Module has a power protection mechanism, an external Fuse Reset button located on underside of unit. If the Control Module has input power, but displays no power, press the external Fuse Reset button.

At this point, this installation of your equipment is complete. If the water has not yet been prepared, then you are ready to begin adding salt and balancing your water chemistry, see pages 6-8. Turn the Control Module to the Power Off mode until enough salt has been dissolved in the water.

INSTALLATION CHECKLIST

□ Barrel Unions installed and glued into pipe work.

□ All 3 O-Rings seated in Cell Housing, Cell aligned with and inserted into Cell Housing, and Cell Cap & both port Threaded Collars screwed in place hand tight (Do not use wrench).

□ Control Module is affixed to wall and wired correctly.

□ Cell cable connected to Control Module.

□ You have checked and confirmed that Control Module switches ON and OFF concurrently with filter pump (or when used with variable speed pumps is only energized during high water flow.)

□ You have checked all connections and joints for leaks.

□ Sufficient salt has been added and fully dissolved and circulated throughout pool water.

□ Pool has properly balanced water chemistry.

HELPFUL HINTS

For more detailed information and useful tips, visit www.circupool.com/help.

Proper operation of the chlorine generator can be easily verified by checking the lights on the control panel. However, if the pool remains cloudy, or the chlorine residual tests low, then the chlorine being produced is being lost due to high chlorine demand or improper water conditions.
To reduce the chlorine demand, check the pH and Stabilizer (Cyanuric Acid) reading. Check for phosphates and nitrates, which commonly contribute to severe chlorine demand. If tests show correct, then a shock treatment with an oxidizer agent is advised. Generally, superchlorination is not necessary if the pool is maintained at correct levels.

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 free chlorine in pool.
- Mount Control Module in shade or out of the direct sunlight whenever possible.
- Decrease Chlorine Production when temperature goes down.
- Take pool water sample to a Pool Professional at least once per month.

Not Recommended List

- Do not allow fertilizer anywhere near your pool. Fertilizers are one of many sources that contain Nitrates or Phosphates which cause severe chlorine demand in pool water.
- Never use dry acid to adjust pH. A build-up of by-products can damage the Cell.
- Do not add any chemicals (including salt) to the skimmers.
- Do not let salinity level drop below 3500 ppm.

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, pink, 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.

TROUBLESHOOTING

SCENARIO:	POSSIBLE CAUSE:	SUGGESTED ACTION:
Low or no chlorine residual in pool	Insufficient Chlorine Output Level	Increase Output Level. This is often required seasonally with increasing temperatures.
(Also cloudy water, green pool)	Insufficient run time	Increase run time to at least 1 hour per 10° ambient temp. Ensure 1.5-2x filter turnover.
	Heavy pool use, inclement weather, organic matter	Activate Super CL mode or chemically shock pool.
	Water chemistry issues, such as: Low Chlorine Stabilizer Low salt in pool Phosphates in pool Nitrates in pool	Contact pool professional, ensure all chemicals on page 8 are within range.
	Cell is dirty, clogged, or has excessive scaling or mineral build-up	Remove Cell from plumbing, inspect and clean (see page 12).
	Flow switch not triggered, or excessive bubbles / air in cell	Inspect Flow Switch, verify sufficient water flow
	Inactive unit, power is off	Turn on system, or see “No Power”
Low or no Chlorine residual in pool after recent installation	Water chemistry was not balanced prior to system installation and a high chlorine demand persists	Contact pool professional, ensure all chemicals on page 8 are within range, chemically shock pool if necessary. Run system at maximum output.
	System hasn’t been running	Double check all connections, verify system runs in sync with circulation pump.
	System is connected to insufficient voltage and is not operational	Have a professional test power source and ensure correct connection.
No Power	System is turned off	Turn system on, verify circulation pump is active
	Problem with input power, voltage, or configuration of system wiring	Have a professional test input power & ensure correct wiring configuration & connections.
	Fuse Reset has tripped	Press reset button on underside of controller.
	Other malfunction in unit	Contact customer support
Salt LED is red and/or	Salinity is out of range	Manually verify salinity (see pages 6-7).
Cell LED is red	It is time to clean the Electrolytic Cell.	The Cell must be cleaned to remove mineral scaling (see page 12 for instructions).
Reminder: After issue is resolved, be sure to restart the unit and set the chlorine output.	Cell is dirty or clogged with debris.	Inspect and clean Cell if necessary.
	Loose Cell connection	Remove, check, and firmly reseat cord plug.
	Cell efficiency has been greatly reduced	Inadequate water flow or a pocket is occurring in the Cell, or Cell is damaged/worn and must be replaced.

For more information or troubleshooting, visit www.circupool.com/help

Flow LED is red	Insufficient water flow to trigger switch, or pocket of air touching sensor tab in cell	This may happen temporarily if there is air in the lines at initial startup. Check water level, pump cavitation, air or blockages in plumbing, and all valves & seals. Clean filters & strainers. Ensure at least 25-30 GPM flow rate.
	Incorrect Installation	Verify correct orientation, cable is plugged in, 6-12" of straight pipe before Flow Switch
	Dirty sensor tab	Follow cell cleaning instructions on page 12.
Generate LED is off	This is normal system operation, the system will automatically resume chlorine generation	The system has a duty cycle and rest cycle determined by how high or low you set the chlorine output. If needed, you can raise chlorine output.
Low Water Temp LED is red	The system has deactivated due to low water temperatures	No action is needed. This is a feature that extends the system's lifespan, and the unit will begin working again once seasonal temperatures rise.
	Sensor is disconnected or damaged	Check cable connections, contact support.
Unable to increase chlorine production	Dirty Cell, cold water, low salt level	Clean Cell, check water temp and salt level.
	Physically damaged keypad	Check keypad buttons, ensure tactile response
Water leak	O-Ring improperly seated	Ensure O-Rings are clean and in good condition.
	Threaded collars are cross-threaded or pipes are misaligned	Inspect threads for damage, ensure that each screws back on without resistance.
	The keyed notch on the Cell head was not fully aligned (or became unaligned) with the corresponding notch on the Cell Housing when it was screwed in place.	Unscrew cell, carefully align cell, and use a hand on the Cell cable to press and hold it in place while screwing the Cell head's cap hand-tight.
	Crack in plumbing parts	Contact support.
Cell frequently has mineral buildup	This is due to imbalanced water chemistry and a high Saturation Index	Ensure that your Saturation Index is at or near zero, in order to avoid damage or premature Cell failure. (page 8)
Cell never or rarely has mineral buildup	Water may be corrosive due to imbalanced water chemistry and a low Saturation Index	Ensure that your Saturation Index is at or near zero, in order to avoid damage or premature Cell failure. (page 8)

CIRCUPOOL LIMITED WARRANTY

CircuPool SJ Series Electronic Chlorine Generators carry the following Limited Warranty should failure occur due to faulty manufacture or materials, during normal use and service. For residential use, the manufacturer warrants to the original purchaser that the equipment shall be free of manufacturer's defects at the time of sale, and upon examination shall provide replacement parts in accordance with the following schedule:

Year One - No charge for parts.
Year Two - Parts supplied at 40% of base price.
Year Three - Parts supplied at 60% of base price.

For Commercial use (any pool that is not for private single-family use, or the use of which is subject to regulation), parts are warranted against defect for a period of one year.

This limited warranty is subject to the following terms, conditions, and exclusions:

1. To obtain the benefits of this warranty, contact the warranty department for troubleshooting. You may obtain current contact information at www.circupool.com/help. Warranty claims must be initiated in a timely manner. Upon discovery of a defect, the warranty department will issue a Return Merchandise Authorization (RMA) and defective items and parts are to be shipped by customer to an authorized service representative, freight prepaid.

Upon examination, the determination of the cause of failure shall be made solely by CircuPool Products. The date upon which the claim is submitted, and an RMA is issued shall solely serve to determine at what point the claim falls within the schedule of warranty proration, in comparison with the original purchase date. **No packages will be accepted without a RMA number.**

2. Should a defect in any item or part covered by the warranty become evident during the warranty's term, CircuPool Products will at its sole discretion repair or replace such item or part. CircuPool Products reserves the right to replace defective parts with new or refurbished parts. This warranty does not include the cost of labor or transportation charges for equipment or component parts to or from CircuPool Products, or the removal, reinstallation, or any such costs incurred in obtaining warranty replacements or repair.

3. This warranty extends to the original retail purchaser and original installation site only, beginning at the original date of purchase, and is non-transferrable.

4. The warranty contains the following exclusions. O-Rings, rubber gaskets and seals, electrical fuses, and circuit-breaker components are normal replacement items subject to wear and are excluded from the warranty. Product discoloration, or any other cosmetic or superficial damage or deterioration, regardless of its cause, is not covered by this warranty. The warranty is not applicable to problems arising from circumstances outside the control of CircuPool Products, including, but not limited to the following:

A. Damage or premature wear due to improper pool chemistry, and failure to maintain pool water chemistry in accordance with the recommendations contained in the owner's manual.

B. Damage due to improper installation or connection to improper voltages, including materials and workmanship supplied by others.

C. Damage due to negligence or failure to properly maintain equipment, including operation with insufficient water flow or the maintenance of clean and tight electrical connections.

D. Damage due to improper service, as well as unauthorized equipment modifications and use of non-genuine replacement parts.

E. Damage due to misapplication, misuse, abuse, or failure to operate equipment as specified in the owner's manual.

F. Problems resulting from tampering, accident, fire, flood, freezing, lightning, insects, or other natural elements, or other circumstances beyond the control of CircuPool Products.

G. Damage due to over-tightening of threaded components or excessive pressure or stress.

The liability of CircuPool Products shall not exceed the repair or replacement of defective items or parts under the referenced limited warranty terms. There are no implied warranties of merchantability or fitness for a particular purpose that apply to this equipment. Under no circumstances shall CircuPool Products, its agents, employees, and affiliates be liable for any loss, damage, injury, inconvenience or loss of time, incidental expenses such as labor and material charges, or any other incidental, or consequential damages, which may result from the use, installation, removal, or reinstallation of its equipment and parts.

This warranty is valid only in the United States of America. This warranty gives you specific legal rights and you may also have other rights, which vary from state to state. This warranty supersedes all previous publications. Any dispute between the original purchaser and CircuPool Products will be settled by binding arbitration, conducted in Harris County, Texas, under the rules of the American Arbitration Association.

Notes: