CircuPool EDGE Series
Troubleshooting Guide

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The complete EDGE manual is always available at ***Circupool***.com:
https://www.circupool.com/Help-Guides-User-Guides_ep_41.html

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☑ **IMPORTANT:** Remember that your pool is compatible with chlorine and shock as normal. If your pool is experiencing temporary loss of chlorine or other difficulties, add sanitizer as needed to maintain the pool.

WATER CHEMISTRY BASICS

Managing the water chemistry of your pool is critical for effective chlorination and ensuring the safety of swimmers in the pool and preventing damage to your pool materials and equipment. This guide reflects national standards for pool water chemistry; for in-depth assistance, please consult your local pool professional and provide them with a copy of your manual in order to ensure that they are familiar with your specific pool equipment.

***Helpful Tip:** *The Pool Calculator App* takes care of all of the math that might come up when keeping your swimming pool's water chemistry in balance. It is able to tell you exactly how much of each chemical to add. Visit www.poolcalculator.com

	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 (7.5 best)	7.2 - 7.8 (7.5 best)
Stabilizer (Cyanuric Acid)	30 - 50 ppm	30 - 50 ppm
Total Alkalinity	80 - 120 ppm	80 - 120 ppm
Calcium Hardness	200 - 400 ppm	150 - 450 ppm
Saturation Index	-0.2 to +0.2 (0 best)	-0.2 to +0.2 (0 best)
Phosphates	0 to 100 ppb (0 best)	0 to 100 ppb (0 best)
Nitrates	0 to 10 ppm (0 best)	0 to 10 ppm (0 best)
Metals	0	0
Ammonia	0	0

If the salt level (PPM) in your pool is currently...

If your pool holds this many gallons...

	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

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Salt

This level will typically be around 3,500. This level is less than one tenth of the salt level in ocean water, which has around 35,000ppm of salt. Salinity can be raised by adding salt sold for use in pools water softeners (sodium chloride). Ensure that the salt is 99.8% pure or better, and which doesn't have any rust inhibitor or other additives. Crystals are fine, pellets will work but dissolve slowly. When adding large quantities of salt, independently test the existing salt level and add in portions, retesting at each stage.

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

The chart above indicates how much salt is required based on the volume of the pool and the current salt level.

Chlorine

Measurable chlorine shows the level of disinfecting chlorine available to keep your pool sanitary. Chlorine is consumed by sunlight, and by breaking down organic material in your pool. The level of chlorine you need to maintain depends on your CYA level and how much you use the pool. It is important that you do not allow chlorine to get too low, or you run the risk of getting algae or germs. Maintaining an appropriate chlorine level is the most important part of keeping your water in balance. The chlorine level should be between 1.0-3.0ppm. It can be efficient to raise the chlorine level in the evening, since none will be lost to sunlight until the next morning. Without constant supply, the chlorine level goes down by itself. If you must lower the chlorine level quickly, you can manually turn off your salt system at any time.

CYA - Cyanuric Acid

Cyanuric acid, often called stabilizer or conditioner, both protects chlorine from sunlight and lowers the effective strength of the chlorine. If you don't have problems from extremely high amounts of sunlight, CYA is typically kept between 30 and 50. High levels of CYA can cause “chlorine lock” and greatly reduce the effectiveness of any remaining chlorine.

pH - Acidity/Alkalinity

pH indicates how acidic or basic the water is. pH should be tested daily at first. Once you gain experience with your pool, less frequent monitoring may be appropriate, depending on your pool's typical rate of pH change. pH levels between 7.5 and 7.8 are ideal, while levels between 7.2 and 7.8 are acceptable for swimming.

TA - Total Alkalinity

Total alkalinity indicates the water's ability to buffer pH changes. Buffering means you need to use a larger quantity of a chemical to change the pH. At low TA levels, the pH tends to swing around wildly. At high TA levels, the pH tends to drift up. TA contributes to the LSI which indicates the tendency for plaster damage or calcium scaling.

You can raise TA with baking soda. It is often best to make large TA adjustments in a couple of steps, testing the water after each one, as adding baking soda will also affect the pH and you don't want the pH going out of range.

CH - Calcium Hardness

Calcium hardness indicates the amount of calcium in the water. A plaster pool should have CH levels between 250 and 350 if possible. If you have a spa you might want to keep CH at at least 100 to 150 to reduce foaming. CH contributes to the LSI which indicates the tendency for plaster damage or calcium scaling. You increase CH with calcium chloride, sold as a deicer and by pool stores, or calcium chloride dihydrate, sold by pools stores for increasing calcium. You lower calcium by replacing water or using a reverse osmosis water treatment.

BASIC WATER CHEMISTRY - PHOSPHATES & NITRATES

Phosphates are a part of the environment: Phosphates became a household word in the 1970's. This is when people started to use low-phosphate and phosphate-free laundry detergents to help minimize the detrimental effects of excess phosphates in lakes, streams, wetlands and other runoff areas- effects such as unwanted algae blooms.

Phosphates accumulate in pools: What's true for lakes is also true for swimming pools; there are innumerable ways phosphates can get into your pool. Phosphates are a natural component of most swimmer wastes. It is also present in rain water. It can be blown in on the wind, in dirt or dust, or in plant material that enters the pool. It may also be introduced by landscaper's fertilizers at very high levels, which may blow into the pool or come in from water runoff. Phosphate levels are persistent and do not break down naturally- you have to treat the water to remove phosphates. For all of these reasons, pools can quickly build up phosphate levels. This can lower chlorine levels and create an abundant source for all strains of algae & microorganisms, and can make controlling their growth difficult. Remove the food source, and you can normalize chlorine demand and have a strong weapon against algae.

When phosphates are present, chlorine levels go down and algae grows: Phosphate is the main ingredient in fertilizer. Phosphate is plant food, and algae are plants. If you have had persistent trouble with chlorine levels or algae, you may have a phosphate problem in your pool. When excess phosphate is present in a swimming pool, the symptoms often include the following: Quickly Dissipating Chlorine Levels or Excessive Chemical Consumption; Cloudy, Green Water; Slippery and Slimy Surfaces; Mustard and Green Colored Debris; Poor Water Quality.

Remove the phosphates and solve the problem: It only takes tiny amounts of phosphates to become significant in pools. The maximum level of phosphate in pool water should be less than 100 ppb, as close to 0 as possible. Once the phosphates climbs above this level, the water quality begins to decrease. Fortunately, draining to eliminate the accumulated phosphate is no longer necessary. Phosphate removers can be added which allow the phosphates to be removed from the water. A popular choice is Natural Chemistry's Phos-Free, which is a natural mineral product and is non-toxic.

You can test for phosphates in your pool with the AquaChek Phosphate Test Kit found at www.aquachek.com

Nitrates: Nitrates are a matter similar to Phosphates, but of different origin; however both a food source for algae. Nitrate is a plant nutrient and is present in all green plants and fertilizers. It is natural occurring and is found everywhere something is growing. Nitrites (NO_2) are a close cousin to Nitrates (NO_3) and are just as much of a problem for pools, because when a Nitrite comes in contact with water, it easily gains another Oxygen atom to become a Nitrate. This additional atom gives Nitrates real stability, and makes eradication difficult. In fact, the only known way of Nitrate removal in pools practiced today is to drain a portion of the pool, and refill with water that is Nitrate free, if possible. Shocking a pool heavily will revert the Nitrates back to Nitrites, but can easily revert once again as an additional Oxygen atom is easy to come by in a swimming pool filled with H_2O.

Where do Nitrates come from? Rural areas - those with water wells and septic tanks are particularly prone to Nitrate contamination in pools. Fertilizer is the most common source of Nitrates in pools. Animals that enter the pool, as well as birds spend time above the pool, can become a significant source of contaminants. Rain spilling off of overhanging trees can add Nitrates to a pool, and even acid rain itself, so common in the Northeast, can increase Nitrate levels. Finally, human waste, sweat, cosmetics can all bring traces of Nitrates into the pool. At levels as low as 10ppm of Nitrate, algae will grow even though you have used algaecide and are keeping a proper chlorine residual. But keeping a proper residual of chlorine in the water can prove to be difficult when Nitrates are present. This is what tricks people into believing in Chlorine Lock- it's not blocking chlorine, but using it very quickly.

What can be done to Eliminate Nitrates in my pool? There still however is no chemical to remove the Nitrates from the pool water, so if you have a contamination, you will need to drain most if not all of the pool water.

BASIC WATER CHEMISTRY - LANGELIER SATURATION INDEX (LSI)

LSI is a measurement of the water's ability to absorb and hold solids in a solution. It is important to know that the scale on which LSI is measured is very narrow, meaning that a small change can indicate a significant difference in your pool. Like pH, the LSI value is logarithmic, meaning that a difference of 1.0 equates to a difference of ten times in reality. A Saturation Index of -2.0 is ten times more corrosive than an SI of –1.0. This is important, as many pool equipment manufacturers may not be able to warranty damage caused by an out-of-balance LSI.

STEPS TO TAKE:

1. Obtain a complete water chemistry test from a pool store for the following items:

   pH, Water Temperature, Alkalinity, Cyanuric Acid (Stabilizer), Calcium Hardness, Total Dissolved Solids

2. Go to www.aquachek.com

   a. Click on "Calculators"
   b. Click on "Langelier Saturation Index"
   c. Plug in your results and obtain your Saturation Index number.

3. Go to www.poolcalculator.com to balance your water accordingly.

If LSI Index is between -0.2 and +0.2 pool water is Balanced. When pool water is balanced, it has no effect on the pool or equipment. There are two values you can readily change to help improve your LSI value to get it into the optimum range: pH and Alkalinity level.

If LSI Index is less than -0.2 pool water is Corrosive. Pool water may cause etching, pitting, dissolving and staining of walls, grouting and plumbing. It will also cause erosion to the titanium salt cell.

- As Stabilizer Increases, LSI Decreases
- As Total Dissolved Solids Increase, LSI Decreases

To raise your LSI value, you should first balance the calcium hardness in the pool. It needs to be between 200-400 PPM at all times. If the calcium hardness is in the correct range, add sodium bicarbonate or baking soda. Consult the calculator at www.poolcalculator.com to determine the target Alkalinity value (recommended range is 80-120ppm; however, you may find that a level lower than 80 may be ideal for a balanced LSI value).

If LSI Index is greater than +0.2 pool water is Scale Forming. Pool water may deposit excess minerals on the pool and equipment. Scale generally appears as white or lightly colored rough blotches on the pool walls. It also adheres to other objects in the pool, piping and filter system. This will cause calcium deposits to rapidly form on the titanium salt cell. Scale can restrict water flow, shortening filter runs and reducing filtration efficiency.

- As Temperature Increases LSI Increases
- As Total Alkalinity Increases LSI Increases
- As pH Increases, LSI Increases
- As Calcium Hardness Increases, LSI Increases

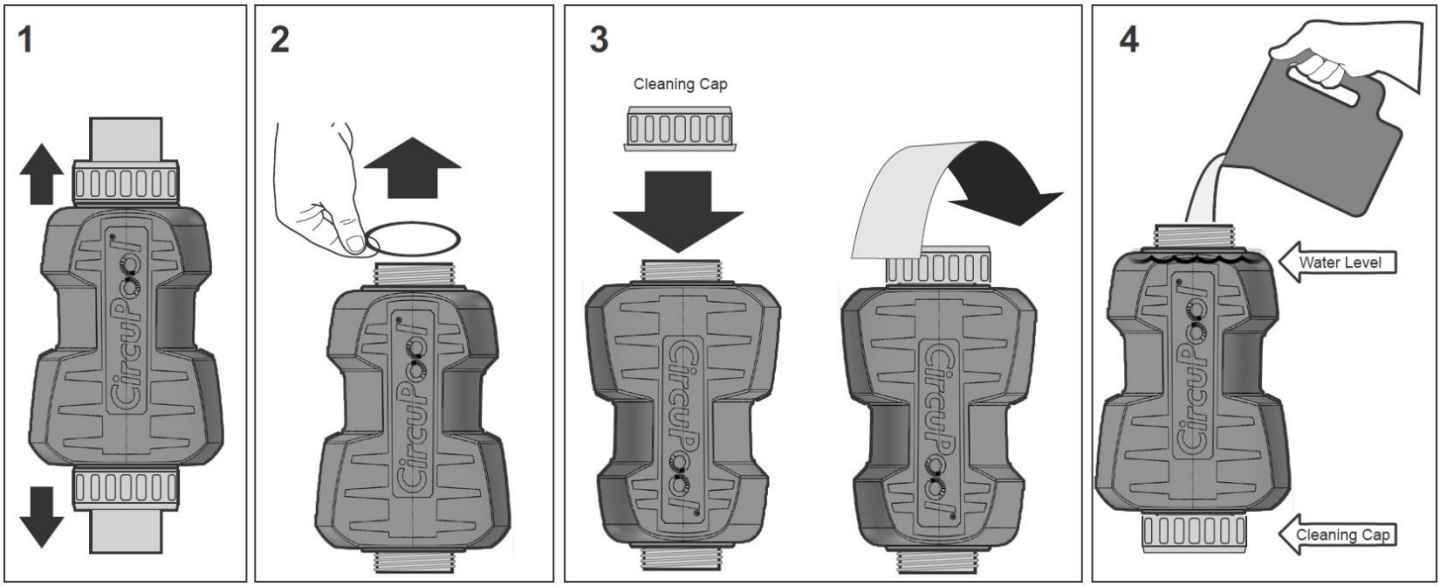
To lower your LSI value, you should first consider adding muriatic acid (can be found in pool supply stores), as it is more difficult to lower Calcium Hardness and especially temperature. Consult the calculator to determine the target pH value.

How to Clean the Electrolytic Cell

IMPORTANT: Using gloves and eye protection during this process is recommended. Always add acid to the water, never water to the acid. Always work in a well-ventilated area. Splashing or spilling acid can cause severe personal injury and/or property damage. The Electrolytic Cell has the self-cleaning Reverse Polarity feature built-in, which prevents mineral deposits from forming rapidly. However, the Cell may eventually need to be manually cleaned. The frequency of mineral build-up is dependent upon the balance of the pool's water chemistry, specifically the Saturation Index (see page 5).

In most circumstances, the Check Cell LED indicator will be illuminated solidly when the cell needs to be cleaned. **Do not** insert metal or any hard objects inside the cell during cleaning, this will void the warranty. Follow these steps to clean the cell:

1. Turn all power to the filter system and salt system off. Close return line valves if applicable. Completely disconnect the Cell Cord from the Control Module. Unscrew the two threaded collars at the inlet and outlet side of the cell, then remove the cell from the return line.
2. Remove the o-ring on the “smaller” end of the cell.
3. Attach the Cleaning Cap (included with system at original purchase) to the other side of the cell (the “wider” end), then orient the cell vertically with the Cap on bottom.
4. In a separate bucket, mix a solution of one part Muriatic Acid and five parts water, and pour the solution into the top of the cell.
    - Secure cell and let it soak until all mineral scaling has been dissolved.
    - You will notice a fizzing or fogging effect inside the cell once the solution has made contact with the titanium cell, this is normal. The solution should completely cover the titanium plates, and should usually be allowed to soak for 10 minutes.
    - Depending on the amount of scaling, a cell may need to be cleaned multiple times in a row. The cleaning solution may stop fizzing because the acidity of the cleaning solution has been neutralized by the amount of mineral scale, not because all of the scale has been removed.
5. Safely dispose of the solution by pouring it into the pool.
6. Flush out any remaining debris from the cell with a hose.
7. Put the o-ring back in place and re-install the cell in the pool plumbing.



Control Module Reprogramming

When installing a <u>new cell of the same size</u> – or – <u>clearing the flashing Check Cell LED</u>:

This procedure will reset the system's internal count of production hours. This should be done in order to clear the Check Cell light when flashing and any time a new cell (of the same size) is installed.

1. Press the On/Off switch to deactivate the Control Module. (Leaving power on at power source)
2. Hold down the chlorine Adjust button until the LED's on the chlorine output power graph light up. Take note of how many LED's are displayed: 1 LED (EDGE15), 4 LEDs (EDGE25), or 8 LEDs (EDGE40).
3. Tap the Adjust button once, then let the Control Module sit until the lights turn off.
4. Hold down the Adjust button until the LED's light back up on the chlorine output power graph.
5. Tap the Adjust button twice (confirm that the same number of LED's are lit up as on Step #2 above), let the Control Module sit until the lights turn off, then hit On/Off button to turn unit back ON.
6. Turn off power at the power source (breaker, timer, etc…) for about 30 seconds.
7. Turn power back on at the power source.
8. Allow the salt system and pump to run for at least 5 minutes to calibrate before shutting it off again.

When installing a <u>new cell of a different size</u>:

If a different size cell is to be used (ex: upgrading to a new Cell of a larger size), the Control Module needs to be set in order to work correctly with the new Cell size. Follow these instructions to change the Control Module to the correct Cell Type.

1. Press the On/Off switch to deactivate the Control Module. (Leaving power on at power source)
2. Hold down the chlorine Adjust button until the LED's on the chlorine output power graph light up.
3. Press the chlorine Adjust button to set the Control Module to a EDGE15 (1 LED light displayed), EDGE25 (4 LED lights displayed), or EDGE40 (8 LED lights displayed).
4. Once desired size is chosen, let the Control Module sit until the lights turn off, then hit On/Off button to turn unit back ON.
5. Turn off power at the power source (breaker, timer, etc…) for about 30 seconds.
6. Turn power back on at the power source.
7. Allow the salt system and pump to run for at least 5 minutes to calibrate before shutting it off again.

LOW CHLORINE LEVEL IN POOL

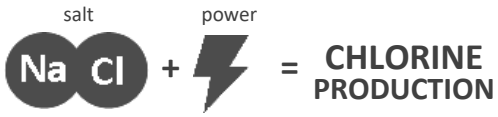
Before proceeding, it is **important** to understand when measuring pool chlorine that **you are detecting the "leftover" amount** in the water, and that measuring a lack of chlorine **does not necessarily mean that your salt system is not working.**

This guide will: **1)** help you verify with certainty whether or not your system is operational and creating chlorine, and **2)** help identify what else may contributing to the low chlorine level in the swimming pool water.

1) Verifying your system's Chlorine Generation

What is required for chlorine production:

There are only two factors required for the system to generate chlorine: salt and electricity. If there is sufficient salinity in the water and electrical power is being sent to the Electrolytic Cell, the system is generating chlorine normally. The system will detect and display errors when there is an issue with the transmission of power through the salt water. Otherwise, the system's ability to transmit power can be verified to confirm chlorine generation.



Verifying Power is present in Cell:

1. **Ensure no Warning Lights are on (inhibiting Power in the cell)**
   - Is the Water Flow LED indicator illuminated? If it is, the system is not able to send power through the cell because the Flow Sensor is not being triggered by the flow of water. See Page 11 for troubleshooting.
   - Is the Check Cell or Low Salt LED indicator illuminated? If it is, the system is not able to send power through the cell because of excess mineral build-up inside of the cell or improper salt levels. See Page 12 for troubleshooting.
   - Is the System Error LED indicator illuminated solidly? If it is, the system is detecting an ongoing issue or critical fault and has stopped sending power through the Cell. See troubleshooting beginning on Page 14.

2. **Confirming Power in the Cell (measuring cell current)**
   - If all warning lights are off, power is successfully able to pass through the cell. For further confirmation, the Control Module has a built-in power meter that verifies that the full & normal amount of power is able to pass through the cell.
   - To verify the power being sent through the cell, turn the chlorine output setting up to 100% for diagnostic purposes. To access the power reading, press and hold the BOOST button for three seconds to display the "Cell Current" reading (Water Flow LED indicator will now be ON).
     - The power graph LED lights will begin to alternate back and forth with the Power (ON/OFF) LED light.
     - Count the number of chlorine level LED's when the Power LED is on, and when the Power LED is off.
       - Example: 5 chlorine level LED's lit with the Power LED on, and 7 chlorine level LED's lit with the Power LED off = 5.7 cell amps
   - As long as you can confirm that there is a "Cell Current" reading (often 5-6 when turned up to 100%), the system is successfully able to pass power through the Cell, and is operating normally and creating chlorine.

Summary: If salt is present above the minimum level of 3000 ppm, if the no warning lights are illuminated solidly, and if "Cell Current" reads normal when the system is turned up to 100%, then the system **is fully operational and creating chlorine normally**. If a low chlorine level persists after continued operation, see the next pages to troubleshoot common causes of high chlorine demand.

⚠ **WARNING:** Always make sure that input power is completely disconnected before attempting service or troubleshooting procedures. All troubleshooting procedures should be done by a qualified professional.
☑ **IMPORTANT:** Remember that your pool is compatible with chlorine and shock as normal. If your pool is experiencing temporary loss of chlorine or other difficulties, add sanitizer as needed to maintain the pool.

2) Common Causes of Low Chlorine Levels

A) Examine the Water Chemistry

- Water chemistry and environmental conditions are the #1 cause of a low chlorine level in a saltwater pool, as they cause chlorine demand to rise above normal levels. **High chlorine demand** means that chlorine is being consumed quicker than it is being replenished, resulting in the inability to measure the chlorine residual in the water. If operation has been verified (as described on the previous page), this *does not mean* that the chlorine generator is not working, only that the chlorine demand currently exceeds the rate of chlorine production.

- The ideal levels for a salt water pool are

Free Available Chlorine	1.0 - 3.0 ppm
Salinity	3000 - 4000 ppm
pH	7.2 - 7.8 (7.5 best)
Stabilizer (Cyanuric Acid)	30 - 50 ppm
Total Alkalinity	80 - 120 ppm
Calcium Hardness	200 - 400 ppm
Saturation Index	-0.2 to +0.2 (0 best)
Phosphates	0 to 100 ppb (0 best)
Nitrates	0 to 10 ppm (0 best)
Iron	0
Copper	0
Other metals	0
Ammonia	0

The levels that are highlighted levels are the most common causes of high chlorine demand and depleted chlorine levels in pools. Ensure that all three levels are being tested for and that their values are included on your chemistry report.

The **Chlorine Stabilizer** (Cyanuric Acid, or CYA) level must be within range, especially during the spring and summer months. If there is not enough CYA in the pool, then your chlorine will not be protected from the sun and the chlorine being produced by the salt system will be consumed once the sun hits the pool water. Up to 90% of the pool's chlorine can be depleted within 2 hours without a sufficient level of chlorine stabilizer. High levels can also negatively affect chlorine levels & effectiveness.

Phosphates and **Nitrates** that are present in the pool will cause the chlorine demand to rise and/or will consume the chlorine being made by the salt system (Also see page 4). Phosphates are very common. Any Phosphate level near or above 100 parts per billion can greatly increase the chlorine demand in the pool. Any Phosphate level over 200 Part Per Billion will not only consume your chlorine, it will also readily feed algae. To remove phosphates, use commercial grade Phosfree. When trying to lower significant phosphate levels, phosphate products meant for weekly maintenance are usually not effective Nitrates will also rapidly consume your chlorine. If the Nitrate level is high, it is often most effective to drain the pool and refill with new water, being sure to add the necessary amount of salt back to the pool.

Lower salt levels can affect chlorine generation and cause the system to work inefficiently.

Other chemistry imbalances and the presence of metals, ammonia, and other impurities can cause high chlorine demand.

2) Common Causes of Low Chlorine Levels (continued)

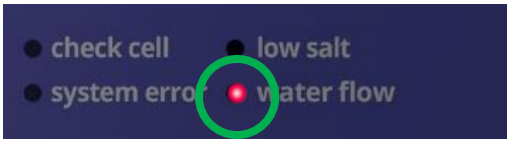
B) Ensure that system is being given sufficient chance to generate chlorine

- **Output Level** - The percentage output level that you set tells the system how much of its maximum capacity to use in order to create chlorine. If you are experiencing high chlorine demand, ensure that you have your system turned up to 100% output so that it is doing as much as possible to compensate. Leave the system at 100% output until the pool is balanced again. Since every pool operates differently and has a different level of chlorine demand, during normal operation there is not a standard percentage level at which to set the output.
- **Run time** - When sized right, a chlorine generator can typically achieve sufficient chlorination when run on the filter pump's normal schedule. However, every pool has different equipment and its operation is unique, and you may require (or choose) to run the filter pump more or less than is standard. As a rule of thumb however, run your system one hour for every ten degrees of ambient temperature in order to achieve both sufficient filtration and chlorination. Periods of high use, harsh environmental conditions, or excessive chlorine demand may require extended run times. For example, running your system twice as long will allow it to create twice as much chlorine.
- **Double check power** - Is the salt system turning on and off with the pump as normal? Has the fuse, fuse reset button, or circuit breaker been tripped?

C) Other common high-chlorine demand situations

- **During initial startup** (springtime / new pools) - When being opened, pools typically have much higher than normal chlorine demand. In these circumstances a pool requires a large amount of sanitizer all at once, which means that it is often more effective to add chlorine or shock as needed initially instead of waiting on the system to slowly reach "break-point" chlorination.
- **When organic matter is visible in the water** -
- **After rain storms** – Rain water can dilute pool sanitizer levels and negatively affect the water chemistry balance. Water runoff can introduce impurities, organic matter, and microorganisms into the pool.
- **After heavy pool usage** – Swimmers introduce organic matter that needs to be oxidized (sweat, lotions, oils, waste, etc…). Foot traffic in and out of the pool can introduce impurities, organic matter, and microorganisms into the pool. A high number of swimmers can quickly deplete sanitizer levels and cause chlorine demand to spike.
- **After young swimmers have used the pool** – A young swimmer or swimmers may introduce high levels of organic matter.
- **After nearby lawns and gardens have been fertilized** – Local fertilization can introduce nutrients into the pool water that allow microorganisms to thrive and multiply faster than pool sanitization is able to prevent. Fertilizer can reach the pool through rainwater runoff, wind, or even directly into the pool by being applied too nearby.
- **After pets or other animals have been in the pool** – Animals can introduce dirt, organic matter, and microorganisms.
- **After strong winds or dust storms** – Windy conditions can introduce dirt, organic matter, and fertilizer (even from miles away)
- **During prolonged periods of high temperatures** – High water temperatures require significantly higher amounts of sanitization.
- **When the pool filter needs cleaning** - A full dirty filter could possible contain a large amount of organic matter.

Water Flow – Error Light



This error light typically indicates the Flow Sensor is not being triggered by water flow. This error light causes the Cell to stop generating chlorine.

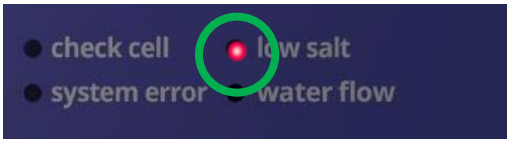
Troubleshooting:

- Verify that there is a proper cable connection between the Control Module and Flow Sensor
- Verify that the pump is on and running.
- Verify that you have proper water flow without a pocket of air in the Cell housing.
- Verify that water flow is sufficient to fully press the Flow Sensor paddle away from its resting center position. In case you have a variable speed pump, increase flow until the LED turns off.

Additional Troubleshooting (turn off pump and salt system)**:**

- Unscrew the Flow Sensor from the PVC tee-fitting. Make sure the paddle moves back and forth correctly. Does the paddle move smoothly when pressed or is it stuck? Does it have proper tension to allow the paddle to snap back on its own to the default position? If stuck, damaged, or if it lacks tension, **replace Flow Sensor**. If not, reinstall Flow Sensor into PVC tee-fitting, being sure that the Flow Sensor points in the proper direction once screwed in.
- **For further troubleshooting**, you will need a small metal wire, paper clip, or other similar object to serve as a "jumper" to complete the circuit.
    - Disconnect the Flow Sensor cable connection to the Control Module
    - Put small jumper wire in the female connector pin holes on the Control Module's cable. Make sure the wire is securely in both sides of the female connections in order to complete the circuit.
    - Turn on pump and salt system to see if the "Water Flow" LED stays off.
        - If the "Water Flow" LED remains off, **replace Flow Sensor**.
        - If the "Water Flow" LED remains on, **replace the Control Module**.

Low Salt (Solid or Flashing) – Error Light

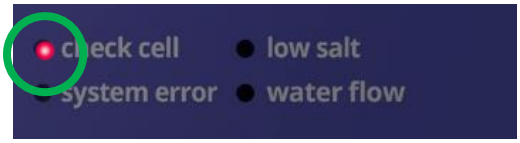


When this LED is illuminated, salt may need to be added to the pool.

Troubleshooting:

- The pool's salinity level may be getting low. Independently measure salt level and adjust to 3500-4000ppm if needed.
- If the salinity level independently tests in range, the cell may be accumulating mineral scaling or other debris that needs to be removed. Clean the cell according to the instructions on page 6.
- If the salt level is ideal and the cell has been thoroughly cleaned multiple times in a row, the cell plates may be partially depleted and the cell is coming near to the end of its useable lifespan.
- **Additional Troubleshooting**: The Control Module is programmed to match the size of the Cell model. If a different size Cell has been put on or if this setting may have been unintentionally changed, follow the Reprogramming instructions.

Check Cell (Solid) – Error Light

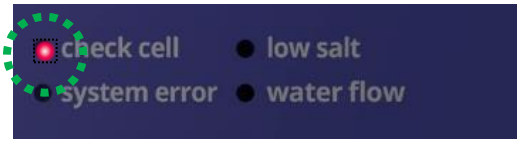


When this LED is illuminated, the cell may need to be cleaned.

Troubleshooting:

- Double check the pool's salinity level. Independently measure salt level and adjust to 3500-4000ppm if needed.
- If the salinity level independently tests in range, the cell needs to be cleaned to remove mineral scaling or other debris. Clean the cell according to the instructions on page 6. Inspect the cell after cleaning to make sure nothing is stuck between the plates. Sometimes multiple cleanings in a row are required; mix a new batch of cleaning solution and let it soak inside the cell. If "fizzing" still occurs, repeat the cleaning process with new solution each time until fizzing no longer occurs when new solution has been added to the cell.
- If the salt level is ideal and the cell has been thoroughly cleaned multiple times in a row, the cell plates may be depleted or damaged and the cell has reached the end of its useable lifespan. If damaged, inspect the cell for plates that are damaged, deteriorated, pitted or physically worn. If so, this indicates corrosive water chemistry (low LSI) that needs to be prevented through regularly ensuring proper water balance.
- **Additional Troubleshooting**:
    - Is the pool losing prime and/or is low-speed pump operation causing air to accumulate in the Cell?
    - Has the salt system been run without any pump operation? If the cell has a white milky coating and is no longer clear, the Flow Sensor should also be checked for failure.
    - Has a new Cell been installed after replacing a depleted Cell? Allow the system to run for at least 45 minutes and the "check cell" LED should go off.

Check Cell (Flashing) – Error Light



This LED may flash when the cell is nearing the end of its lifepsan.

Troubleshooting:

No troubleshooting is required. The Cell can continue to be used until a solid warnling light occurs, but enough operation has occurred that you should consider purchasing a replacement cell. The flashing LED light can be cleared by following the follow the Reprogramming instructions on page 7.

No Power on Display – Non-functional Control Module

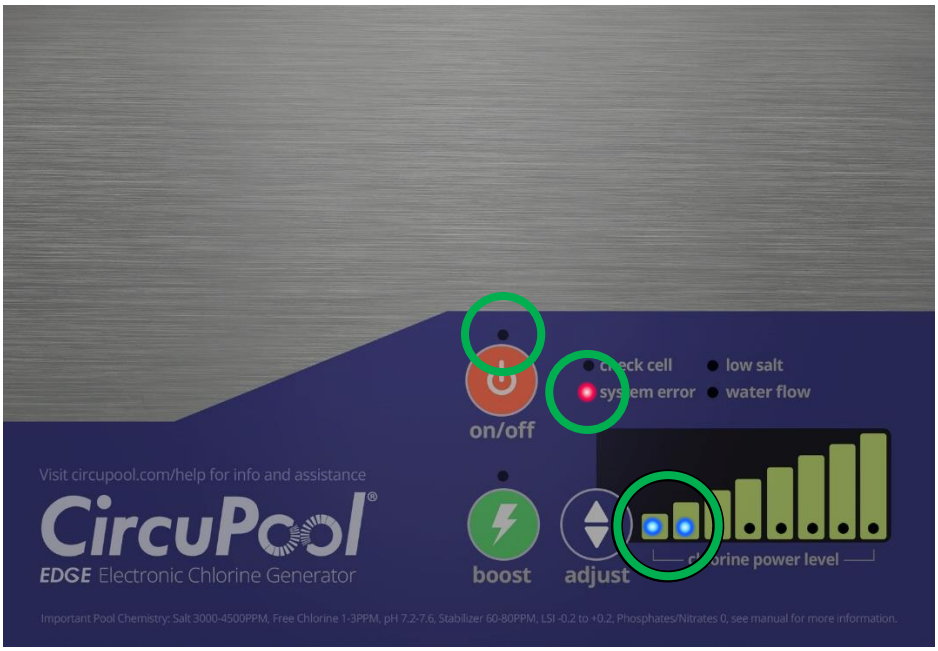
Is the pump running? Are all breakers on? Have you verified power going into the unit? If these things are confirmed and the system is not powering on or reacting, **the Control Module must be replaced**.

How to Diagnose System Error Codes

When the System Error indicator light is lit, perform the following diagnostic to identify the System Error code. The System Error light MUST BE ILLUMINATED before testing.

If the SYSTEM ERROR LED is lit:

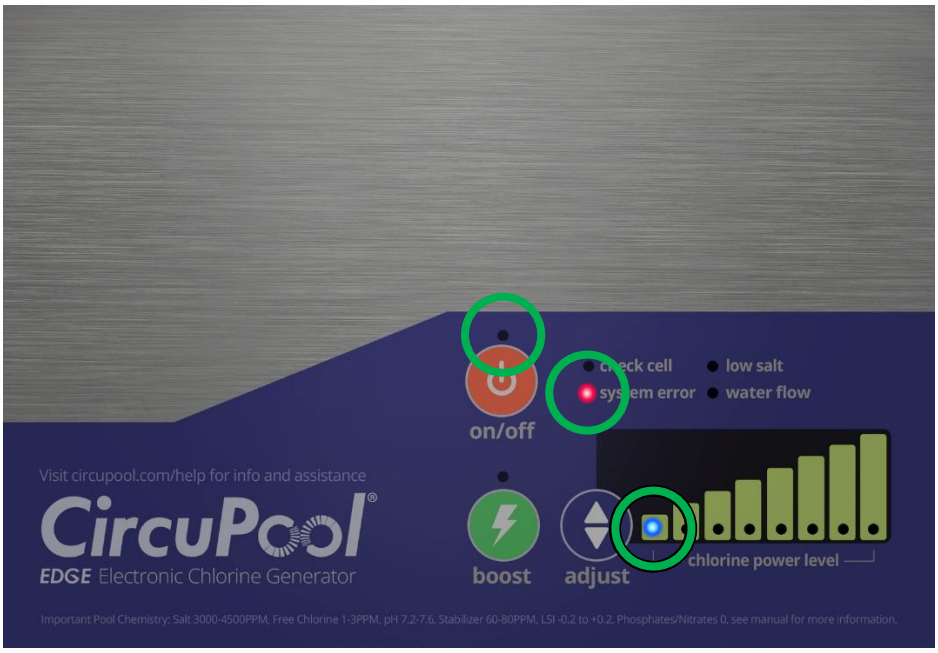
1. If unit is currently ON (if the LED above on/off is lit), tap the on/off button once to turn it OFF.
2. The unit will go OFF, but the System Error light will remain ON. To get the Error Code, count the number of LED lights that are lit on the "chlorine power level" graph (anywhere from 1 to 7 will be lit).
3. This count is the System Error Code currently indicated. Proceed to the corresponding section for that System Error code. In the example below, System Error code 2 is shown.



Example of System Error Code 2 - the unit is OFF (no LED above on/off), the system error LED is lit, and 2 power LED's are lit.

Note: Some critical System Errors (2, 4, 5, 6, 7) may result in automatic shut-down of the Control Module. In these cases, the ON/OFF indicator will already be off with the System Error light on, and the corresponding number of LED lights will already be shown on the power graph. If the Control Module is turned back on, it will continue to shut off and return to the System Error state, showing the number of LED lights that correspond with the specific error code.

System Error 1 – No/Low Salt, Cell Scaling, Air, or Connection Problem



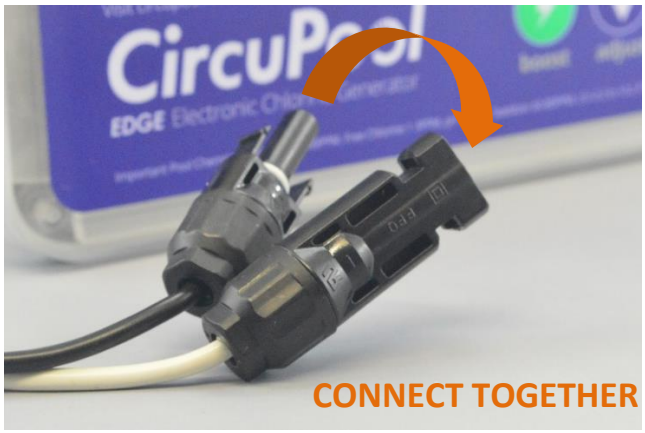
If a System Error 1 is illuminated, it is critical to check and fix these 5 issues before proceeding.
The following issues will commonly cause this error.

- Check the pool's salt level and adjust to minimum 3500ppm if necessary.
- Confirm cell is fully clean & free of scale & debris between plates. Clean again if necessary.
- Check for air getting pulled into the cell causing large bubbles during operation.
- Check if cell plates are damaged, deteriorated, pitted or physically worn. If so, this indicates corrosive water chemistry (low LSI, preventable) and the cell must be replaced.
- Check all cable connections and clean if necessary, to remove any corrosion or debris.

If none of the above resolve the System Error 1, proceed with the additional troubleshooting on the next page to determine what the source of the issue is.

System Error 1 (CONTINUED) – Sub-Error Codes

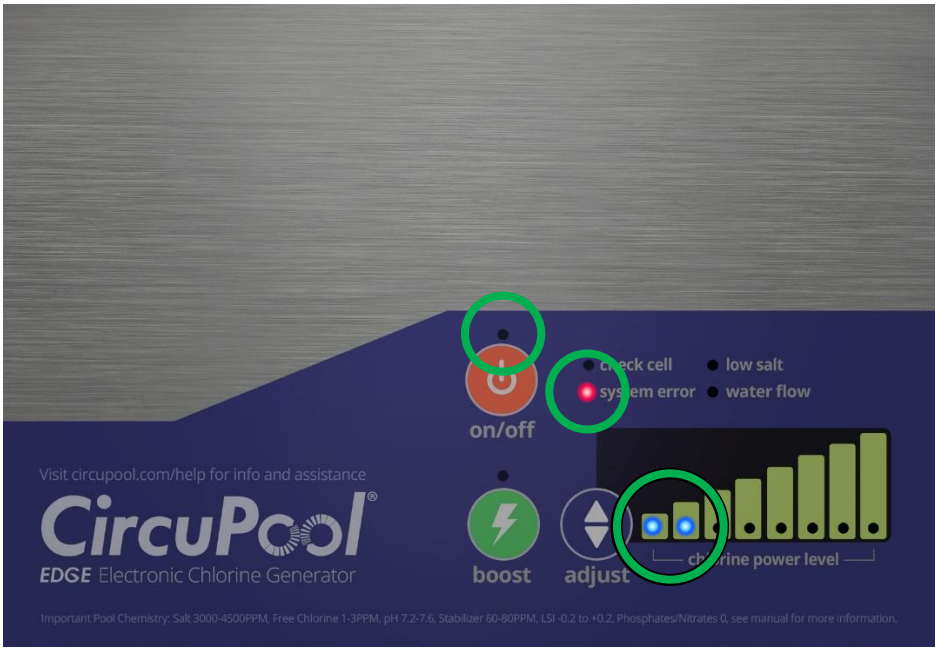
1. Disconnect the Control Module's cable connectors from the cell, and then connect the Control Module cable's white and black connectors together (bypassing the cell and connecting the cable to itself, as shown). Leave the cell's short connectors disconnected.



IMPORTANT: the next step will determine the second part of the System Error 1 code. Once determined, power the Control Module back off as soon as possible and disconnect the above cable connection. **Do not leave the connections to power supply together for too long, as it could damage the internal power supply**.

2. Turn back on pump and the EDGE Control Module. WAIT 45 SECONDS. The System Error indicator light should come on within a few moments.
   - If all lights flash on the Control Module and it reboots, the electronics are functional and the Cell needs replacement.
   - If the Control Module does not flash all lights and goes directly to System Error, there is an issue with the electronics and the Control Module must be replaced.
3. **Once this is determined, remove power immediately and disconnect the Control Module's cable connectors from each other in order to prevent damage to the unit.** To protect all of the connections until the replacement part arrives, connect the Cell and Control Module back together as normal.

System Error 2 – Over-Current or Debris



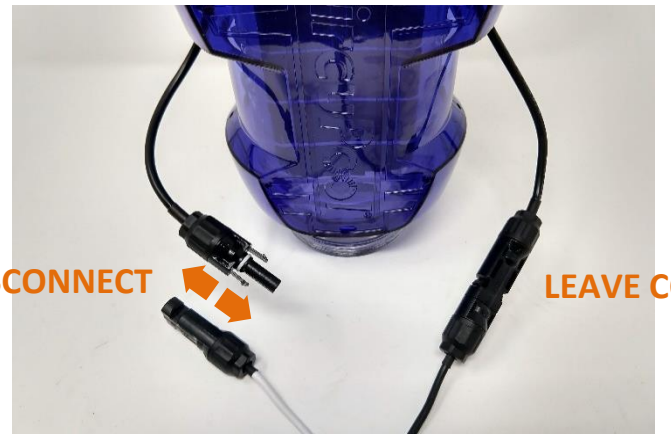
If a System Error 2 is illuminated, it is critical to check and fix these issues before proceeding.
Turn off pump and salt system. The following issues will commonly cause this error.

- Check cell for any debris or foreign object that may be lodged between plates. Use a high pressure garden hose to get it out, do not stick anything between plates. If mineral scale is present, clean the cell according to the instructions in the manual.
- Check if cell plates are damaged, deteriorated, pitted or physically worn. If so, this indicates corrosive water chemistry (low LSI, preventable) and the cell must be replaced.
- Check all cable connections and clean if necessary to remove any corrosion or debris.

If none of the above resolve the System Error 2, proceed with the additional troubleshooting on the next page to determine the second numerical sub-error code for this issue. (Example: System Error 2.1, System Error 2.2)

System Error 2 (CONTINUED) – Sub-Error Codes

1. Disconnect one end of the Control Module's cable connectors from the cell.



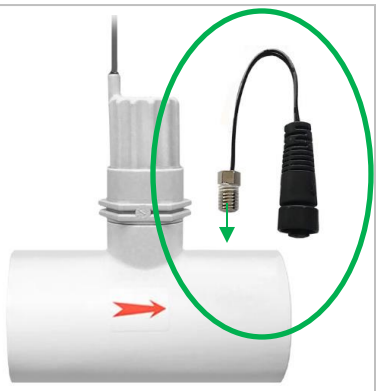
IMPORTANT: the next step will determine the second part of the System Error 2 code. Once determined, power the Control Module back off as soon as possible and restore the normal cable connection. **Do not leave the connections connected to only one side and powered for too long, as it could damage the internal power supply**.

2. Turn back on pump and the EDGE Control Module. The System Error indicator light should come on within a few moments. Once the System Error light is back on, take note of the number of LED indicators lit on the power graph. This corresponds to the System Error 2 sub code.

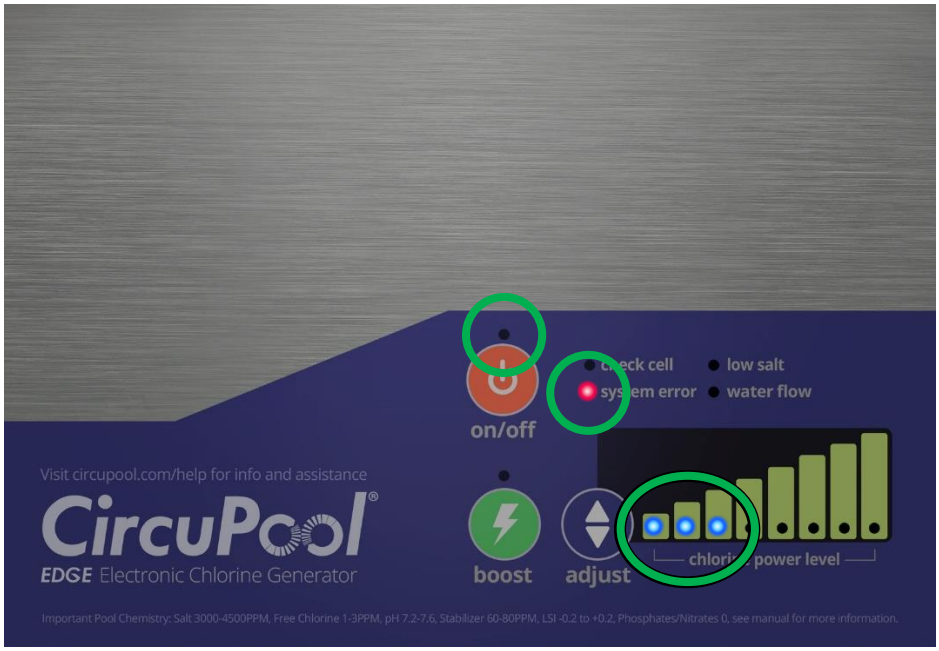
   - If one power graph LED is lit (System Error 2.1), the electronics are functional and the Cell needs replacement.
   - If two power graph LED's are lit (System Error 2.2), the Control Module must be replaced.

3. **Once this is determined, remove power immediately in order to prevent damage to the unit.** To protect all of the connections until the replacement part arrives, connect the Cell and Control Module back together as normal.

System Error 3 – Temperature Sensor Connections



The Temperature Sensor is located on the tee-fitting of the Flow Sensor; it is the silver nut screwed into the body of the fitting.



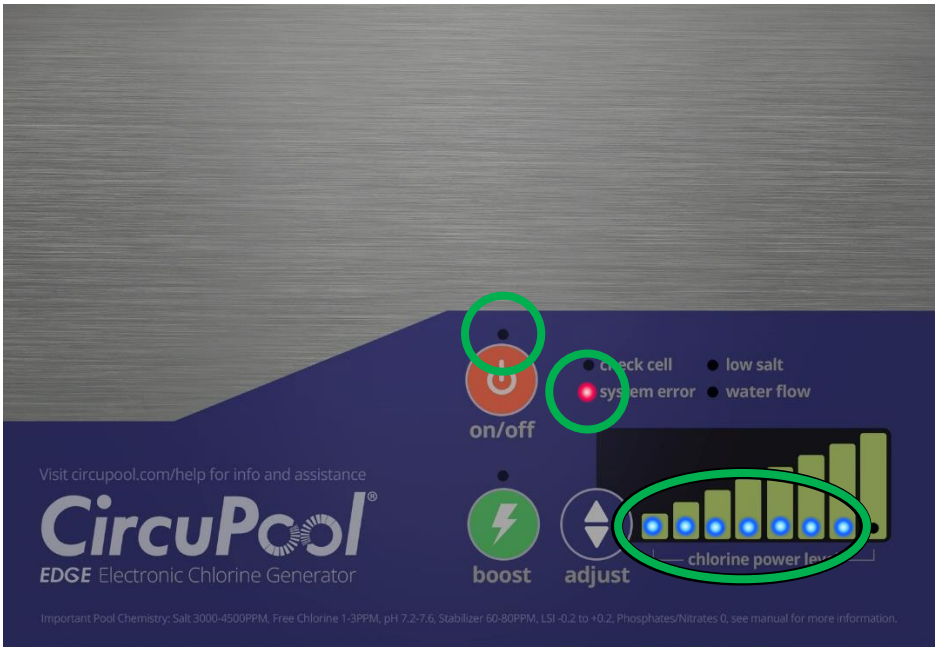
If a System Error 3 is illuminated, check and fix these issues before proceeding which will commonly cause this error.

- Check Temperature Sensor connection to make sure the wire is not broken or loose, and that cable connections are free of corrosion; wipe clean if necessary.

If there is no visible damage to the Temperature Sensor or cable connection, proceed with additional troubleshooting. You will need a small metal wire, paper clip, or other similar object to serve as a "jumper" to complete the circuit:

1. Disconnect the Temperature Sensor cable connection.
2. Tap the "Adjust" button on the Control Module until all 8 LED's are on.
3. Wait about 45 seconds to allow the system to ramp up internally.
4. Press and hold the "Boost" button for about 3 seconds until the "water flow" light comes on.
5. Tap the "Adjust" button twice to get the "check cell" light.
6. At this point there should be 7 LED's on the power graph.
7. Touch the ends of your jumper to the male prongs on the Temp Sensor connector.
8. With the jumper securely touching both prongs, count the power graph LED's:
   - If 8 LED's show, the Temp Sensor itself is bad and needs replacement.
   - If only 7 LED's still show, there is electronics damage and the Control Module needs replacement.

System Error 4, 5, 6, 7 – Critical Faults



If a System Error 4-7 is illuminated, critical electronic damage has occurred, and the Control Module must be replaced.

Quick Reference

See previous sections for more detailed explanations to common scenarios, diagnostic readings, and warning lights.

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 Boost 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 2 are within range.
	Cell is dirty, clogged, or has excessive scaling or mineral build-up	Remove Cell from plumbing, inspect and clean (see page 6).
	Flow Sensor not triggered, or excessive bubbles / air in cell	Inspect Flow Sensor, verify sufficient water flow
	Inactive unit, power is off	Turn on system, or see “No Power”
Low or no Chlorine residual after new installation	Water chemistry was not balanced prior to system installation.	Contact pool professional, ensure all chemicals on page 2 are within range, chemically shock pool if necessary. Run system at 100% output.
	System hasn’t been running, or has been set to run at insufficient levels	Raise system to 100% output and run continuously to achieve sufficient chlorination. Double check all connections, verify system runs in sync with circulation pump.
No Power	System is turned off	Turn system on, verify circulation pump is active
	Problem with input power, or configuration of system wiring	Check house circuit breaker. Have a professional test input power & ensure correct wiring configuration & connections.
	Reset has tripped	Allow one hour to cool.
	Other malfunction in unit	Contact customer support
Check Cell LED is on, or Low Salt LED is on	It is time to clean the Electrolytic Cell.	The Cell must be cleaned (see page 12 for instructions).
	Salinity is out of range	Verify salinity (see page 2).
	Cell efficiency has been greatly reduced	Inadequate water flow exists, or Cell is damaged/worn and must be replaced.
	Incorrect Cell Version set	Verify Cell Version in system menu

⚠ **WARNING:** Always make sure that input power is completely disconnected before attempting service or troubleshooting procedures. All troubleshooting procedures should be done by a qualified professional.
☑ **IMPORTANT:** Remember that your pool is compatible with chlorine and shock as normal. If your pool is experiencing temporary loss of chlorine or other difficulties, add sanitizer as needed to maintain the pool.

Check Cell LED is flashing	Notice that Cell may be near end of lifespan	Reset indicator, see page 7.
Water Flow LED is on	Pump is off	Verify that pump is set to run with salt system.
	Flow Sensor is not connected to Controls	Check cable connector
	Flow Sensor is not facing correct direction	Ensure red arrow on Flow Sensor points with the correct direction of water flow in return plumbing
	Air in plumbing	Ensure that there is not a pocket of air in the Cell or Flow Sensor
	Insufficient pump RPM's	Set variable speed pump RPM's higher in order trigger Flow Sensor and keep the Cell completely filled with water.
	Incorrect Installation	Verify correct orientation, cable is plugged in, 6-12" of straight pipe before Flow Switch
	Flow Sensor is damaged	See page 11.
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.
System Error LED is on	Ongoing standard issue, see previous sections	Verify 3500ppm salt, clean cell, no air in cell during operation, no debris or damage in cell.
	Incorrect wiring	Have professional check wiring.
	Loose, dirty, or damaged system cables	Check system's connectors are properly seated
	Internal system error	See page 14 to identify error.
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 5)
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 5)