



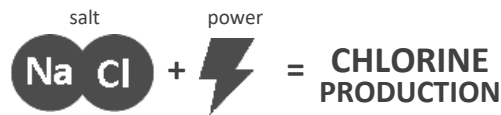
Before proceeding, it is **important** to understand when measuring pool chlorine that **you are detecting the “leftover” amount** in the water, and that measuring a lack of chlorine **does not necessarily mean that your salt system is not working**.

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 be 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:

- **Ensuring Power in the Cell when no Warning Lights are on**
 1. Turn unit off with main power switch on lower right, then turn unit back on.
 2. Use “+” to turn on “**boost**” mode (if not already there). Wait 1-2 minutes. Ensure that no warning lights activate.
 3. Does the “**flow**” led light remain solid green? If yes, the system is allowing power to flow to the Cell.
 4. Does the “**generate**” led light remain solid green? If yes, the system is detecting & confirming that it is successfully able to send constant power to the Cell. (Reminder: this light goes on and off throughout the day during normal operation according to its duty cycle).
 5. Does the “**boost**” led light remain solid green? If yes, the system is detecting & confirming it is sending the full amount of power through the Cell.

- **If you answered “Yes” to all of these questions, you have successfully verified full and normal power.** This means:

- **The system is fully operational and creating chlorine normally.** Salt present in the water at proper levels and proper power flowing through the Cell causes full & normal chlorine generation.
 - If a low chlorine level persists after continued operation, this indicates an issue in the water causing “high chlorine demand”. **See the next pages** to troubleshoot common causes of high chlorine demand.

- If you answered “No” to any of these questions, then there is an issue preventing proper flow of power to the Cell. See Troubleshooting Guide (page 9).

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
➔	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 (<u>0 best</u>)
➔	Nitrates	0 to 10 ppm (<u>0 best</u>)
	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.