APX PERFORMANCE

E-CHLOR Plug-In Electronic Chlorine Generator

USER GUIDE

APX-ECHLOR-32-0301 35805073 V202412

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IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS. All electrical work must be performed by a licensed electrician and conform to all national, state, and local codes. Improper use or installation can badly harm the unit and its surroundings. When installing and using electrical equipment, basic safety precautions should always be followed, including the following:

- **DANGER** Disconnect all AC power before installation.
- Device can be connected / disconnected to / from power supply by plug or circuit breaker.
- **WARNING** – to reduce the risk of injury, do not permit children to use this product, unless they are closely supervised at all times.
- Unit must be mounted at a minimum horizontal distance of 5 ft (or more, if local codes require so) from the inside walls of the swimming pool.
- **WARNING – risk of electric shock!** Connect only to a grounding type circuit protected by a ground-fault circuit-interrupter (GFCI) outlet. The installer should provide this GFCI requirement. The GFCI should be rated for minimum 6 Amps and tested on a regular basis by pushing the test button. If the GFCI fails to operate correctly, there is ground current flowing indicating the possibility of electric shock. Do not use this unit. Disconnect unit and have a qualified professional fix the problem before operating again.
- **DANGER - Risk of electric shock!** Install at least 5 feet from all metal surfaces. As an alternative, this unit may be installed within 5 feet of metal surfaces, if each metal surface is permanently connected by a minimum No. 8 AWG solid copper conductor to the wire connector on the terminal box that is provided for this purpose.
- **WARNING!** To reduce the risk of electric shock, DO NOT turn on or operate the unit if the cell housing is damaged or improperly assembled!
- **WARNING!** To reduce the risk of electric shock, replace a damaged cord immediately. **WARNING - RISK OF ELECTRIC SHOCK!**
- **WARNING!** To reduce the risk of electric shock, do not use an extension cord to connect the unit to electric power supply; provide a properly located outlet. Do not bury cord!
- Wiring of the unit must be performed according to the wiring instructions detailed in this manual.
- Ensure that equipment and materials used in or around the pool and spa are compatible with salt-based sanitation systems. Certain materials may be susceptible to salt and chlorine damage.
- If acid is stored in the machine room, make sure it is properly vented to avoid damage from acid vapors.
- Under no circumstances should the machine room be used to store equipment, furniture, sports gear or any other apparatus that is not related to the pool including spare acid containers. The machine room must be aired and vented prior to working in it.
- Device is suitable for IP66 environment conditions.
- Device is suitable for voltage range of 100-240Vac, 50-60Hzm current rating 4A.
- Device should be installed at maximum operating temperature of 40°C, Pollution Degree 2, Installation Category 2, Altitude up to 2000m, Indoor/Outdoor, Wet locations
- SAVE THESE INSTRUCTIONS.

APX E-CHLOR

Swimming Pool Chlorine Generator | Model: APX-ECHLOR-32-0301

Thank you for choosing a high-performance E-CHLOR Chlorine Generator. APX PERFROMANCE pool equipment offers pool owners effective and economical options for their swimming pool and pool equipment system. The **E-CHLOR** is an electronic salt chlorine generator which uses a very low level of salt in the pool water to continuously create free chlorine, killing bacteria and algae in the water. The **E-CHLOR** should be set so that enough chlorine is generated in order to disinfect the pool water every day; this is achieved when the free chlorine level in the pool is maintained between 1 – 3 ppm.

Please take a moment to read through the entire manual before installing your new unit. To ensure consistent, safe, and reliable operation, the pool and equipment must be installed, operated, and maintained as specified. Most issues are easily avoidable with correct maintenance.

Before installation or operation, please take the time to make sure you understand the entire manual. Double check that you have all required components and any tools that may be necessary. This manual contains instructions to help ensure that this product's configuration and use meets the recommended standards and is operated correctly.

As with any electrical or mechanical 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. Improper installation may void the warranty and create unnecessary hazards. Please choose an installer or service person with care.

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!

WATER CHEMISTRY & SALT LEVELS

CHEMISTRY NOTICE

It is important that the pool's water chemistry is balanced before the **E-CHLOR** is powered on and used. In order for the system to be able to generate chlorine, there must be a minimum level of salt in the pool water. It is important to maintain these chemistry levels in order to ensure that the pool can be enjoyed safely, to **prevent excessive chlorine demand** (and minimize the amount of effort required to sanitize the water), and to prevent corrosion or scaling. 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.

IDEAL WATER CHEMISTRY LEVELS

Free Chlorine	1-3 ppm
Combined Chlorine	0
PH	7.2-7.8 (7.5 target)
Calcium Hardness	>300 (depending on LSI)
Total Alkalinity	60-90 ppm
Salt Level	3000-4500 ppm (3500 target)
Cyanuric Acid	30-50 ppm
Phosphates / Nitrates	None
Saturation Index (LSI)	-0.2 to +0.2 (0 target)
Metals	None
TDS	<1000

PREPARING THE POOL WATER

It is important that the pool's water chemistry is balanced before the **E-CHLOR** 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 Required” on page 6. In order to achieve normal pool operation, water chemistry needs to be balanced according to the national standards listed under "Ideal Water Chemistry Levels" above.

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.

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

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

If pool has not been in operation prior to installation: If a pool has not been in operation or attended to (ex: due to winter or lack of use), it is especially important to remove any algae / organic debris and balance all water chemistry levels as a first step. While the unit may be used to generate chlorine as long as there is a sufficient salinity level, the excessive sanitation demand otherwise may be higher than the unit’s chlorine generation alone is able to compensate for (growth rate of microorganisms may exceed kill rate of chlorination). Additional chemical sanitation or “shocking” may be required during this startup period.

SALT LEVELS REQUIRED

What kind of salt?

It is important to use only 99% pure sodium chloride (NaCl). Pool salt is commonly found at hardware stores, as well as water softener salt; do not however use rock salt, salt containing more than 1% Sodium Ferrocyanide / Yellow Prussiate of Soda or anti-caking additive, or iodized salt. Salt pellets or granules can be used; smaller grains dissolve faster.

How Much Salt to Use?

Use the table below to determine how much salt is needed. Pool owners must always test the salt level independently before adding salt: most pools contain some salt, depending on the water source and the chemicals used to disinfect it. A target salt level of 3500 ppm is recommended for optimal water quality.

IMPORTANT: Before adding salt at any time, ALWAYS perform an independent water test to measure pre-existing salt levels. When adding large quantities of salt, add in portions, retesting at each stage.

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

Note: Salt measurement values will vary depending on the measuring device (salt test strips, electronic testers and titrators). Readings between test sources can be within +/- 300 ppm.

Unsure of your pool size? Determine the size of the pool (gallons of water in the pool)

Rectangular Pools	Length x width x average depth x 7.5
Round Pools	Diameter x diameter x average depth x 5.9
Oval Pools	Length x width x average depth x 6.7
Angled walls	Multiply total gallons by 0.85 (estimated)

HOW TO ADD OR REMOVE SALT

It is best to add salt in the shallow portion of the pool or in an area with the most circulation, moving around as salt is added to help disperse and distribute the salt so as to prevent it being piled up at the bottom of the pool. Brushing the salt can help it dissolve quickly, though it is not necessary. Keep your pump and filter running until all salt has dissolved; this can take 24 - 48 hours on average.

Do not add salt directly to skimmers or to the main drain. This can shorten the life of the cell due to high salt concentration and reduced pump flow.

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. Excessive rain can dilute the pool's salinity. Salt is not lost due to evaporation.

WATER CHEMISTRY RECOMMENDATIONS

Chlorine Stabilizer (Cyanuric Acid)
This is needed in outdoor pools to help stabilize and maintain proper levels of chlorine. Within two hours, UV rays from the sun will destroy 90% of the unstable chlorine. Cyanuric acid stabilizes the chlorine in the water and prevents UV degradation. Excessive levels, however, can significantly weaken the disinfection performance of chlorine and so should be maintained at the minimum required levels. It should not be used in indoor pools.

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.

SYSTEM OVERVIEW

The E-CHLOR chlorine generator consists of an electronic controller mounted on top of a cell body. Inside is the salt cell with a flow switch/sensor, and threaded connections are included which allow the unit to be easily attached to plumbing unions.

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.

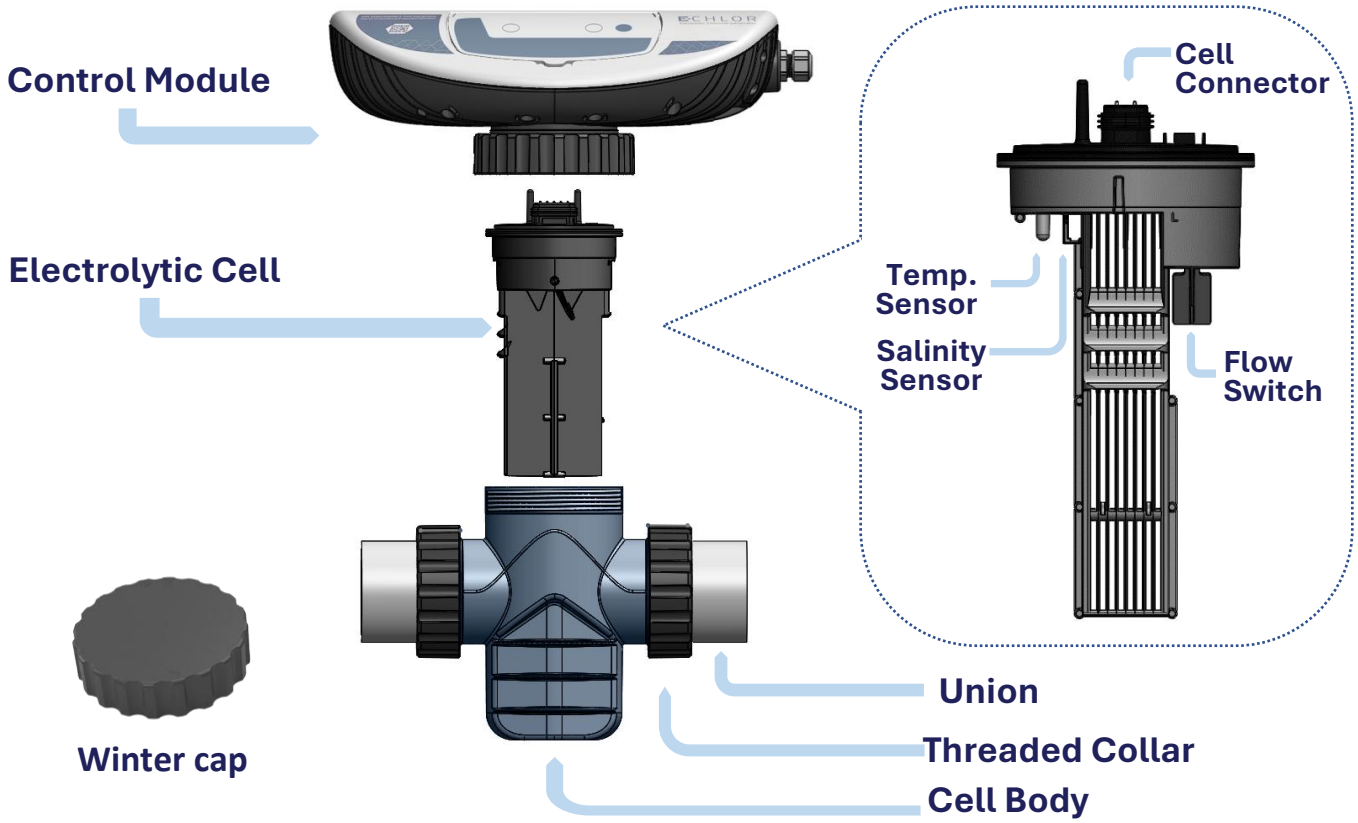
Electrolytic Cell: This component creates chlorine as the water inside passes through and returns to the pool. The Electrolytic Cell ("Cell") contains a bipolar set of titanium plates that use a low level of DC electrical power to generate chlorine from salt in the water.

Salinity / Flow / Temperature Sensor: These components ensure that there is adequate salinity & water flow for the Cell to activate, and monitor the temperature in order to protect the cell.

Cell Body: This component houses the Electrolytic Cell as water passes through inside.

Unions / Threaded Collars: These components allow the Cell Body to connect to the pool's PVC return plumbing.

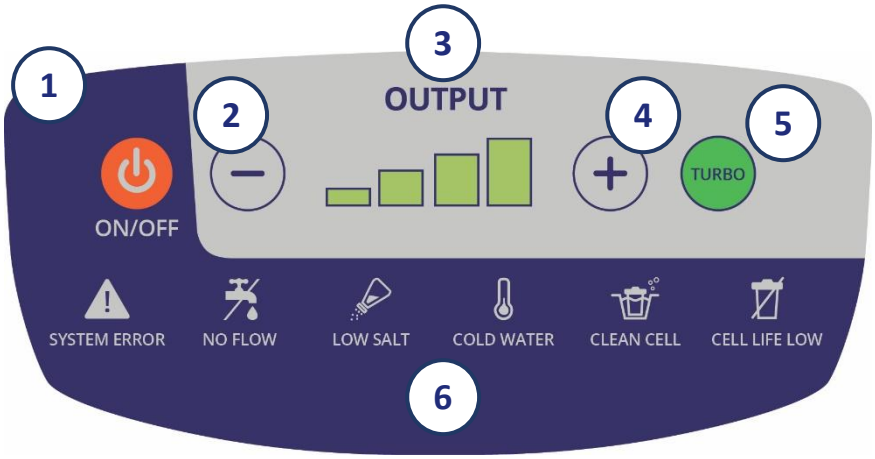
Winter Cap: makes the winterizing or maintenance quick and convenient if you ever need to remove your salt chlorine generator cell but keep your plumbing sealed. Includes cap nut and o-ring to seal the top of the clear cell housing after removing the electrolytic cell.



Additional Items Required (Not Included)

PVC Cement, PVC Primer, Hacksaw or Pipe Cutters, Screwdrivers, Permanent Marker

CONTROLS + LED INDICATORS



1) **ON/OFF**: Use this button to manually activate / deactivate the system on or off.

2) **Decrease Chlorine Output**: Use the ⊖ button to lower the system's power setting (the rate of chlorine production), in order to customize operation for your pool's needs.

3) **Chlorine Output Level**: Displays the system's chlorine output level (22.5%, 45%, 67.5%, 90%) that you have chosen. The system gradually adjusts its chlorine production. A blinking light indicates the system is making adjustments, a solid light indicates steady operation.

4) **Increase Chlorine Output**: Use the ⊕ button to raise the system's power setting (the rate of chlorine production), in order to customize operation for your pool's needs.

5) **Turbo:** Press TURBO to boost Chlorine Output to maximum power of 100%. Each press sets Turbo as follows:

Single press: 100% power for 24 hours, then returns to previous setting – Turbo LED blinks slowly

Two button presses: 100% power for 72 hours, then returns to previous setting – Turbo LED pulses on/off

Three button presses: 100% power continuously – Turbo LED lights solid

(A fourth button press will turn Turbo mode OFF)

6) **System Messages**: These LED lights display important information about the operations of your system.

- **NO FLOW**: When this LED is illuminated, the system has detected an insufficient amount of water in the Cell. This causes the Cell to stop generating chlorine. Verify that you have proper water flow without air bubbles in the Cell housing, and verify that water flow is fully pressing the flow switch away from its resting center position. In case you have a variable speed pump, increase flow until the LED turns off.

- **LOW SALT:** When this LED is illuminated, salt may need to be added to the pool. First, inspect the Cell for mineral scaling and clean if necessary. If this does not solve the problem, manually check the salinity of the pool water and add salt according to the table on page 7.

- **COLD WATER / WINTER MODE**: To protect the Cell, the Control Module is programmed to automatically decrease chlorine production when it senses low temperatures. In case of low water temperature below 68°F the unit reduces chlorine production to 45% and the LED below the 45% bar

will be lit. Below 59°F the unit reduces chlorine production to 22.5% and the LED below the 22.5% bar will be lit. In both cases, the LED below the required level bar will be blinking and the "Cold Water" warning LED will be illuminated.

- **CLEAN CELL:** When this LED is illuminated, it indicates that the Cell requires cleaning. Refer to page 12 of this manual to see how to clean the blades of the Cell.

- **CELL LIFE LOW:** The E-CHLOR tracks how much usage the cell receives. To help make sure you are prepared with a replacement cell, this LED is illuminated during the later stages of the Cell's expected lifespan. This light **does not** mean that the system is non-operational. Allow your system to run and continue generate chlorine as needed (so as to get the most out of the cell's possible lifespan) until the required setpoint can't be reached or other lights indicate that the system is experiencing an error and is unable to generate chlorine at all. Replacement cells are readily available for purchase from a local dealer or at www.apxpool.com

- **SYSTEM ERROR:** This LED is illuminated when the system is not able to produce chlorine. Please refer to the "Troubleshooting" section on page 18.

OPERATION

Before starting the system for the first time, 1) ensure that the pool water is chemically balanced according to pages 5-7, and 2) ensure that all installation items are completed according to pages 14-17

Press the power button on the **E-CHLOR** controller while the circulation pump is running. This should activate the system and within moments a green "Output" LED light should flash briefly while the system checks its status (if the pump is not running, you will see the red "No-Flow" light). Once the system is ready to operate, the green "Output" LED will be solid.

OUTPUT SETTINGS AND ADJUSTMENTS

The rate at which the E-CHLOR is generating chlorine (out of its 100% maximum capability) is displayed by the OUTPUT LEDs. To adjust the output, press the **CHLORINE OUTPUT UP (+)** or **CHLORINE OUTPUT DOWN (-)** button. Please note that when you adjust the chlorine output, the system will perform diagnostics for that ensures the system reaches the desired chlorine output setpoint; you may see flashing LEDs during this time.

MAKING ADJUSTMENTS AT START-UP

After the E-CHLOR has been added to the pool system and is operational, take note of what the current Free Chlorine level is in the water, allow the system to operate at 75% output according to the normal daily pool system schedule for 24 hours, and then re-check the Free Chlorine level. If the Free Chlorine level has decreased and is too low, increase the E-CHLOR's output setting; if the Free Chlorine level is too high, decrease the E-CHLOR's output setting. This process usually needs to be performed a number of times within the first week of operation to find your pool's currently ideal output setting. After this, typically only seasonal adjustments are needed; after periods of heavy use or bad weather, consider using the E-CHLOR's turbo mode to temporarily boost chlorine output in order to compensate for periods of temporarily higher chlorine demand.

Note: this assumes typical run times and that the chlorine generator has been properly sized for the pool. If you have long pool system run times (more than 12 hours) or an over-sized chlorine generator then you may need to decrease the chlorine output, and vice versa. Every pool has a unique chlorine demand (which can change over time), so it is expected that you'll need to tailor the E-CHLOR's output as needed.

MAINTENANCE

After your E-CHLOR has been put in to use, the following items should be attended to in order to ensure proper operation and longevity of your cell.

Continue to monitor your pool's water chemistry balance as normal. Frequent testing is still important in order to proactively address potential issues. However, a properly used chlorine generator system should allow consistent and predictable Free Chlorine levels. **Regular testing allows you to know when to adjust the output level of the E-CHLOR**, should Free Chlorine levels get too high or too low.

- Note: the chlorine generator system is not monitoring and controlling either your Free Chlorine level or any other water chemical levels.

WATER BALANCE

All water chemistry levels are critical to maintain, but with regards to the E-CHLOR, the following are relevant for the system's maintenance.

Free Chlorine Level
Your responsibility as the owner of a chlorine generator system is to monitor the resulting Free Chlorine level in the swimming pool, and to keep the system set to an output level that matches chlorine demand of the water so as to keep a 1 – 3 ppm residual level in the water.
You should expect to make seasonal adjustments to the output setting to correspond to rising or falling temperatures. Low temperatures require less chlorination, warm temperatures require more chlorination.
You should expect to make adjustments after events such as bad weather or heavy pool usage. These events can require more chlorination to compensate for more impurities being introduced to the pool. If the need is temporary, the turbo mode can be activated to provide maximum chlorine output for 24 hours, after which the system will revert to its previous output setting.

Salinity
Salt in the water is not consumed during the chlorine generation process and does not need regular replenishment. However, pool water gets diluted by rain as well as any type of draining and refilling (not counting evaporation). Over time it would be expected for salinity levels to slow fall. Check your pool's salinity levels as often as your other water chemistry, and especially after rainstorms.

Chlorine Demand
So that your chlorine generator does not have to work harder than necessary, and so that you avoid problematic water chemistry that allows for cloudy or green water conditions, prevent excessive chlorine demand caused by common water chemistry issues such as the presence of phosphates or nitrates in the water (0 best), low or high pH (7.5 target), or low or high chlorine stabilizer levels (typically 30-50ppm).

Saturation Index (LSI)
For your pool system as well as your chlorine generator, ensure a balanced LSI (0 target). This prevents excessive mineral scaling as well as damaging chemical erosion.

EXPECTED MAINTENANCE

The E-CHLOR is a reverse-polarity self-cleaning electrolytic cell, which actively works to counteract natural mineral scaling, and ensures that any accumulation of mineral scaling is gradual.

Like all salt chlorine generators, after the system has run for a time, your cell will likely need to be cleaned so as to remove accumulated mineral scaling. The system will notify you of this by turning on the “CLEAN CELL” light. When illuminated, follow the cleaning instructions below under "Cleaning the Electrolytic Cell".

How frequently this happens is based on your water chemistry’s Saturation Index (LSI), which can change over time; the rate of mineral scaling does not indicate that the chlorine generator is or is not operational. Frequent or heavy mineral scaling is a sign of a high LSI; this can get balanced so that cleaning is not frequently required. It is generally recommended that the cell be removed for inspection at least twice a year.

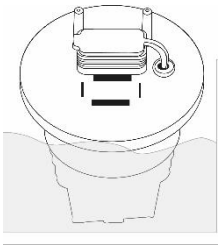
CLEANING THE ELECTROLYTIC CELL

Once substantial deposits have built up on the titanium plates in the Cell, the “CLEAN CELL” light will illuminate, and the mineral scaling must be removed. To do so, follow these steps:

Important Precautions: 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.

Caution: Do not insert anything or use metal or other hard objects to clean the cell. This will void the warranty.

Important: Ensure the electrical connector on the top of the Cell does not come in direct contact with water or acid. If this occurs, rinse immediately with freshwater, then rinse with rubbing alcohol and allow to dry thoroughly.



Before removing the Cell for cleaning or replacement:

1) Turn off all pool equipment, disconnect unit from power, close supply line valves if applicable.
2) Detach unit from the plumbing by unscrewing the Threaded Collars around the PVC unions where the Cell attaches to the return line plumbing.
3) Disconnect the Cell from the Control Module by unscrewing the Threaded Collar at the top of the clear Cell Housing. **Place the cap over the electrical connection.** Make sure the electrical connection does not get wet.
4) Remove entire Cell from the Cell Housing, then remove the O-ring from the Cell.

To clean the Cell of mineral buildup:

1) In the Cleaning Vessel, mix one part muriatic acid into ten parts water. Ensure that there is enough cleaning solution to cover the Cell blades. Be sure that Cleaning Vessel is stable so as to remain upright and prevent spilling.
2) Lower Cell into Cleaning Vessel, ensuring that cleaning solution covers Cell blades.
3) Wait for foaming to stop. Allow solution to soak for no more than fifteen minutes.
4) Properly dispose of acid solution, and use a hose to generously flush any remaining debris out of the Cell.
5) Look inside the cell to check that no debris or scaling remains. Repeat steps 2-4 if necessary.
6) Reinstall Cell and Control Module on to return line. Note: The Cell body can only fit in one direction into the Cell Housing, so be gentle and flip the other way if necessary; be sure to remove the cap from the Cell electrical connection.

Note: If mineral build-up is severe, more than one cleaning may be necessary to dissolve remaining solids. Inspect cell plates closely with a bright light after cleaning. If you see any remaining scaling, debris, or physical blockages through Cell, repeat the cleaning process as needed. If “CLEAN CELL” comes back on soon after cleaning, verify salinity and then clean cell again.

GENERAL MAINTENANCE

Winterizing

Very little chlorine is necessary at low temperatures. The E-CHLOR will not produce normal chlorine levels at cold temperatures, see “COLD WATER / WINTER MODE” on page 9. This feature extends the lifespan of the Cell.

If you “close” your pool for the winter, you can continue to follow all standard procedures for your local area. If you super-chlorinate your pool water during your area’s winterization process, allow the chlorine generator to produce as much of the chlorine as possible that your pool may need for this process.

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 APX PERFORMANCE replacement parts may be used.

How do I know when I need to replace my Cell?

After years of use, the plating on the chlorine generator’s Electrolytic Cell will finally become depleted. When the cell reaches the end of its life, it will reach the point where it can no longer pass power through the cell and chlorine generation will cease. Since power can’t pass normally through the cell at this point, a warning will also trigger on the chlorine generator (for example, “LOW SALT” or “CLEAN CELL”). First, follow all normal troubleshooting procedures outlined in this manual (see page 18). Additionally, the following checklist can help eliminate most other common possibilities so that you to be confident that the Cell needs to be replaced.

1. Ensure that the pool water's salinity is in range, using tests such as titration-based salinity test kits or else a recently-calibrated digital test.
2. Ensure that the cell is fully cleaned, and that all solids are flushed cell thoroughly with a hose-end nozzle. Additionally confirmation that the cell is fully cleaned can be achieved by cleaning the cell again until no fizzing reaction occurs when the cell is placed in newly-mixed cleaning solution.
3. Ensure that all connections and cables are fully tight, fully seated, and free of debris or damage.
4. Ensure that water is completely filling the Cell throughout daily operation, especially if the system appears to work initially bug gets daily repetitive error lights later in the day.
5. Ensure that the water is within normal operating temperatures.
6. Power the unit off and on to confirm; if the cell is depleted, and all other issues have been resolved, any warning will come on within the first 1-5 minutes or so of turning the unit on.

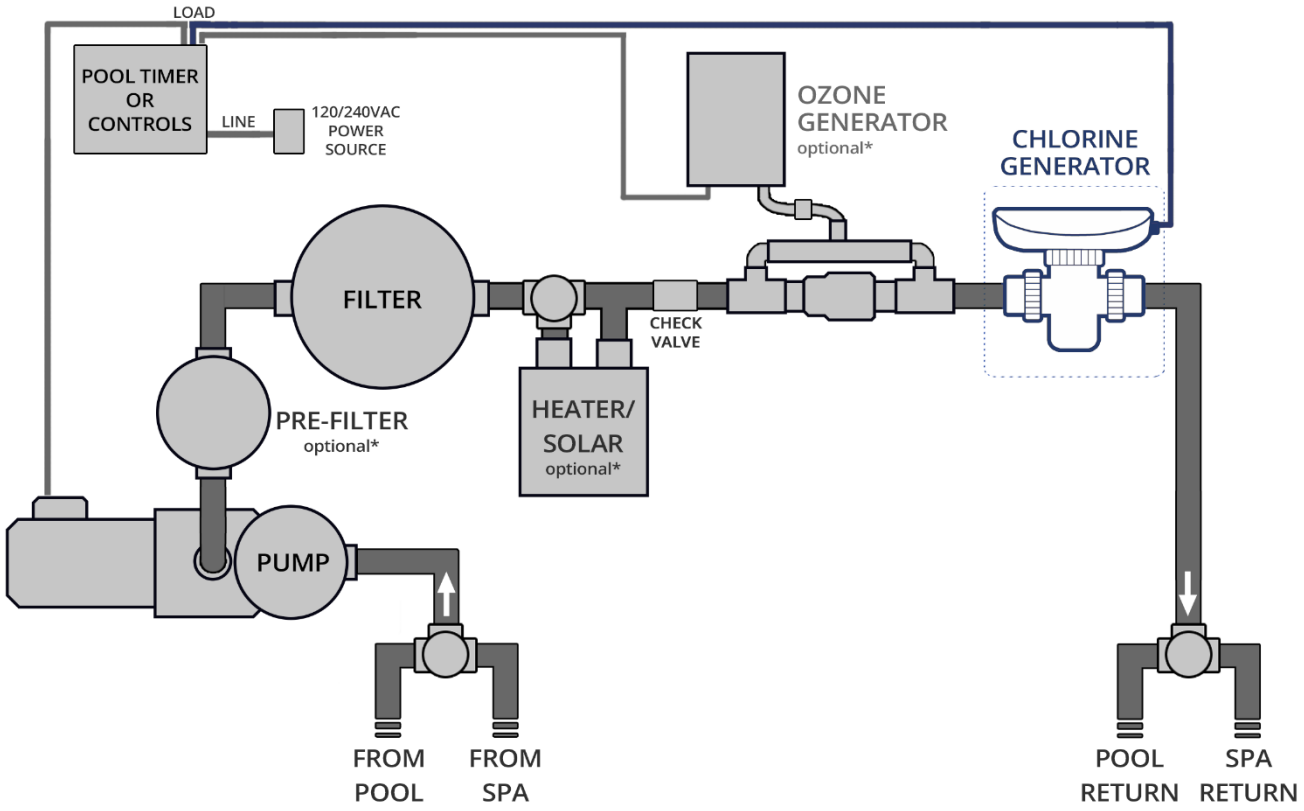
A cell that is properly sized and maintained should last many years. A cell’s lifespan is ultimately unique due to its particular usage, pool sizing, chemical maintenance, and other environmental factors. Additionally, the E-CHLOR will turn on its "Cell Life Low" light (see complete explanation on page 10) as a helpful reminder that the system has tracked enough hours of use that you may want to be prepared with another replacement cell. The cell should continue to be used until it is no longer able to generate chlorine.

INSTALLATION

IMPORTANT: If you haven't already done so, it is necessary to balance the pool's water chemistry before the **E-CHLOR** is powered on and used. See pages 5 - 7 for more information.

The following are instructions for the typical installation using 2" plumbing. If 1.5" plumbing exists, standard reducers 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.

OVERVIEW



The **E-CHLOR** consists of one assembly that incorporates all of the following: Control Module, Electrolytic Cell, Flow Switch, and Temperature Sensor.

The system must be installed on 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 system should be installed before any Tees in the return line. Be sure to install the system so that is easily accessible and serviceable. Note that the system's orientation is reversible; it can be installed with water flow passing through it in either direction. **IMPORTANT**: Do not block the vents of the unit, located on the rear of the Control Module case.

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

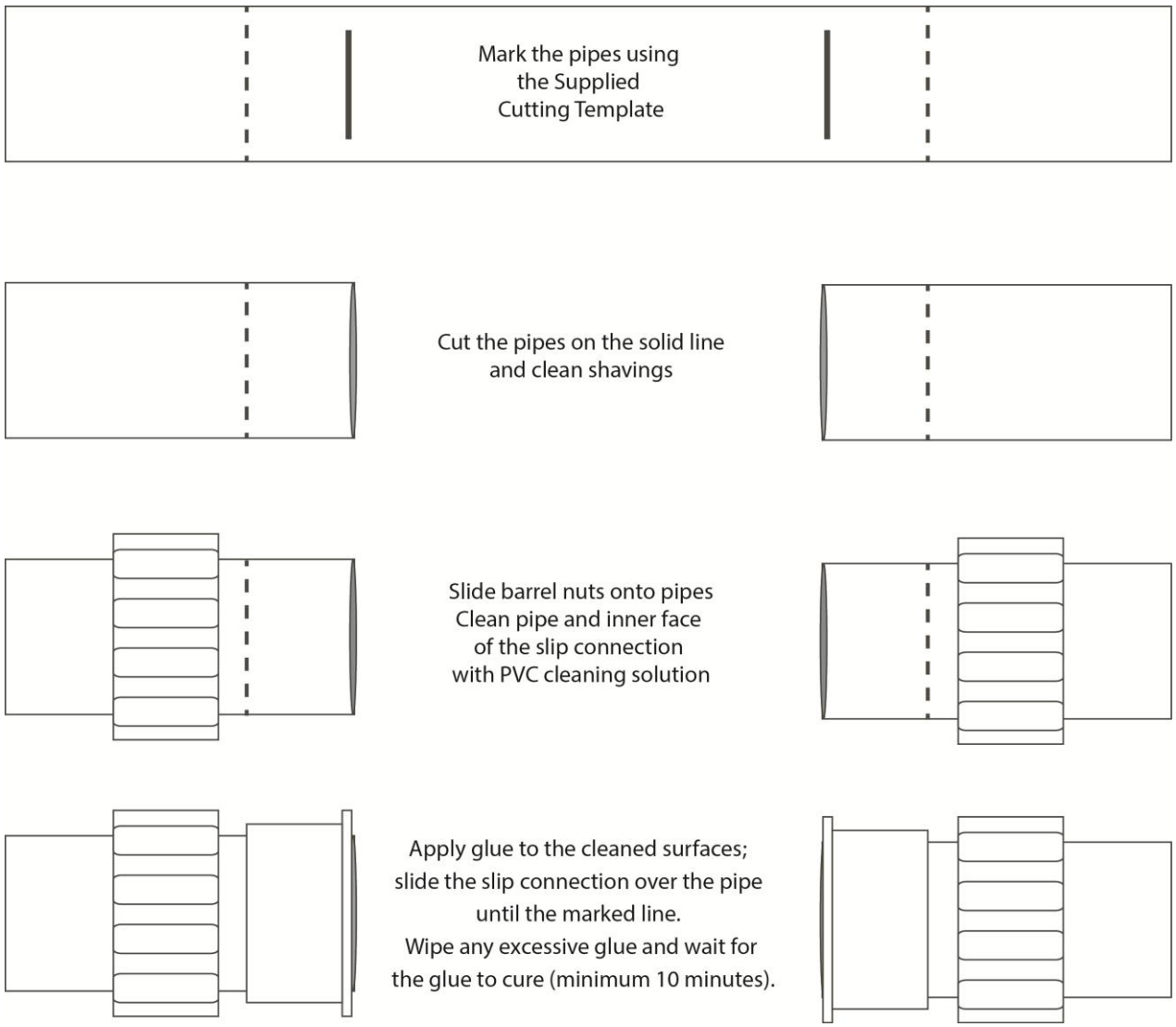
TIP: Lay out your equipment and confirm placement and measurements first before cutting and gluing.

TIP: 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.

CONNECTING TO PLUMBING

Note: To ensure that flow switch gets properly triggered, maximize the amount of straight pipe before Cell, at least 6".

1. 11 inches of straight pipe length are required for the installation.
2. On the section of pipe where the cell will be installed, use the Cutting Template to mark two lines 7.5" apart. This is the pipe area that will be removed. (Template is for 2" plumbing only)
3. Cut the pipe at the marked lines using a hacksaw or pipe cutter. Make sure that the cut is parallel and straight.
4. Slip the Threaded collars onto each end of the cut pipe.
5. Clean pipe and inside of Barrel Unions with PVC Primer. Apply glue to cleaned surfaces and slide the Barrel Unions fully onto pipe. Be sure to follow all directions on glue & primer, and wipe any excess glue.
6. After the glue had sufficient drying time, place the system with the o-rings into the opening between the two ends of the pipe and tighten the unions (hand-tight only)

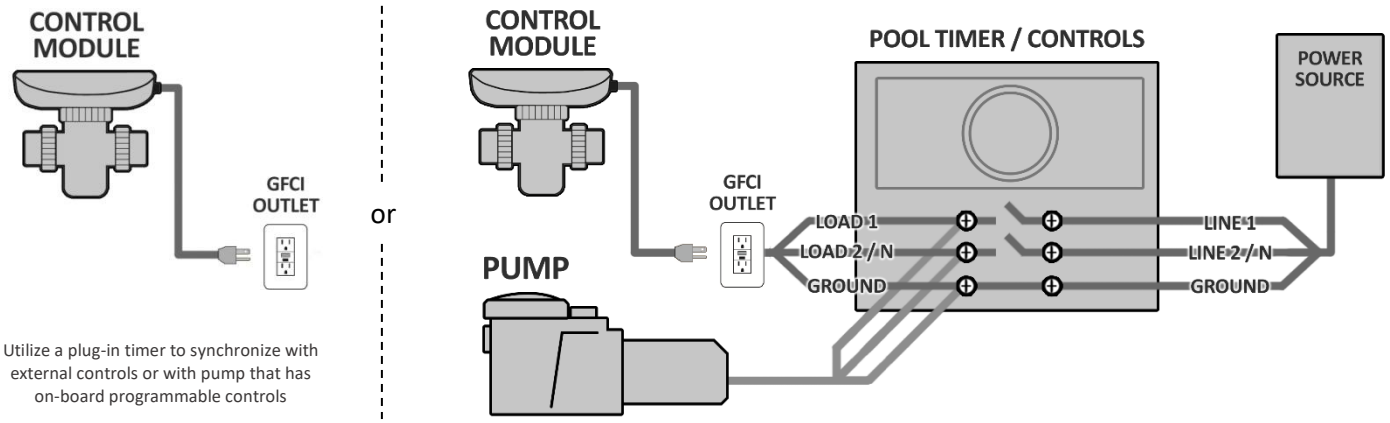


CONNECTING TO POWER

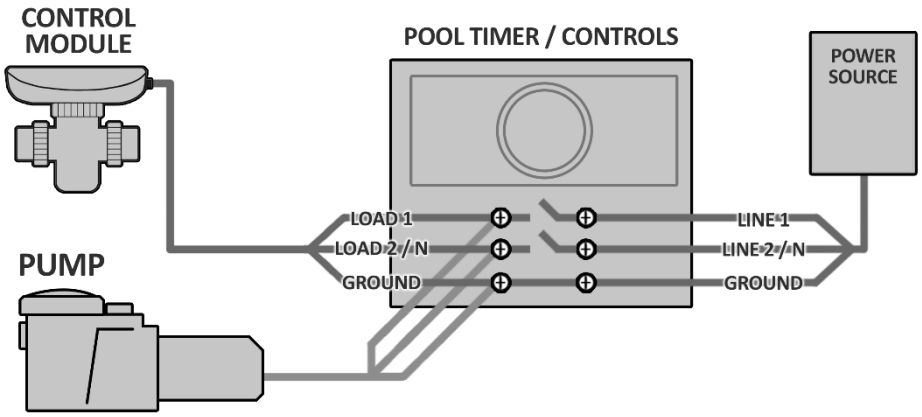
CAUTION: **Power must be shut off at the circuit breaker before performing any wiring.** Be sure to follow local and NEC/CEC electrical codes. It is best that the outlet be wired parallel to the pump so both the unit and pump are working simultaneously. The system has been designed to easily wire into typical in-ground pool systems. To provide safe operation, the unit must be properly grounded. The Control Module uses a switch-mode power supply designed to automatically accept either 120VAC or 240VAC (no internal adjustments are needed).

The E-CHLOR is shipped from the factory with a power cord that ends in a standard 120VAC plug, to allow the easiest installation. **When used with variable-speed or other electronically controlled pumps**, you may wish to wire the Control Module directly to your power source. This will allow the pump to determine when the Cell is energized or dormant by activation of the Flow Switch.

A. Simply plug the unit into a ground fault circuit interrupter (GFCI) safety outlet or an outlet protected by a ground fault circuit breaker (GFCB).



If a hardwire connection is desired, the wiring can be modified by a qualified person.



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 5-7. Turn the Control Module to the Power Off mode until enough salt has been dissolved in the water.

INSTALLATION CHECKLIST

- ☐ Cell Unions installed and glued into pipe work.
- ☐ Threaded Collars on either side of the Cell are hand tight.
- ☐ Control Module is wired correctly.
- ☐ You have checked and confirmed that Control Module switches ON and OFF concurrently with filter pump, or is energized continuously for use with variable speed pump and flow switch is correctly activating Control Module.
- ☐ 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.apxpool.com

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 chlorine demand exceeds maximum chlorine production, then a shock treatment with an oxidizer agent is advised. Generally, regular shocking / superchlorination is not necessary if the pool is maintained at correct levels.

Recommended List

- Read and keep your manual in a safe place.
- Check full water chemistry regularly to ensure consistent performance, ideally weekly and at least once a month.
- Increase Chlorine Production when temperature goes up or when number of guests goes up.
- Increase Chlorine Production temporarily after bad weather. Check water chemistry at this time as well.
- Ensure maximum chlorine effectiveness, achieved at 7.5 pH & stabilizer (Cyanuric Acid) w/in a 30-50ppm range typically.
- Mount Control Module in shade or out of the direct sunlight whenever possible using common sense precautions.
- Decrease Chlorine Production when temperature or usage goes down.
- Inspect Cell at least monthly for mineral scaling and/or debris that has made it past the filter

Not Recommended List

- Do not let salinity level drop below 3000 ppm.
- Prevent Phosphates or Nitrates, treat if present to completely remove them from the water. Do not allow fertilizer anywhere near your pool and prevent water run-off; this is a common but 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. Keep Cell off until any concentrated chemicals are dissolved.

TROUBLESHOOTING

SCENARIO:	POSSIBLE CAUSE:	SUGGESTED ACTION:
Low or no chlorine residual in pool (Also cloudy water, green pool)	Insufficient Chlorine Output Level	Increase Output Level. This is often required seasonally with increasing temperatures.
	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).
	Inactive unit, flow switch not triggered	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 pages 5-7 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.
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.
	Reset has tripped	Allow one hour to cool.
	Other malfunction in unit	Contact customer support
Chlorine Output LED blinking	The level has been increased/decreased	This is normal after pressing +/-, or during low temperature
Clean Cell 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 pages 5-7).
	Cell efficiency has been greatly reduced	Inadequate water flow exists, or Cell must be replaced.
Low Salt LED is on 	Salinity is out of range	Manually verify salinity (see pages 5-7).
	Cell is dirty or clogged	Inspect and clean Cell if necessary.
No Flow LED is on 	Insufficient water flow or air bubbles	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.
	Obstruction or build up on or around flow switch paddle	Dismantle Cell and remove debris to ensure flow switch paddle moves freely.

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.
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. (pages 5-7)
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. (pages 5-7)
Cold Water LED is on	Winter Mode is activated	Water temp is less than 68°. No further action req.
Chlorine Output level does not reach 100%	Cell is dirty or clogged	Clean Cell (see page 12).
	Not enough salt in the water	See Low Salt LED is on
	Low pool water temperature	See Cold Water LED is on
	Overheating protection	In extreme condition, when the unit identifies overheating it will automatically reduce chlorine production to protect itself.
	Worn cell	Clean Cell (see page 12) multiple times to ensure no scale or debris is present, independently verify salinity is in proper range. If problem is not resolved, cell may be worn and requiring replacement.
Cell Life Low LED is on	The system has recorded that the amount of usage that has been placed on the cell will likely indicate that the system is nearing the later stages of its lifespan.	No immediate action is required. Cell is reaching its working capacity limit. Replace cell when system displays errors or power lights blink indicating output cannot reach the chlorination set point (see page 10). Replacement cells are readily available for purchase from your local dealer or at www.apxpool.com
System Error LED blinking	Debris is stuck in the electrical connection between Cell and Control Module	Remove Control Module from the Cell. Clean the electrical connection from any debris stuck in it. Wipe with a dry cloth.
	Other communication problem between Cell and Control Module	Contact Customer Support
System Error LED is on	Debris is stuck in the electrical connection between Cell and Control Module	Remove Control Module from the Cell. Clean the electrical connection from any debris stuck in it. Wipe with a dry cloth.
	Cell blades are dirty or worn	Inspect Cell for debris or scaling, clean if necessary. Replace Cell if damaged or worn.
	Salinity is greatly out of range	Manually verify salinity (see pages 5-7).
	A more serious error has occurred	Contact Customer Support.
All LED lights flashing	Salt level may be greatly out of range	Manually verify salinity (see pages 5-7).

LIMITED WARRANTY

E-CHLOR 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 - No charge for parts
Year Three - Parts supplied at 50% 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 90-days.

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.apxpool.com. Warranty claims must be initiated in a timely manner. Upon discovery of a defect, APX PERFORMANCE and/or its authorized service agents ("APX PERFORMANCE 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 APX PERFORMANCE Warranty Department. 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, APX PERFORMANCE Warranty Department will at its sole discretion repair or replace such item or part. APX PERFORMANCE Warranty Department 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 the location of APX PERFORMANCE Warranty Department, 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 APX PERFORMANCE, 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, improper sizing, misuse, abuse, or failure to operate equipment as specified in the owner's manual and overuse.

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

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

The liability of APX PERFORMANCE 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 APX PERFORMANCE, 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.

Disclaimer: This limited warranty is the entire warranty. No other warranties apply, expressed or implied. 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 APX PERFORMANCE will be settled by binding arbitration, conducted in Harris County, Texas, under the rules of the American Arbitration Association.