

# APEX

PERFORMANCE POOL EQUIPMENT

**P-CELL (20-60,000 Max. Gallon Models)**





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# IMPORTANT SAFETY INSTRUCTIONS

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

-  **WARNING:** Follow all aspects of local and National Electrical Code(s) during installation. Disconnect all electrical power during installation & service.
  -  **WARNING:** To reduce the risk of injury, do not permit children to operate this device. Service should only be attempted by a qualified professional.
  -  **WARNING:** Heavy pool (and/or spa) usage and higher temperatures may require higher chlorine output to maintain proper free available chlorine residuals. The actual amount of chlorination required by your pool can change and varies according to factors not limited to bather load, rain, temperature, dirt, debris, and chemical balance.
  -  **WARNING:** Safe operation of the electrolytic Cell requires a minimum water flow rate of 20 gpm. Never operate the unit when the flow of water is restricted. Always turn unit off when operating any plumbing control valves such as for backwashing, water exhaust, or during operation of spa or water features. If operation restricts water flow to the Cell, a build-up of flammable gases will result in hazardous conditions. Ensure that the lowest speed of a variable-speed pump provides sufficient flow.
  -  **WARNING:** The use of isolation valves is strongly recommend against. If full pump pressure is applied to an isolated component, it may be prone to rupture. Turn off all pumps before changing valve positions. Prevent water pressure spikes at Electrolytic Cell.
- Before installation, ensure that materials and equipment used in and around the pool are compatible with the use of chlorinated water and salt. Avoid high chlorine and high salt levels (above the recommended range); it is possible that certain materials and pool (and/or spa) equipment may be susceptible to damage.
  - If additional chlorine is required (due to heavy bather loads, for example), use Sodium Hypochlorite to maintain an appropriate chlorine residual in the water.
  - Check the expiration date of any test kits as test results may be inaccurate if used after that date.
  - Proper pool chemistry must be maintained at all times. For outdoor pools, chlorine residuals can be protected from destruction by sunlight by addition of stabilizer (cyanuric acid).
  - The use of dry acid may damage the salt Cell and is not recommended. When using liquid acid, always add acid to water, never water to acid.
  - DO NOT add acid or other concentrated chemicals directly to the skimmer. This may damage the Cell.
  - Ensure that the chlorine generator installation does not constitute a cross connection with the local potable water supply. Consult local plumbing codes.
  - Note: Some local codes may require external grounding source. Check your local ordinances.
  - To reduce the risk of electric shock, the power pack must be grounded.
  - To reduce the risk of personal injury, the power pack must be installed and wired to the load side of the clock or the load side of the relay. Ensure that the chlorinator operates only when the circulation pump is operating.
  - All metal parts installed on site, such as railings, ladders, drainage pipes or other similar hardware located within 10 feet (3 meters) of swimming pools, spas or hot baths, should be connected to the equipment grounding bus, American AWG/ Canadian 6 AWG, with a copper conductor not less than 8.

Please note, the total working hours for a properly-sized chlorine generator should ideally be less than 8 hours total per day. Total working hours can be approximated by total run time multiplied by the chlorine output percentage. If you are using a variable speed pump with long run times (ex: 24 hours a day), be sure to adjust down the chlorine output so as to avoid over-use and over-chlorination (ex: 30% output at 24 hours a day).

ATTENTION: APEX POOL products or APEX P-CELLs are not affiliated with Pentair Pool Products, the use of any trademarks herein is for informational purposes only.

# APEX P-CELL Series

**Salt Cell Replacement | Models: APX-P6-20R, APX-P11-40R, APX-P15-60R**



**Thank you for choosing a high-performance APEX P-CELL Chlorine Generator.** APEX Performance Pool Equipment offers pool owners effective and economical options for their swimming pool and pool equipment system. The P-CELL is an aftermarket replacement cell which uses a very low level of salt in the pool water to continuously create free chlorine, killing bacteria and algae in the water.

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.

Be sure to familiarize yourself with the intended use and correct operation of this product. Be sure you fully understand the pool chemistry requirements and maintenance procedures.

# WATER CHEMISTRY

## CHEMISTRY NOTICE

It is important that the pool's water chemistry is balanced before the APEX P-CELL 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. In order to achieve normal pool operation, water chemistry needs to be balanced.

## IDEAL WATER CHEMISTRY LEVELS

<b>Free Chlorine</b>	1-3 ppm
<b>Combined Chlorine</b>	0
<b>PH</b>	7.2-7.8 (7.5 target)
<b>Calcium Hardness</b>	50-300 for vinyl 220-320 for fiberglass 350-450 for plaster
<b>Total Alkalinity</b>	60-180 ppm
<b>Salt Level</b>	2600-4500 ppm (3400 target)
<b>Cyanuric Acid</b>	30-50 ppm
<b>Phosphates / Nitrates</b>	None
<b>Saturation Index</b>	-0.2 to +0.2 (0 target)
<b>Metals</b>	None
<b>TDS</b>	<1000

## WATER CHEMISTRY RECOMMENDATIONS

**WHEN POOL HAS BEEN IN OPERATION PRIOR TO CELL REPLACEMENT:** Double check your pool's salinity level using independent testing. It is possible that the salinity level in the pool is higher than the previous cell has been reporting, as failing salt cells can incorrectly display low salt levels. Especially if salt has recently been added because a failing salt cell has been reporting low salt warnings, it is possible to receive a high salt warning from a new replacement cell – this does not indicate a problem with a new cell.

Similarly, salt system controls may continue to read the previous salinity levels (if an “average” salinity is displayed). The salinity levels displayed by the system may update slowly over 24 hours of operation.

**WHEN POOL HAS NOT BEEN IN OPERATION PRIOR TO CELL REPLACEMENT:** If a pool has not been attended to or in operation or 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 cell may be used to generate chlorine as long as there are sufficient salinity levels, the sanitation demand otherwise may be higher than the cell's chlorine generation alone is able to compensate for. If significant “shocking” is required during this startup period, this may be achieved quicker with an external chlorination source.

**NEW POOL WATER:** Should the pool be newly filled or refurbished, pools may contain undesirable substances. Such undesirable substances may interfere with the cell's ability to properly chlorinate. Before turning on the salt system, make sure the water has been tested and that all water chemistry levels are properly balanced. Should the pool be newly resurfaced, consult with the builder for a curing wait time before salt may be added (typically at least 30 days); conventional chlorination may be used in the meantime.

**COMBINED CHLORINE:** This level should be zero, as it negatively affects disinfection in the water. If a level is measured, it indicates that the sanitation demand (chlorine demand) of the water has been exceeding the rate of chlorine generation of the system. If this is the case, be sure to increase the chlorine output setting and/or system run time appropriately. Combined Chlorine levels also may form when excessive levels of urine and sweat from swimmers.

**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 common substances can cause extremely high chlorine demand, which can deplete the pool of free chlorine.

**METALS:** Certain metals, such as copper and iron, can cause chlorine loss. In addition, metals can stain your pool or damage the cell.

## 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 3400-3500 ppm is recommended for optimal water quality.

Low salt concentrations below 2300 ppm or above 6000 ppm will cause the unit to shut down.

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

		If the salt level (PPM) in your pool is currently...								
		0	500	1000	1500	2000	2500	3000	3500	4000
If your pool holds this many gallons...	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.**



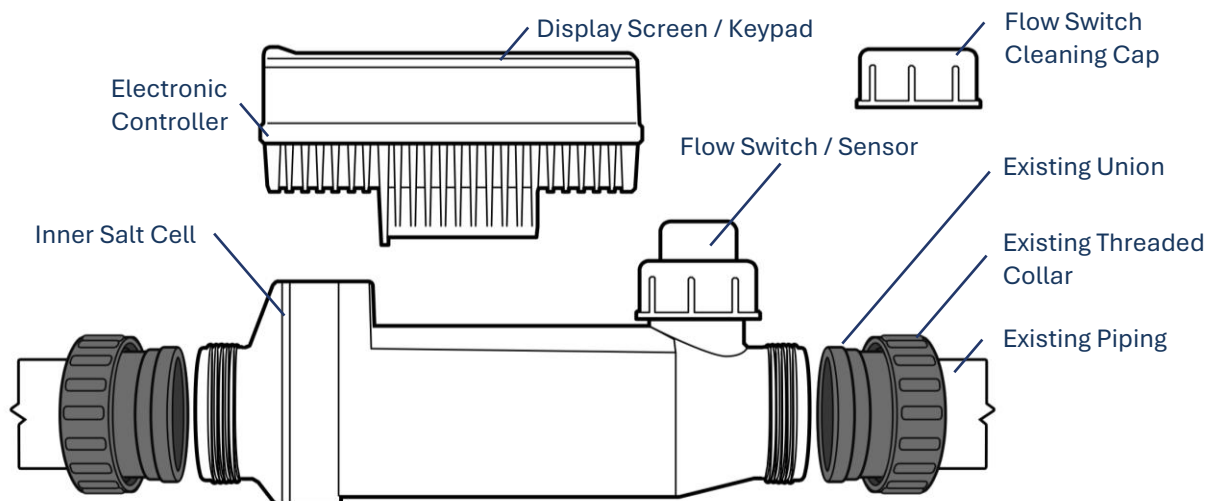
# INTRODUCTION

The APEX P-CELL consists of an electronic controller mounted on top of a salt cell. The body of the salt cell has an easily accessible flow switch/sensor, as well as threaded connections which allow the P-CELL to be easily attached to plumbing unions.

**Electronic Controller:** The controller has an LED screen that provides adjustable chlorine output in 10% increments, diagnostics and readings. Additionally, LED indicators will provide warnings to aid in troubleshooting. The controller also has an internal fuse to provide additional protection for the electronics.

**Salt Cell:** The salt cell is what houses the titanium electrodes, which is where the chlorine generation takes place. When it reaches the end of its lifespan, the salt cell body is replaceable independent of the electronic controls and flow switch/sensors, to help minimize lifetime equipment costs.

**Flow Switch / Sensor:** Mounted to the salt cell body, the flow switch ensures that water is circulating before chlorine generation is allowed to take place. Additionally, the integrated sensor helps improve system operation and diagnostics. The flow switch is directional and must face the correct direction of water flow.



APEX P-CELL has a self-cleaning cycle, which can reverse polarity and reduce calcium accumulation. This function turns the cell on and off regularly to minimize the accumulation of calcium and scale and further extend the cell life.

**WARNING: Make sure you have disconnected all power before performing any installation, component replacement, or service.**

**Please read all safety precautions, warnings, and important instructions, including original requirements if replacing a third-party component. Be sure to read and observe the safety instructions before accessing any electrical wiring. Installation must be done by a qualified individual.**



# SETUP

## Replacing a Cell (existing installations):

Please note when the cell is used for aftermarket replacement, it is not normally necessary to install the cell; the cell will connect to existing threaded couplers.

1. When the entire pool system is off and depressurized, unscrew the female threaded collars from the existing salt cell. Remove the existing salt cell from the plumbing. Ensure that the plumbing union o-rings are in good condition; replace if necessary.
2. Place the P-CELL between the existing unions and threaded collars, ensuring that P-CELL is oriented so that water will be flowing through it in the correct direction.
3. Tighten the existing female threaded collars on to the P-CELL to ensure that the P-CELL fits securely in place. Hand-tighten only, DO NOT OVER-TIGHTEN.

## Connecting the APEX P-CELL Cell Cable to the Power Center

**Warning:** Ensure power is off and disconnected from all equipment before removing or attaching any cables.

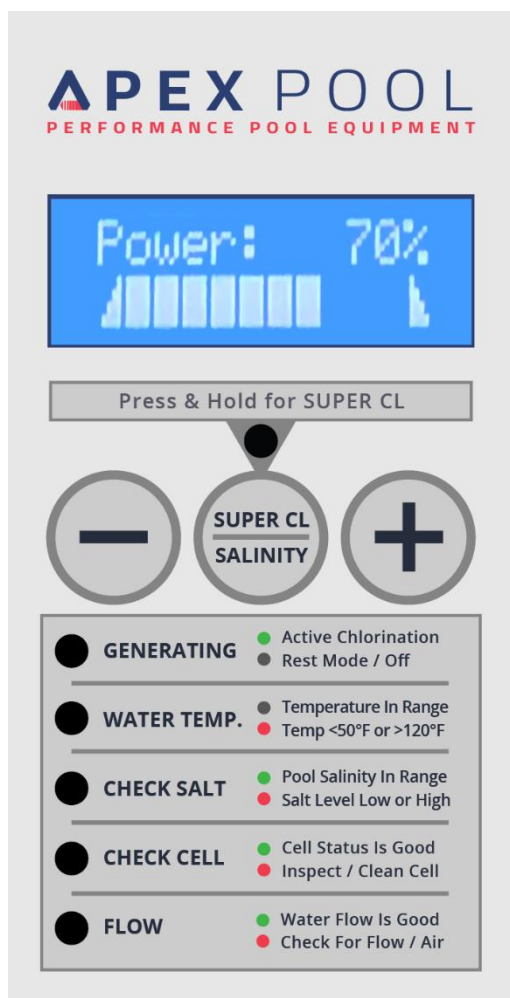
1. Disconnect the existing cell cable from the existing power center.
2. Before connecting the new cell cable to the power center, align the two (2) pins of the cell power cord connector with the socket on the top of the power supply.
3. Center and insert the connector. Turn the round socket nut until the connector is locked in place.

**IMPORTANT:** Ensure that the chlorine generator system is set up so as to run in tandem with the circulation system. An external pool pump timer is typically required.

**Please note:** These P-CELL's electronic controls are not designed to connect to automation.

**Please note:** After restoring power to the equipment, be sure to visually check whether there is leakage around the cell unions.

# CONTROLS + LED INDICATORS



**CHLORINE OUTPUT UP (+):** Raises the chlorine output in 10% increments up to 100% (maximum)

**CHLORINE OUTPUT DOWN (-):** Lowers the chlorine output in 10% increments down to 0% (off)

- **NOTE:** After making adjustments to the chlorine output %, the system will perform diagnostics for 30 seconds before it begins to generate.

## **SUPERCL / SALINITY:**

- **SHORT-PRESS:** Display the reading of the salinity level.
- **LONG-PRESS** (Until the LED becomes green): Enter into SuperCL mode. Long-press again to exit setup. SuperCL mode will automatically end after 24 hours.

**GENERATING:** The LED on steady means unit is actively generating chlorine. If the LED is off, the system is in its rest mode and no action is required (unless paired with a warning light, which indicates that troubleshooting is required)

**WATER TEMP.:** This LED warning light will activate if the water temperature is out of range (lower than 50°F or higher than 120°F).

**CHECK SALT (Green):** This LED status confirms that the pool water's salinity is within the operational range of 2800PPM - 4500PPM.

**CHECK SALT (Red, flashing):** This LED indicates that the salinity is outside of operational range (2300 PPM to 2800 PPM / 4500 PPM to 6000 PPM).

**CHECK SALT (Red, steady):** This LED warning means that the salinity is below 2300 PPM or above 6000 PPM.

**CHECK CELL (Green):** This LED indicates that the cell is operational and is able to generate chlorine.

**CHECK CELL (Red):** This LED warning means the cell needs to be inspected. In this state, the cell cannot generate chlorine. The titanium plates may have mineral scaling that needs to be removed.

**FLOW (Green):** This LED indicates that there is enough water flow to generate chlorine.

**FLOW (Red, flashing):** This LED indicates that while water flow is detected, the flow of water either just started or is unstable. Continuous detection of water flow for one minute must occur before the FLOW light will turn green.

**FLOW (Red, steady):** This LED warning means water flow is not detected and/or air is present in the cell.

# OPERATION

The APEX P-CELL 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.

## Output Settings and Adjustments

The rate at which the P-CELL is generating chlorine (out of its 100% maximum capability) is displayed on the LED screen. 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 30 seconds before it resumes chlorine generation.

## Making Adjustments at Start-Up

After the P-CELL 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 according to its normal daily schedule for 24 hours, and then re-check the Free Chlorine level. If the Free Chlorine level is too low, increase the P-CELL's output setting; if the Free Chlorine level is too high, decrease the P-CELL'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 P-CELL's SuperCL mode to temporarily boost chlorine output in order to compensate for periods of temporarily higher chlorine demand.

Please note that if at initial start-up you check the Free Chlorine level and the result is low, consider setting the P-CELL's output setting to 100% until 1-3 ppm is reached, and then perform the above procedure to find your pool's currently ideal chlorine output setting. If the initial Free Chlorine level is zero, consider a supplemental chlorine source depending on the pool's conditions.

Please note that if the pool pump has very long run times or runs continuously for 24 hours, it is likely that the P-CELL will produce more chlorine than most swimming pools need (1-3 ppm). This will unnecessarily shorten the lifespan of the cell. Be sure to set the system to the minimum required output setting in order to maintain 1-3 ppm Free Chlorine in the water.

# EXPECTED MAINTENANCE

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

## Water Balance

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.

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

All water chemistry levels are critical to maintain, but with regards to the P-CELL, 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 SuperCL 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 slowly 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.

## Cell Cleaning

The P-CELL is a reverse-polarity self-cleaning electrolytic cell and should experience the slow accumulation of mineral scaling at a rate comparable to other cells you may be experienced with. Like all salt cells, it eventually may become necessary to clean and remove the mineral scaling from the 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. It is generally recommended that the cell be removed for inspection at least twice a year.

**Remove calcium buildup from the cell before acid cleaning:** Use a typical garden hose with a powerful spray nozzle, and spray directly into the ends of the cell. Much of the calcium mineral scaling can have a soft consistency, which can be blown out of the cell. This also helps to remove any debris which may have passed through the pool filter and become trapped inside the cell. Once most of the calcium has been removed, continue with acid cleaning, which will now be more effective.

**Acid Cleaning:** A small amount of scale formation is normal. If a look through the P-CELL reveals scale formation between the titanium plates, the P-CELL must be cleaned according to the following instructions. It is important to take all necessary safety precautions such as: **always wear rubber gloves and goggles when handling or using acid; always add acid to water, do not add water to acid.**

- Disconnect the AC power from the power center.
- Disconnect the P-CELL from the power center and disconnect the P-CELL from the plumbing. Remove the P-CELL's flow switch from the cell body and replace it with the cleaning cap included with the cell. Ensure that the o-ring is present between the cap and the flow switch port.
- Connect the P-CELL to a compatible cleaning stand (available at [apexpool.com](http://apexpool.com)). Ensure that the cleaning stand's o-ring is present. Hand-tighten the cell to the cleaning stand.
- Place the cleaning stand, with the cell attached and upright, down into a 5-gallon bucket in order to contain any spills. Ensure that the assembly is stable.
- Mix one (1) quart of hydrochloric acid with one (1) gallon of tap water in a plastic bucket.
- Carefully pour the acid solution down into the cell. Fill the interior of the cell with the cleaning solution, ensuring that the titanium plates are covered.
- **Note: The acid should only be in contact with the inside of the P-CELL. Acid should not come in contact with any metal components of the cell cable's connector. Try not to spill acid on the outside of the cell. If acid does spill on the outside of cell, please clean it with water.**
- The cleaning solution will begin to foam as it dissolves the mineral scale (calcium carbonate) on the titanium plates. Cell cleaning should typically take 10-15 minutes. If foaming stops within this time, the process is likely complete, and you can move to the next step. If foaming still continues after this time, there may be excessively heavy mineral scaling; allow the cell to soak up to 30 minutes and be sure to very thoroughly rinse the cell out to remove any remaining scale. On rare occasions excessive scaling may require additional cleanings. **Do not leave the cell unattended or allow unnecessary cleaning or excess time soaking in acid, as this can damage the titanium plates.**
- Take the P-CELL out of the bucket and put it into a 5-gallon bucket. Thoroughly rinse the inside and outside of the P-CELL with a garden hose and inspect the inside of the cell. If mineral scaling deposits are still visible, repeat the acid cleaning process.
- After cleaning is complete, replace the P-CELL in the plumbing, ensuring it is fully connected. Reconnect the P-CELL cell cable to the power center, then restore AC power. The system can return to normal operation.

# TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SUGGESTED ACTION
<b>Low or no chlorine residual in pool</b>	Sanitizer Output percentage set too low or off at 0%	Increase Output Level.
	Insufficient run time	Increase run time to at least 1 hour per 10°F ambient temp.
	Heavy pool use, inclement weather, organic matter	Activate Super CL mode or chemically shock pool.
	Water chemistry issues: Low salt in the pool Phosphates in pool Nitrates in pool Low/High Chlorine Stabilizer	Contact pool professional, ensure all chemicals
	The cell is dirty, clogged, or Has excessive scaling or mineral build-	Remove Cell from plumbing, inspect and clean (see p.13).
<b>Low or no chlorine residual in pool after recent installation</b>	Water chemistry was not balanced prior to system installation and a high chlorine demand persists.	Contact pool professional, ensure all chemicals on p.6 are within range, chemically shock pool if necessary.
<b>No Power</b>	Fuse/Reset has tripped.	Check fuse on power center, check fuse inside salt cell
	No AC Power to the power center	Check the connection or source
<b>CHECK CELL Red LED is on</b>	It is time to clean the Electrolytic Cell.	The Cell must be cleaned.
	Cell efficiency has been greatly reduced.	Inadequate water flow exists, or Cell must be replaced.
<b>CHECK SALT Red LED is on</b>	Pool water salt is too low or too high, system is off. Less than 2300 or Over 6000 ppm	Chlorine generation has ceased until the salinity level is corrected.
<b>CHECK SALT Red LED flashing</b>	Pool water salt is low (2300 PPM to 2800 PPM) or high (4500 PPM to 6000 PPM).	Normal chlorine generation is not possible until the salinity level is corrected
<b>FLOW Red LED is on Or flashing</b>	Incorrect installation	Verify Sensor probe correct orientation
	Sensor probe is dirty or clogged.	Ensure correct connection, clean the sensor probe if necessary.
	Insufficient circulation	Ensure operation of the pump, at least 20-30 GPM. Check water level, filter pressure, or for air or blockages in PVC plumbing.

<b>WATER TEMP. LED is on</b>	Water temperature is too hot or cold for operation.	Check operation of the heater, or turn off until the water temp is between 50°F to 120 °F.
	Bad Sensor contact or connection	Ensure Sensor probe is well-connected and free of debris
	Damaged Sensor	Contact manufacturer.
<b>Water leak</b>	O-Ring improperly seated	Ensure O-Rings are clean and in good condition.
	Threaded collars are cross-threaded.	Inspect threads for damage, ensure that each screws back on without resistance.
<b>Cell frequently has mineral buildup</b>	This is due to imbalanced water chemistry and a high Saturation Index.	Ensure that your Saturation Index is at or near zero, to avoid damage or premature cell failure.
<b>Cell never or rarely has mineral buildup.</b>	Water may be corrosive due to imbalanced water chemistry and a low Saturation Index.	Ensure that your Saturation Index is at or near zero, to avoid damage or premature cell failure.

## Advanced: Salinity Calibration (not recommended unless instructed by a professional)

Do not perform this procedure until you have ensured that your cell is thoroughly cleaned and free of mineral scaling and debris. Do not perform this procedure until you have performed multiple independent salinity tests to positively confirm the water's salinity level; titration testing is recommended. Also remember that differences of +/- 300ppm between different test sources is to be expected. If after these conditions have been met it is required to calibrate the salinity reading, please press "-" and "+" at the same time, and press several times quickly. When the display shows "SALT Tsys:" and a calibration number. **This calibration number is inverse**, so you will press "+" to lower the salinity, and press "-" to increase the salinity. For example, pressing "+" to make the calibration number 150 will *lower* the salinity reading by 150ppm. Alternatively, pressing "-" would make the calibration number *raise* the salinity reading.



The APEX P-Series Cell is not manufactured, endorsed, or sold by Pentair. Neither APEX POOL nor the P-Series cell is affiliated with Pentair; the use of manufacturer names, product names, part numbers, or such trademarks herein are included for compatibility designations and informational purposes only. The product is also not warranted or supported by Pentair:

## LIMITED WARRANTY

APEX P-CELLS carry the following Limited Warranty should failure occur due to faulty manufacture or materials, during normal use and service. For residential use only (a pool that is for private single-family use, or the use of which is not subject to regulation), the manufacturer warrants to the original purchaser that the equipment shall be free of manufacturer's defects at the time of sale, and upon examination shall provide replacement parts in accordance with the following schedule:

- Year One - No charge for parts.
- Year Two - Parts supplied at 50% of base price.

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.apexpool.com](http://www.apexpool.com). Warranty claims must be initiated in a timely manner. Upon discovery of a defect, APEX Pool Products and/or its authorized service agents ("APEX Pool Products 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 APEX Pool Products 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, APEX Pool Products Warranty Department will at its sole discretion repair or replace such item or part. APEX Pool Products 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 APEX Pool Products 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-transferable.

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 APEX Pool Products, including, but not limited to the following:

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

- B. Damage due to improper installation or connection to improper voltages, including materials and workmanship supplied by others.
- C. Damage due to negligence or failure to properly maintain equipment, including operation with insufficient water flow or the maintenance of clean and tight electrical connections.
- D. Damage due to improper service, as well as unauthorized equipment modifications and use of non-genuine replacement parts.
- E. Damage due to misapplication, 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 APEX Pool Products.
- G. Damage due to over-tightening of threaded components or excessive pressure or stress.

The liability of APEX Pool Products shall not exceed the repair or replacement of defective items or parts under the referenced limited warranty terms. There are no implied warranties of merchantability or fitness for a particular purpose that apply to this equipment. Under no circumstances shall APEX Pool Products manufacturer, distributor, dealer, 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, special, or consequential damage(s), 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.





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