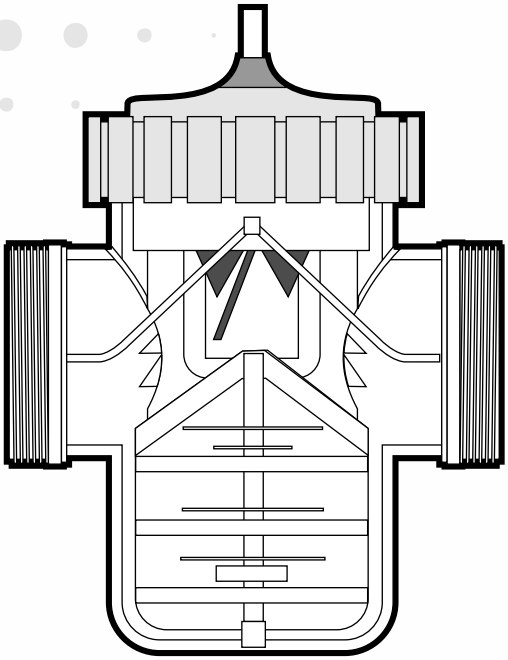
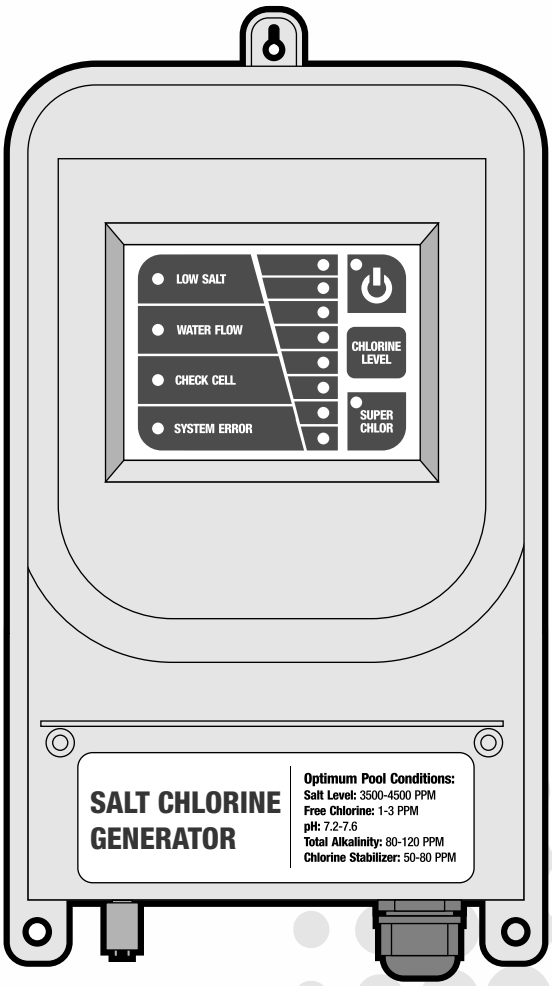




OWNER'S MANUAL

SALT CHLORINE GENERATOR

35220210 12/25

TABLE OF CONTENTS

Section 1. Important Safety Instructions

READ AND FOLLOW ALL INSTRUCTIONS

This product should be installed by a professional service technician or similar person who is qualified in electrical equipment installation. Improper installation and/or operation could cause serious personal injury, property damage or death. Improper installation and/or operation will void the warranty.
When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

DO NOT OPEN THE SEALED COVER OF THE BOX – NOT A SERVICEABLE UNIT

Power must be shut off at the circuit breaker before performing any wiring. Be sure to follow Local and NEC electrical codes. To provide safe operation, the power supply must be properly grounded and bonded.

⚠ **WARNING** – To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

The Power Supply must be mounted vertically on a flat surface and at a minimum horizontal distance of 5 ft (1.5m) (or more, if local codes so require) from the pool/spa.

⚠ **WARNING** – Risk of Electric Shock. Connect only to a branch circuit protected by a ground-fault circuit-interrupter (GFCI). Contact a qualified electrician if you cannot verify that the circuit is protected by a GFCI.

⚠ **WARNING** – To reduce the risk of personal injury the power supply must be installed on and wired to the load side of the time clock, electronically controlled switch, or relay load side, **so that it will receive power only when the pool pump is on. The Power supply should never be energized when water is not flowing through the unit.**

⚠ **WARNING** – The wiring of the unit must be performed according to the wiring instructions of this manual.

⚠ **WARNING** – A build-up of flammable fumes can result in a hazardous condition if the cell is allowed to operate without flow.

⚠ **WARNING** – 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.

ALWAYS ADD ACID TO WATER, NEVER WATER TO ACID.

SAVE THESE INSTRUCTIONS.

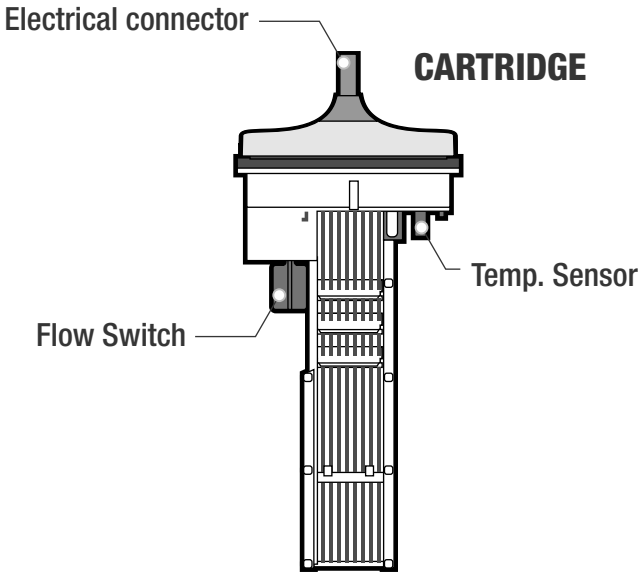
You may find a current version at www.solaxx.com

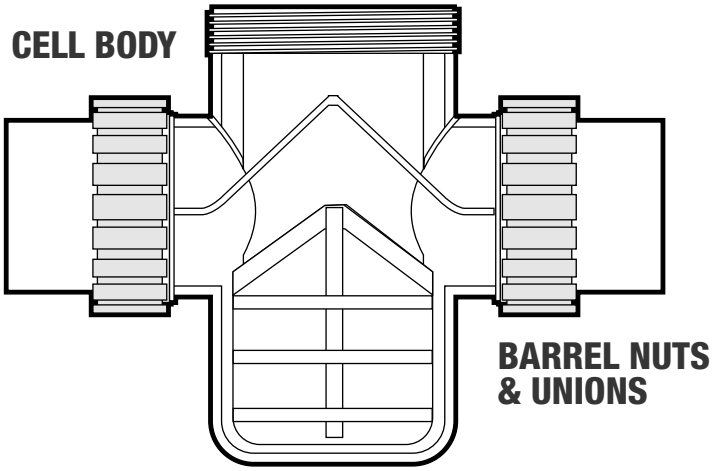
WINTERIZING

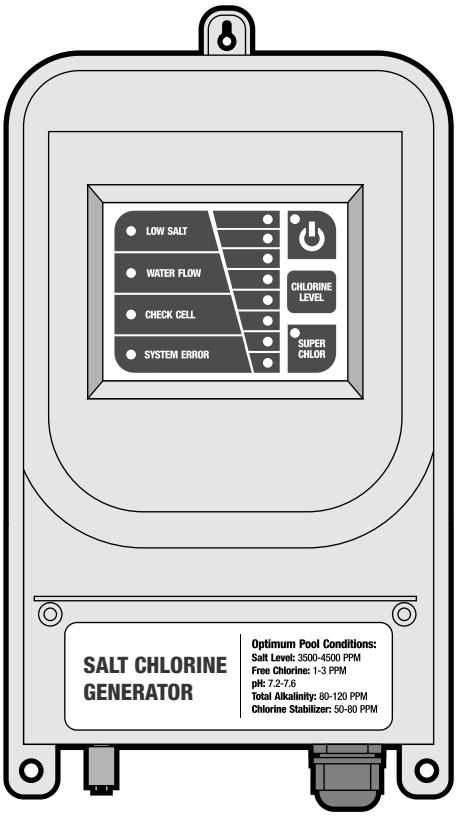
If your pool is in a climate where the equipment is winterized, you must winterize the salt cell in the same way that your other pool equipment is winterized. This includes draining the water from all equipment and possibly adding antifreeze to the plumbing. It is not necessary to remove the cell from the plumbing. Many pool owners leave the Power Supply mounted on the wall for winter. However, removing and storing the Power Supply in a dry location for the winter will extend it's life.

Section 2. System Overview

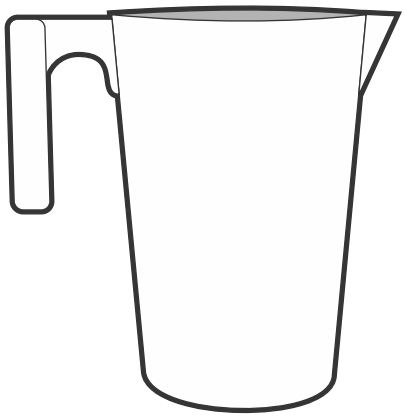
2.1 Package content



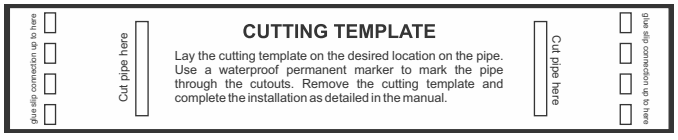




POWER SUPPLY BOX



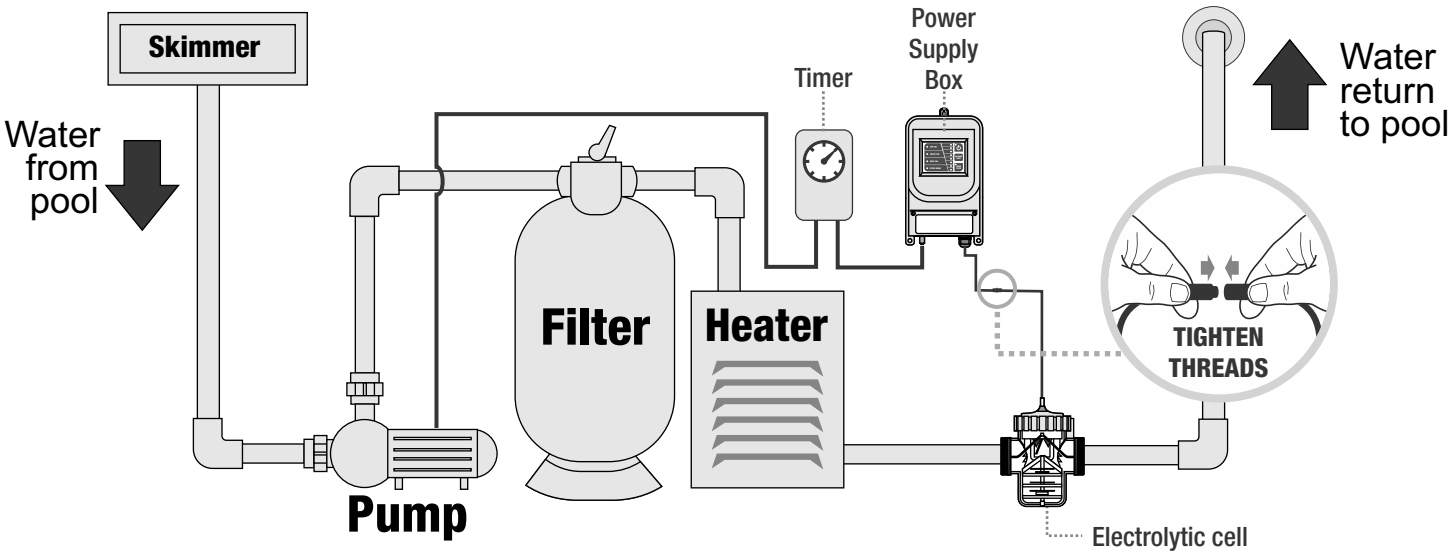
CARTRIDGE CLEANING VESSEL



PIPE CUTTING TEMPLATE

Section 2. System Overview

2.2 System and Plumbing Configurations:



The system has two major parts: **the Power Supply Box and Cell**

Power Supply Box - The power supply converts AC electrical current to a low voltage DC current which is required by the cell to perform the electrolysis. **The power supply is connected with the pool circulation pump electrical source so that the electrolytic cell only operates when the pool pump is on. The flow Sensor is a backup device only.**

Cell Cartridge - The electrolytic Cell Cartridge contains bipolar electrodes which perform the electrolysis and produce chlorine when energized with DC current. Chlorine is generated as pool water containing salt passes through the cell. This system automatically cleans the Cell electrodes. This does not interrupt the production of Chlorine.

The Cell Cartridge also contains the f**low and temperature sensors.** The Flow/Temp sensor allows the cell to operate only if there is adequate water flow through the cell. The water temperature is constantly monitored in order to protect the cell.

⚠ IMPORTANT!

ADD SALT TO THE POOL **BEFORE** STARTING INSTALLATION

Adding the salt to the pool water **BEFORE** starting the salt system is required. The system could show error lights on the power supply if there is no salt circulating in the pool water for several hours before starting the system.
The "Low Salt" light may remain lit for up to 24 Hours until salt is fully dissolved in the water.

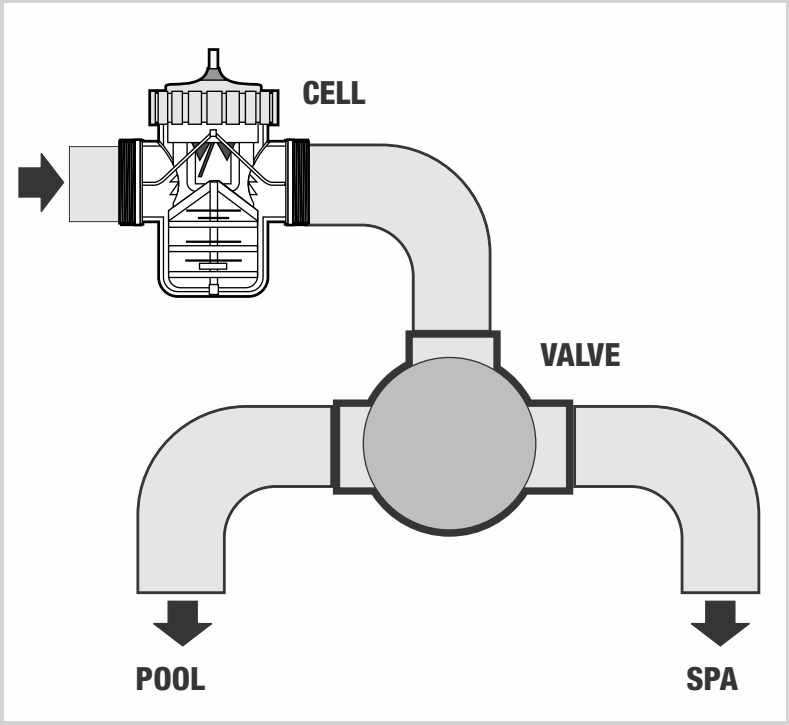
Section 3. Installation Instructions

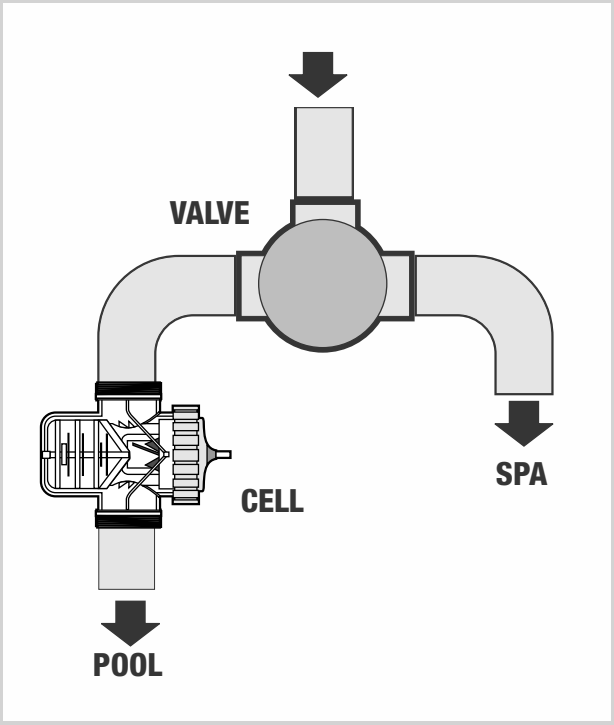
3.1 Materials and Tools

1. PVC solvent cement and priming fluid
2. Hacksaw or pipe cutters
3. Screwdrivers
4. Drill
5. Silicone Lubricant (DO NOT USE silicone glue or petroleum jelly).
6. Pipe adaptors (i.e. reducer couplings) if needed for systems with 1 ½ inch plumbing

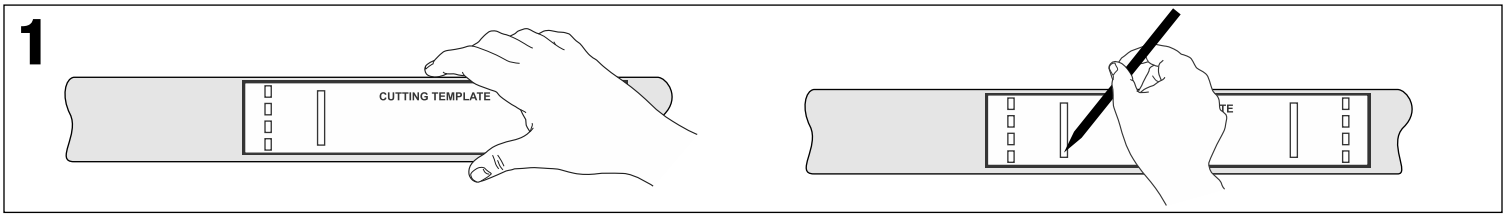
3.2 Install the Cell

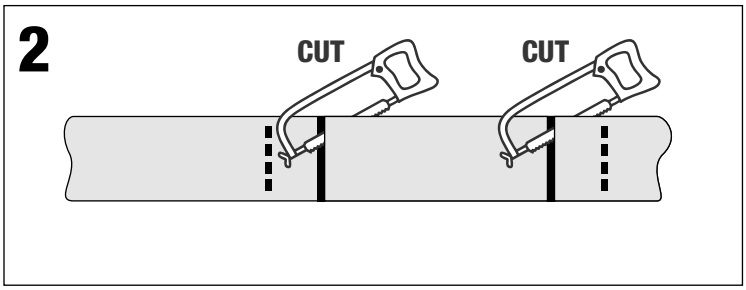
Cell & Plumbing Configuration:

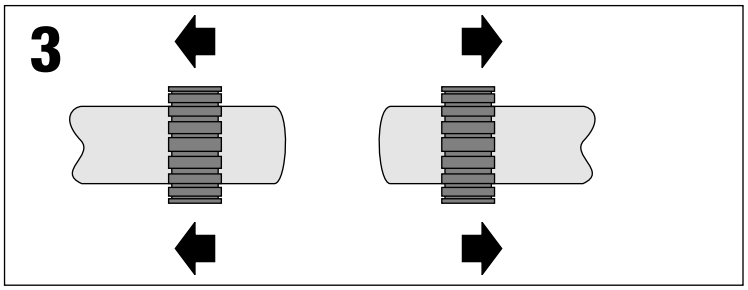




CELL/CARTRIDGE ASSEMBLY INSTALLATION



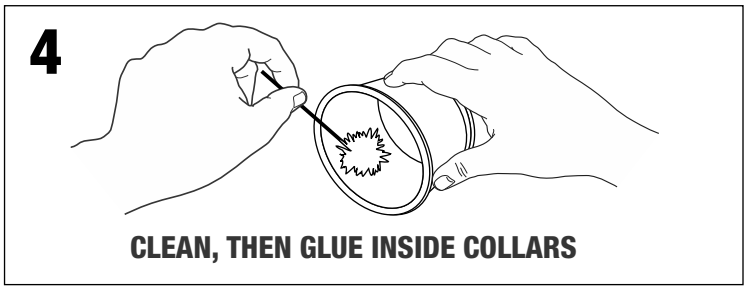


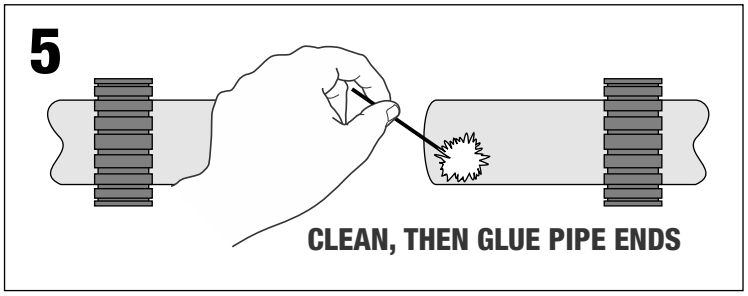


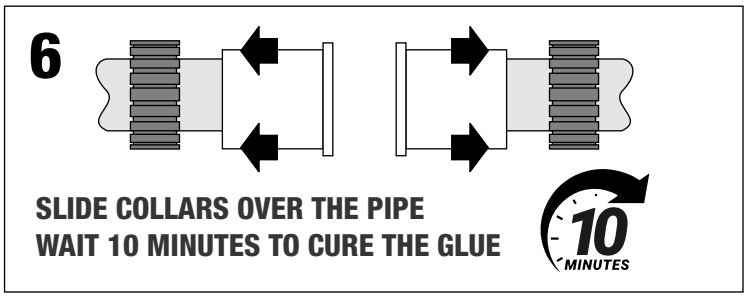
3.3 Cell / Cartridge Assembly Installation

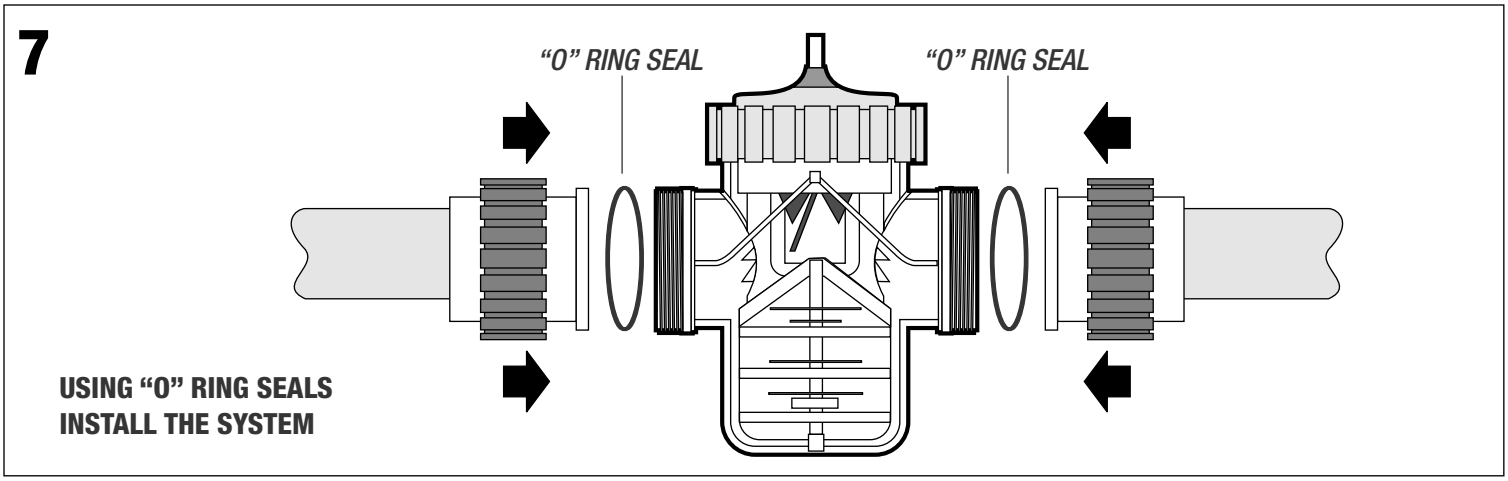
30 cm (12 inch) of straight pipe length is required for the installation.

1. Using the cutting template supplied with the unit, mark the required cutting distance, “cut the pipe here” 19.5 cm (7.6 inch) and the “glue slip connector up to here” lines on the pipeline.
2. Cut the pipe using a hacksaw or pipe cutter and slip the barrel nuts onto the pipe. Make sure the cut is parallel and straight!
3. Slip the barrel nuts onto each end of the pipe.
4. Clean the pipe and inner face of each collar with a PVC cleaning solution.
5. Apply glue to the cleaned surfaces, and push the collar completely into the pipe, up to the inner stop (lines marked “glue slip connector up to here” on the pipe in step 1)
6. Wipe any excess glue and wait for the glue to cure (minimum 10 minutes).
7. Place the system with the O-rings (seals) into the opening between the two ends of the pipe and tighten the barrel nuts.





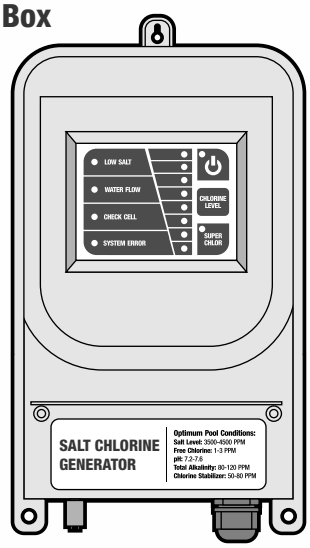




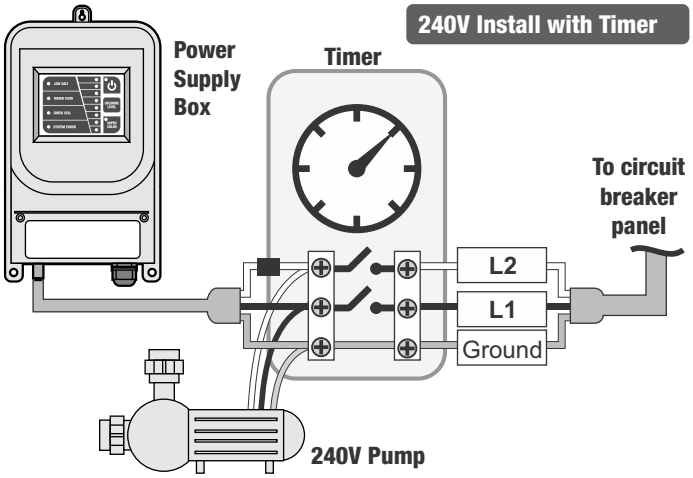
3.4 Install the Power Supply / Control Box

1. The Power Supply Box must be mounted vertically on a flat surface and a minimum of 5 ft (1.5m) horizontal distance (or more, if local codes require) from the pool/spa.
2. Locate a position for your Box within 8 ft of where the Cell will be installed .
3. Because the box acts as a heat sink dispersing heat from inside the box, do not block the four sides of the Control Box. Do Not mount the system above a heater or inside a panel or an enclosed area.
4. If possible, try to mount the power supply out of direct sunlight.

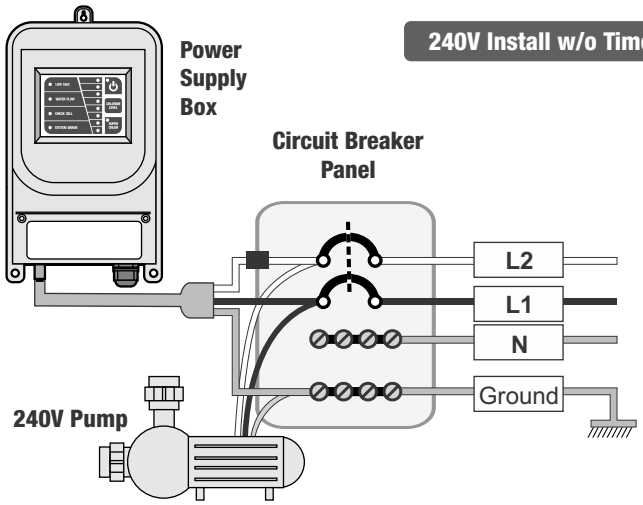
Power Supply Box



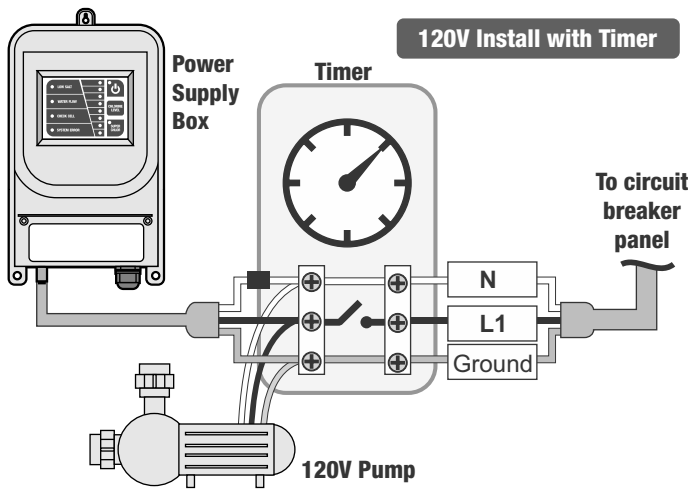
240V Install with Timer



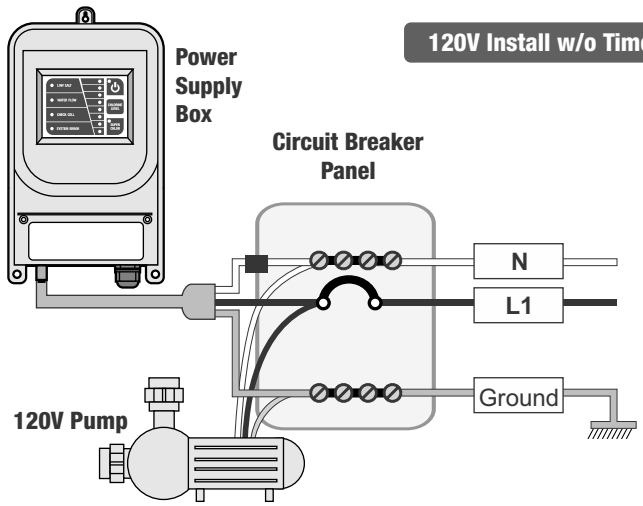
240V Install w/o Timer



120V Install with Timer



120V Install w/o Timer

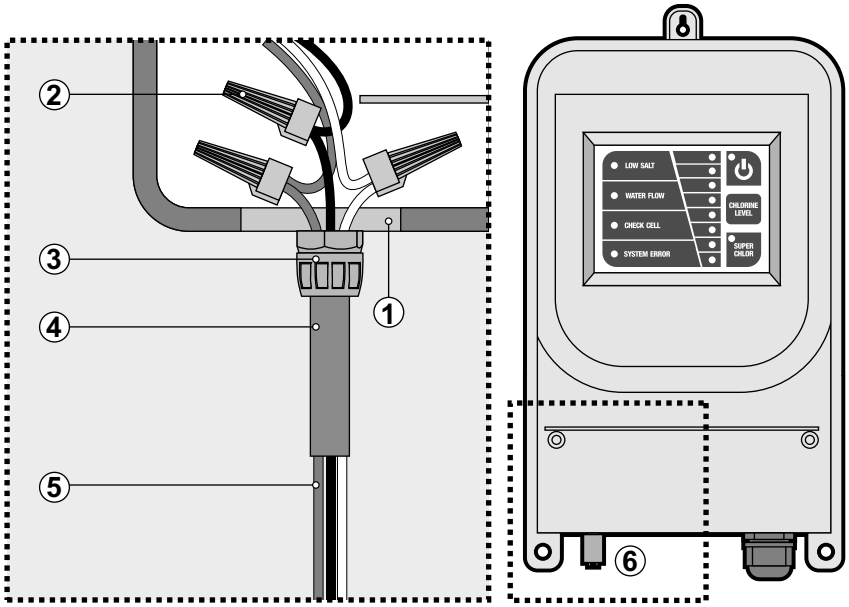


3.5 Wiring the Power Supply Box

CAUTION: TURN OFF ALL POWER TO THE POOL EQUIPMENT BEFORE CONNECTING THE POWER SUPPLY TO ANY ELECTRICAL SOURCE. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH!

USE COPPER CONDUCTORS ONLY

FOLLOW ALL APPLICABLE ELECTRICAL CODES.



Internal Wire Connections

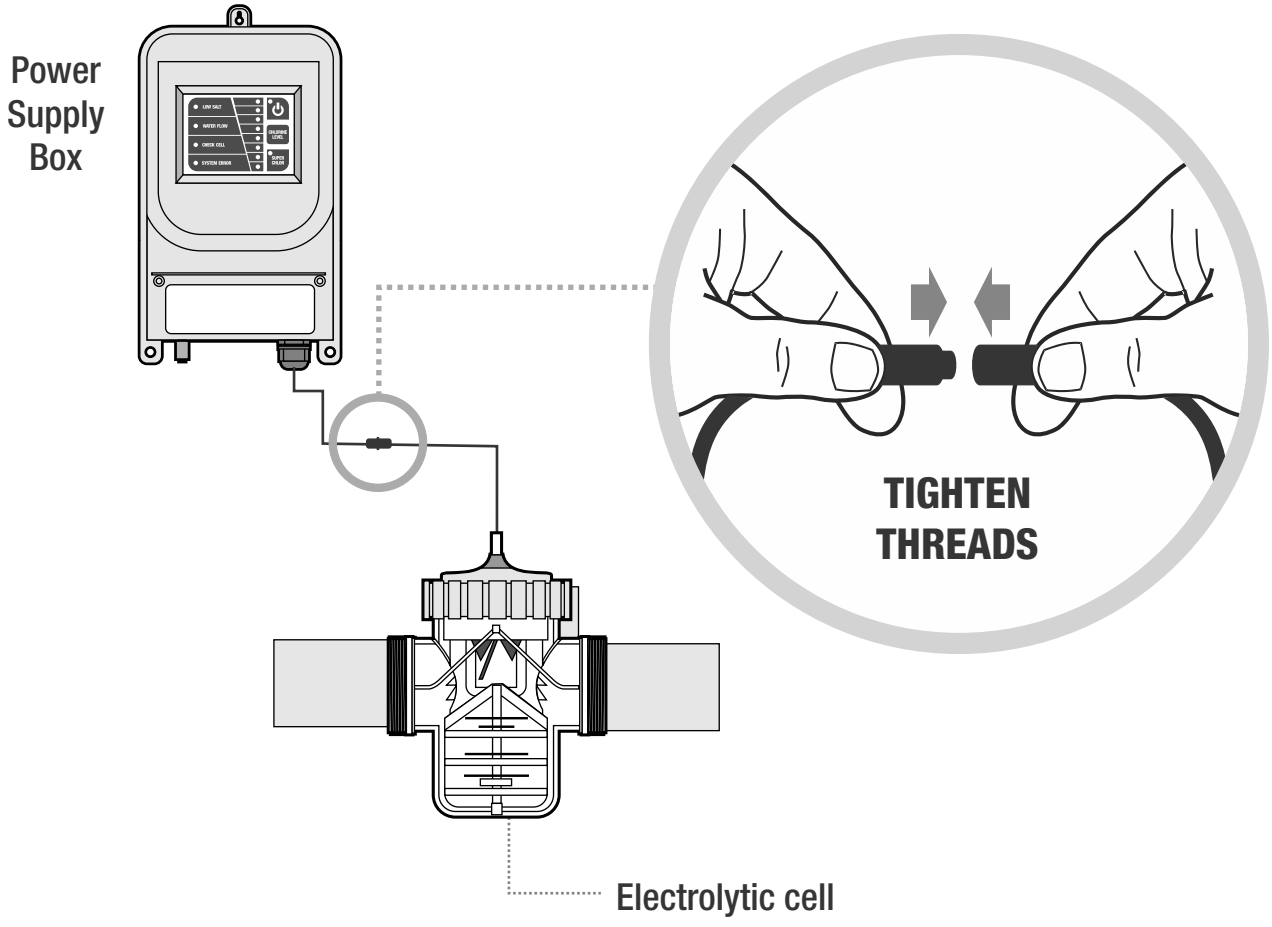
1. Cover of the Junction Box
2. Wire Nut Connections
3. Liquid-Tight Conduit Fitting (1/2 inch) (UL514B)
4. Liquid-Tight Conduit (1/2 inch) (UL514B)
5. Wires
6. Bonding lug

NOTE: *3,4 and 5 Not Supplied*
NOTE: *Connect solid copper wire, not smaller than no. 8 AWG, to the bonding lug (6).*

Wires to be connected to either a circuit breaker, automation system or variable speed pump per diagram above:

3.6 Wiring the cell.

Connect the two black wires from the Power Supply Box to the two Quick-Connects on the sides of the Cell. Ensure the connections are perfectly clean of any debris.



Section 4. Pool Water Preparation

4.1 Adding the salt

Adding the salt to the pool water BEFORE starting the salt system is required. The system could show error lights on the power supply if there is no salt circulating in the pool water for several hours before starting the system.
The "Low Salt" light may remain lit for up to 24 Hours until salt is fully dissolved in the water.

1. Measure the pre-existing salinity of your pool. Previous use of liquid chlorine may have created a residual level of salt in your pool.
2. Determine how much salt is needed from the pool volume calculator and salinity demand table on the following pages. This table is based on a salt concentration of 3500 ppm.
3. Keep the circulating pump on.
4. Distribute the determined amount of salt evenly around the pool. To avoid clogging the filter or damaging the Control Box and pump, do not add salt through the skimmer. Brush the bottom of the pool to help dissolve the salt.
5. The readout on the chlorine generator may fluctuate until the salt is fully dissolved.

GOOD Acceptable Salts
Granulated Pool Salt

BAD – do NOT use:
Iodized Salt
Salt with more than 1% anti-caking agents
Rock Salt, Water Softener Salts
Calcium Chloride (not salt). Use Sodium Chloride Only

4.2 Calculating the size of the pool

Gallons (Dimensions in feet)	Liters (Dimensions in meters)
Rectangle Width X Length X Average Depth X 7.5 = Gallons	**Rectangle** Length x Width x Average Depth x 1000 = Liters
Round Diameter x Diameter x Average Depth x 5.9 = Gallons	**Round** Diameter X Diameter X Average Depth X 785 = Liters
Oval Length X Width X Average Depth X 6.7 = Gallons	**Oval** Length X Width X Average Depth X 893 = Liters

Use the above chart to determine the water volume of your pool

Example: 15' X 30' Rectangle Pool 3' shallow end, 6' deep end.

$$15^{\text{wide}} \times 30^{\text{long}} = 450^{\text{sq ft}} \times 4.5^{\text{avg depth}} \times 7.5^{\text{gal per cubic ft}} = 15{,}147\ _{\text{gallons}}$$

Section 5. Salinity Demand Table (in lbs.)

Salt level before addition (in PPM)

How much salt to add (in pounds)

Water volume in thousands of Gallons

	0	500	1000	1500	2000	2500	3000	3500	4500
4	117	100	83	67	50	33	17	0	OK
6	175	150	125	100	75	50	25	0	OK
8	234	200	167	133	100	67	33	0	OK
10	292	250	209	167	125	83	42	0	OK
12	350	300	250	200	150	100	50	0	OK
14	409	350	292	234	175	117	58	0	OK
16	467	400	334	267	200	133	67	0	OK
18	525	450	375	300	225	150	75	0	OK
20	584	500	417	334	250	167	83	0	OK
22	642	550	459	367	275	183	92	0	OK
24	701	600	500	400	300	200	100	0	OK
26	759	651	542	434	325	217	108	0	OK
28	817	701	584	467	350	234	117	0	OK
30	876	751	626	500	375	250	125	0	OK
32	934	801	667	534	400	267	133	0	OK
34	992	851	709	567	425	284	142	0	OK
36	1051	901	751	600	450	300	150	0	OK
38	1109	951	792	634	475	317	158	0	OK
40	1168	1001	834	667	500	334	167	0	OK
42	1226	1051	876	701	525	350	175	0	OK
44	1284	1101	917	734	550	367	183	0	OK
46	1343	1151	959	767	575	384	192	0	OK
48	1401	1201	1001	801	600	400	200	0	OK
50	1460	1251	1043	834	626	417	209	0	OK

Locate the current salt concentration at the top of the chart (e.g. 1000 ppm).Then locate the size of your pool on the left (e.g. 12,000 gallons). Run these figures down and across until they meet. That number is the number of pounds of salt required for your pool.

Section 6. Basic Water Chemistry In A Salt Pool

Salt is the sanitizer source of the Chlorine Generator. The ideal salt level to ensure maximum benefits using our system is 3500 ppm (parts per million). A low concentration of salt may hinder the generator effectiveness. A concentration of salt above 5500 ppm may cause corrosion damage to the pool fixtures. See the Adding Salt section for more information.

Free Chlorine vs. Combined Chlorine: The unpleasant smells and side effects often associated with chlorine are actually caused by combined chlorine (i.e., chloramines).Combined chlorine is a chlorine molecule that attacks a noxious particle in the water but is unable to destroy the noxious particle. This chlorine particle remains attached to the noxious particle until one of the two is burned off; hence the term Combined Chlorine (a.k.a. chloramines). To burn off the noxious particle and free up the chlorine again, pool owners have to shock (with chlorine) the pool periodically, but with the Chlorine Generator, the noxious particles are burned off within the Cell and the combined chlorine is continuously converted back to free chlorine. The free chlorine level in the pool should be maintained at 2 to 4 ppm. This level of free chlorine is comfortable to swim in with no unpleasant smells, and maintains proper sanitizing power.

pH is a measure of the acidic or basic solution. A scale of 0 to 14 is used to measure pH. Pure water has a pH of seven (neutral), acid solutions have a pH of less than seven, and basic (alkali) solutions have a pH of more than seven. The recommended range is 7.2 to 7.6 for pools; chlorine is much more effective within this range and the water is most comfortable for bathers. pH levels above 7.8 drastically reduce the effectiveness of the chlorine. To lower the pH, add muriatic acid or dry acid. Be sure to read and follow the respective manufacturer's instructions.

Total Alkalinity reduces changes in pH. It is often referred to as the "big brother of pH." Keeping proper levels of total alkalinity helps reduce unwanted fluctuations in pH levels. Total alkalinity is also used to offset high or low levels of calcium hardness.
Add muriatic acid or dry acid to lower the total alkalinity and sodium bicarbonate to raise the total alkalinity. Be sure to read and follow the respective manufacturer's instructions.

Stabilizer (Cyanuric Acid or Conditioner) is necessary in outdoor pools to maintain appropriate levels of chlorine. Chlorine stabilizer helps provide an appropriate residual chlorine level in the water. Without stabilizer, UV radiation from the sun destroys most chlorine within 2 hours, but excessive amounts of stabilizer can decrease the effectiveness of chlorine. Chlorine stabilizer should be maintained at 60 ppm to offset the harmful effect of the sun while maintaining the effectiveness of the chlorine. Where pH/ORP automatic sensors are used, 40 ppm of stabilizer suffices. If you have a Salt System, you must use stabilizer!

Phosphates and Nitrates set very high demands on chlorine; most often nitrates and phosphates bring the chlorine level down to zero (0). You can have your water tested for nitrates and phosphates by the local pool professional. Your pool should NOT contain Nitrates or Phosphates. To reduce Phosphate levels, use a phosphate remover from your local pool professional. To reduce Nitrate levels, the pool must be partially or fully drained. (Please check with your local pool professional prior to draining the pool).

Metals (copper, iron, etc.) can cause loss of chlorine and can stain your pool. If a water test reveals the presence of metals, refer to your local pool professional for recommended methods of removal. Be sure to use a phosphate-free metal remover to avoid replacing a metal problem with a phosphate problem.

Calcium Hardness, like pH and alkalinity, affects the water tendency to be aggressive\ or scale forming. Lower levels of calcium hardness improve the chlorine generator's ability to stay clean and provide softer silkier water for the swimmers. Check with your pool professional for proper calcium levels for your pool surface.

Total Dissolved Solids (TDS) is a measure of many types of dissolved materials, including salt. High effective TDS levels (i.e., 1500 ppm and up) cause cloudy water and significantly increase chlorine demand. To obtain the effective TDS level in a pool using a salt system, subtract the salt level from the TDS reading. (e.g., 5000 TDS – 4000 Salt = 1000 effective TDS).

Saturation Index determines whether the pool water is balanced, aggressive, or scale forming by comprehensively taking into account all the relevant factors, including pH level, alkalinity level, calcium hardness, and temperature. These factors should be tested periodically, and then included into the worksheet on the following page to verify the proper balance of the pool and make adjustments as necessary.

Section 7. Maintenance

Maintaining your chlorinator maximizes the performance and life of the unit and requires minimal work.
Pool water should be tested weekly, but MUST be tested at least once a month.

CELL MAINTENANCE

The clear cell body allows easy, regular inspection for lime-scale and calcium build up. Visually check the cell periodically, and clean it as necessary. Advanced self-cleaning technologies, including reverse polarization help the cell stay cleaner but bi-annual cleanings are required.

CELL CLEANING

⚠ **CAUTION – do not use metal or other hard objects to clean the cell.**

⚠ **DO NOT insert anything into the cell.**

Both actions detailed above may scratch the precious coating on the plates and void the warranty.

⚠ **Make sure the electrical connection on top of the cartridge does not come in direct contact with water and/or acid!**

⚠ **Always add acid to water NOT water to acid.**

⚠ **Diluted muriatic acid solution = 1 part acid to 10 parts water.**

⚠ **Follow the instructions of the acid manufacturer.**

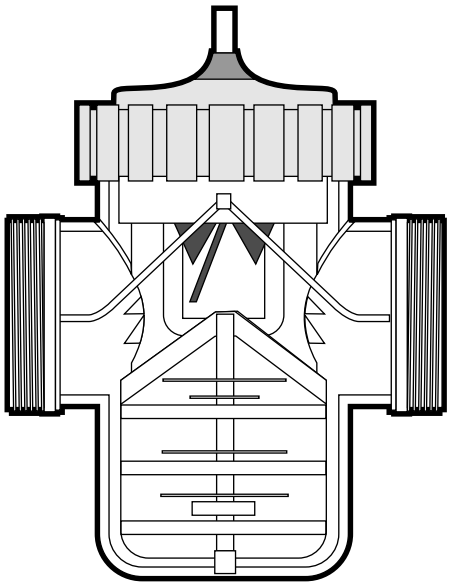
1. Turn the unit OFF and disconnect it from all electric sources.
2. Close the valves before and after the unit
3. Allow water to drain from the unit by opening on of the side barrel unions.
4. Disconnect the control box from the cell body by unscrewing the large barrel nut located under the control box. Place the control box in a dry, safe place away from any water source.
5. Remove the cap, connected to the top part of the cartridge and plug it on top of the electrical connection. Make sure it is tight.
6. Remove the cartridge from the cell body. Make sure the electrical connection on top of the cartridge does not come in direct contact with water and acid!
7. Once removed, look inside the cartridge and inspect for lime-scale formations (light colored crusty or flaky deposits) on the plates and for any debris which has passed through the filter and caught on the plates. If no deposits are visible, reinstall. If deposits are visible, please complete the cell cleaning operation.
8. Remove the O'ring from the cartridge
9. Mix undiluted white distilled vinegar, or a solution of diluted muriatic acid (one part muriatic acid to 10 parts water) in a clean plastic container. ALWAYS ADD ACID TO WATER - NEVER ADD WATER TO ACID!
10. Place the cartridge in the container make sure the electrical connection on top of the cartridge do not come in direct contact with water and acid!
11. Wait for foaming to stop (5-10 minutes when using muriatic acid; vinegar takes longer).
12. Safely dispose of the acid solution or vinegar by pouring it into your pool.
13. Carefully wash the cartridge in tap or pool water and return the cartridge's O'ring to its place.
14. Insert the cartridge into the cell body. Notice that it can only fit in a particular direction so be gentle and flip the other way if necessary.
15. Remove the cap from the electrical connection and plug it back into the head of the cartridge.
16. Place the control box back over the cell and tighten the barrel nut firmly.
17. Turn the unit ON
18. Make sure there are no leaks from the unit once it has restarted

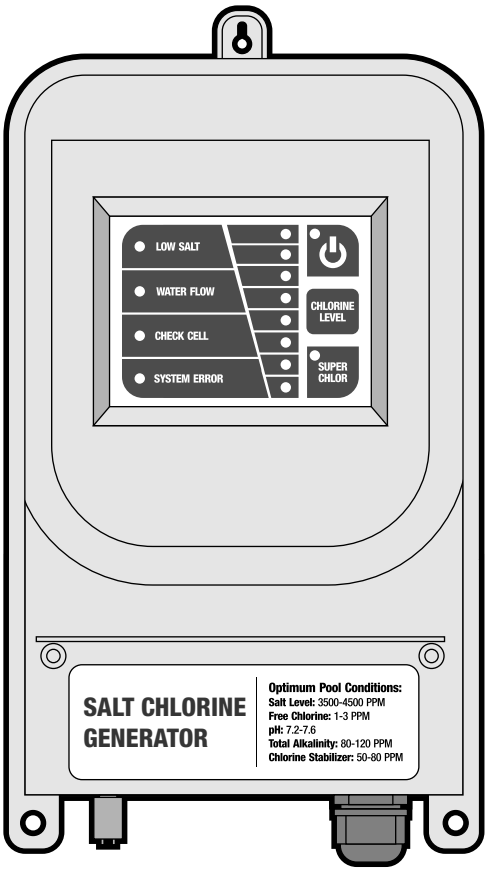
WINTERIZING

Just like the pool plumbing, freezing may damage the unit. If severe or extended periods of freezing temperatures may occur, drain all water from the pump, filter, cell, supply and return lines before temperatures drop.

SPRING STARTUP

DO NOT turn on the system until the pools' water chemistry has been brought to the required levels.




LOW SALT
WATER FLOW
CHECK CELL
SYSTEM ERROR
CHLORINE LEVEL
SUPER CHLOR
SALT CHLORINE GENERATOR
Optimum Pool Conditions:
Salt Level: 3500-4500 PPM
Free Chlorine: 1-3 PPM
pH: 7.2-7.6
Total Alkalinity: 80-120 PPM
Chlorine Stabilizer: 50-80 PPM