

SALT CHLORINATOR FOR ABOVE GROUND POOLS



Crystal Pure 3.0 ABG

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IMPORTANT SAFETY INSTRUCTIONS

Use basic safety precautions when using electrical equipment, including the following:

READ AND FOLLOW ALL INSTRUCTIONS

- Do not permit children to use this product without proper supervision
- Disconnect all AC power during installation
- To reduce electrical shock, connect the ground wire from your breaker to the green colored screw inside the wiring compartment
- One bonding lug for US models (two for Canadian models) is provided on the external surface. To reduce the risk of electric shock, connect the local common bonding grid in the area of the swimming pool, spa, or hot tub to these terminals with an insulated or bare copper conductor not smaller than 8 AWG US/6 AWG Canada.
- All field-installed metal components such as rails, ladders, drains, or other similar hardware located within 10 feet (3 meters) of the pool, spa or hot tub shall be bonded to the equipment grounding bus with copper conductors not smaller than 8 AWG US/ 6 AWG Canada.

HOW IT WORKS

The Crystal Pure 3.0 ABG is an automatic salt chlorinator specifically designed for above ground pools. The salt or minerals pass through the electrolytic plates in the chlorinator cell to form chlorine which kills all the contaminants within the pool and prevents bacteria and algae from forming.

Crystal Pure 3.0 ABG is designed to handle residential swimming pools up to 40,000 gallons (150,000 liters). The actual amount of chlorination depends upon bather load, rainfall, air temperature, water temperature, pool's exposure to sunlight, pool's surface, and cleanliness.

Crystal Pure 3.0 ABG is not used to generate Bromine. If your pool has natural stone coping or decking, check with your installer for stone maintenance before installing the Crystal Pure 3.0 ABG.

WATER CHEMISTRY

Salt	3200
Free Chlorine	1.0 - 3.0 ppm
pH	7.2 - 7.6
Cyanuric Acid (Stabilizer)	50 - 100 ppm
Total Alkalinity	80 - 120 ppm
Calcium Hardness	200 - 400 ppm
Saturation Index	-.2 - .2

SALT NEEDED FOR 3400 PPM IN

LBS and (KG)

Current Sal level ppm	6,000 (22,500)	8,000 (30,000)	10,000 (37,500)	12,000 (45,000)	14,000 (52,500)	16,000 (60,000)	18,000 (67,500)
0	180 (82)	239 (109)	301 (136)	360 (163)	419 (190)	481 (218)	540 (245)
200	170 (78)	226 (103)	284 (129)	340 (154)	396 (180)	454 (206)	510 (232)
400	160 (73)	213 (97)	267 (121)	320 (145)	373 (170)	427 (194)	480 (218)
600	150 (69)	200 (91)	250 (114)	300 (136)	350 (159)	400 (182)	450 (205)
800	140 (64)	187 (85)	233 (106)	280 (127)	327 (148)	373 (170)	420 (191)
1000	130 (59)	173 (79)	217 (98)	260 (118)	303 (138)	347 (158)	390 (177)
1200	120 (55)	160 (73)	200 (91)	240 (109)	280 (127)	320 (145)	360 (164)
1400	110 (51)	147 (67)	183 (83)	220 (100)	257 (117)	293 (133)	330 (150)
1600	100 (46)	133 (61)	167 (76)	200 (91)	233 (106)	267 (121)	300 (136)
1800	90 (41)	120 (55)	150 (68)	180 (82)	210 (95)	240 (109)	270 (123)
2000	80 (36)	107 (48)	133 (61)	160 (73)	187 (85)	213 (97)	240 (109)
2200	70 (32)	93 (42)	117 (53)	140 (64)	163 (74)	187 (85)	210 (95)
2400	60 (27)	80 (36)	100 (45)	120 (55)	140 (64)	160 (73)	180 (82)
2600	50 (23)	67 (30)	83 (38)	100 (45)	117 (53)	133 (61)	150 (68)
2800	40 (18)	53 (24)	67 (30)	80 (36)	93 (42)	107 (48)	120 (55)
3000	OK	OK	OK	OK	OK	OK	OK
3200	OK	OK	OK	OK	OK	OK	OK
3400	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal
3600	OK	OK	OK	OK	OK	OK	OK
3800	OK	OK	OK	OK	OK	OK	OK
4000	OK	OK	OK	OK	OK	OK	OK
4200	High	High	High	High	High	High	High
4400	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute

SALT LEVEL

The ideal salt level for efficient operation is between 3000-4000 ppm. To determine your current salt levels, first calculate the number of gallons in your

pool. The chart below shows how to calculate the number of gallons in your pool based on the shape.

	GALLONS <i>(pool size in feet)</i>	LITERS <i>(pool size in meters)</i>
Rectangular	Length x Width x Average Depth x 7.5	Length x Width x Average Depth x 1000
Round	Diameter x Diameter x Average Depth x 5.9	Diameter x Diameter x Average Depth x 785
Oval	Length x Width x Average Depth x 6.7	Length x Width x Average Depth x 893

Next, test your pool water to determine the current salt levels. Before you can adjust the salt levels in your pool, you first have to calculate how much salt is already there. Based on your pool's gallon size and current salt levels, use the salt chart to determine how much salt to add or remove.

LOW salt levels reduce the efficiency of the Crystal Pure 3.0 ABG and can result in low chlorine production or can cause the system not to operate.

Excessively HIGH salt levels will cause the Crystal Pure 3.0 ABG to shut down, making pool water unsafe for swimmers.

TYPE OF SALT TO USE

It is important to use only sodium chloride (NaCl) that is 99% pure. This is common food quality or water softener salt available in 40-80 lb/bag at your local store. It is also acceptable to use water conditioning salt pellets, however it will take longer for them to dissolve. Do not use rock salt, salt with more than 1% yellow prussiate of soda, salt with more than 1% of anti-caking additives, or iodized salt.

ADDING OR REMOVING SALT

ABOVE GROUND POOLS WITH MAIN DRAINS: Add directly in front of the return jet to pool. Run the filter pump for 24 hours with the suction coming from the main drain (use the pool vacuum if there is no main drain) to allow the salt to evenly disperse throughout the pool.

ABOVE GROUND POOLS WITHOUT MAIN DRAINS: Add directly into the pool. Brush the salt to speed up the dissolving process—to not allow the salt to sit in a pile on the bottom of the pool. -----ELIMINATE THE FOLLOWING--(Run the filter pump for 24 hours with the suction coming from the main drain (use the pool vacuum if there is no main drain) to allow the salt to evenly disperse throughout the pool).

SALT DOES NOT EVAPORATE FROM THE POOL

To lower the salt concentration, partially drain the pool and refill with fresh water.

STABILIZER (CYANURIC ACID)

Always test your stabilizer level(cyanuric acid), when testing for salt. This test should be done at least once a month. Use the chart below to determine how much stabilizer is needed to raise the level to 80 ppm.

POUNDS AND (Kg) OF STABILIZER (CYANURIC ACID) NEEDED FOR 80 ppm

Current Stabilizer Level(ppm)	6,000 (22500)	8,000 (30000)	10,000 (37500)	12,000 (45000)	14,000 (52500)	16,000 (60000)	18,000 (67500)
0 ppm	4.0 (1.8)	5.3 (2.4)	6.7 (3.0)	8.0 (3.6)	9.4 (4.3)	10.7 (4.9)	12.0 (5.4)
10 ppm	3.5 (1.6)	4.7 (2.1)	5.8 (2.6)	7.0 (3.2)	8.2 (3.7)	9.4 (4.3)	10.5 (4.8)
20 ppm	3.0 (1.4)	4.0 (1.8)	5.0 (2.3)	6.0 (2.7)	7.0 (3.2)	8.0 (3.6)	9.0 (2.2)
30 ppm	2.5 (1.1)	3.3 (1.5)	4.2 (1.9)	5.0 (2.3)	5.9 (2.7)	6.7 (3.0)	7.5 (3.4)
40 ppm	2.0 (.9)	2.7 (1.2)	3.3 (1.5)	4.0 (1.8)	4.7 (2.1)	5.4 (2.4)	6.0 (2.7)
50 ppm	1.5 (.7)	2.0 (.9)	2.5 (1.1)	3.0 (1.4)	3.5 (1.6)	4.0 (1.8)	4.5 (2.0)
60 ppm	1.0 (.5)	1.3 (.6)	1.7 (.8)	2.0 (.91)	2.4 (1.1)	2.7 (1.2)	3.0 (1.4)
70 ppm	0.5 (.2)	0.7 (.3)	0.8 (.4)	1.0 (.45)	1.2 (.54)	1.4 (.64)	1.5 (.68)
80 ppm	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Use polymers (commonly sold as poly algaecide) when using salt water sanitizing systems. The poly algaecide is sold in 30% and 60% concentrations.

Application rate is 1 quart of Poly 30 (or 1/2 quart of Poly 60) per 15,000 gallons (60,000 liters) of pool water, per month. Apply directly in front of the return jet.

INSTALLATION

Installation must be performed in accordance with Local NEC Codes.

The pool's chemistry must be balanced BEFORE activating the Crystal Pure 3.0. Freezing temperatures can damage the cell and flow detection switch. In areas of the country that experience severe or extended periods of freezing temperatures, be sure to drain all water from the pump, filter, and supply and return lines. The electronic control is capable of withstanding any winter weather and should not be removed.

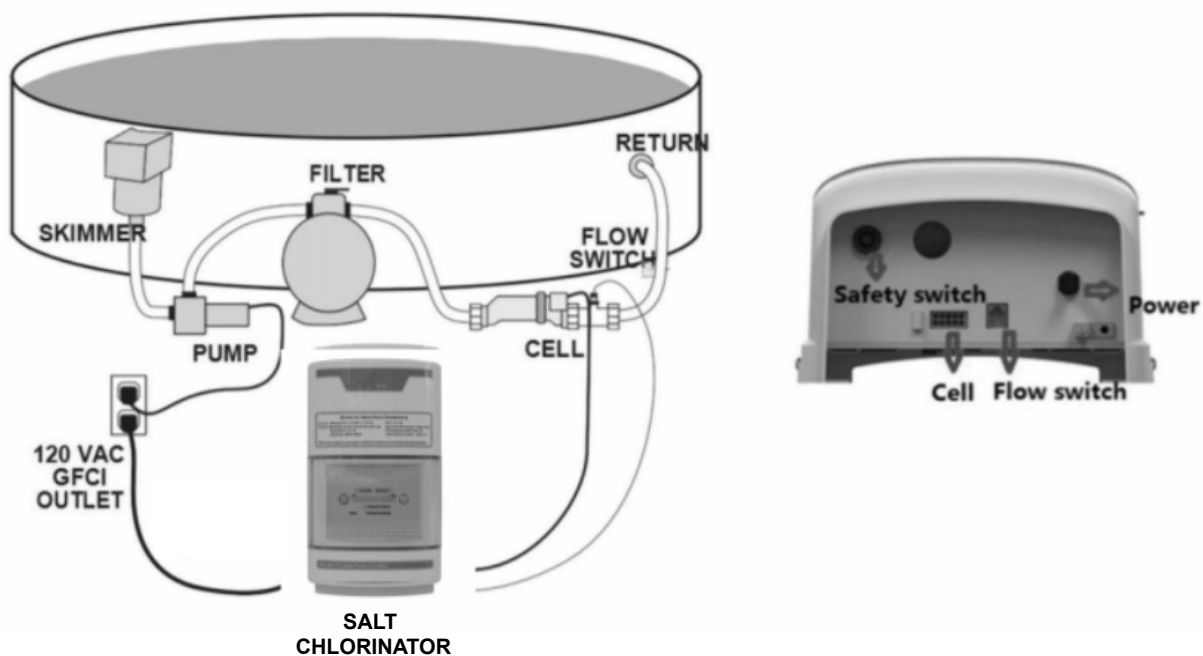
INSTALL THE CONTROL

The Crystal Pure 3.0 ABG control unit must be mounted at minimum of 6 ft. (2 meters) horizontal distance (or more if local codes require) from the pool.

The control is designed to mount vertically on a flat surface with the knockouts facing downward. Do NOT block the four sides of the control.

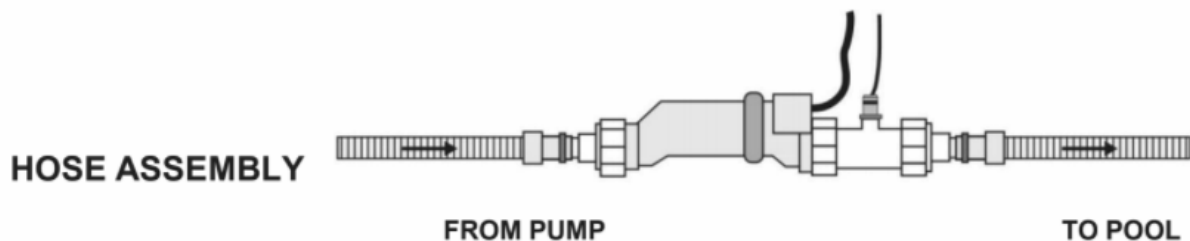
Do NOT mount the Crystal Pure 3.0 ABG in a panel or tightly enclosed space.

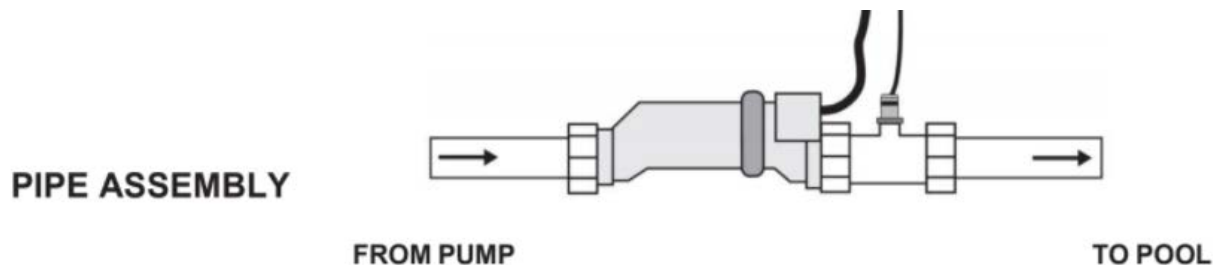
SYSTEM OVERVIEW



INSTALL THE CELL

To install the cell and flow switch, refer to the picture below. Flow switch is installed after the cell. When using the hose adaptors, remove the O-ring from the pipe union tailpiece and install them in the hose tailpieces. Tighten all union nuts **BY HAND** for a watertight seal.





The Crystal Pure 3.0 ABG cell can be installed vertically. Adapt an elbow to connect on the water return.

WIRING

Power must be turned OFF before performing any wiring. Be sure to follow local and NEC electrical codes. To provide safe operation, Crystal Pure 3.0 ABG must be properly grounded and bonded.

INPUT POWER

Wire the Crystal Pure 3.0 ABG to the LOAD SIDE of the filter pump timer. **It is very important that the Crystal Pure 3.0 ABG is powered only when the pump is running.**

CELL AND FLOW SWITCH

The electrolytic cell and flow switch cables are terminated with connectors that plug into the unit for easy attachment and removal. Crystal Pure 3.0 ABG has an Auto Control System with a very simple operation.

DESIRED LEVEL: There are 10 LED lights, each LED represents 10%. Choose the desired level percentage by pressing MIN to decrease or MAX to increase. The Crystal Pure 3.0 ABG will produce chlorine according to the desired level % adjustment setting for the entire filter cycle.

MAX: Press MAX to increase the level to 100%. This is commonly used when you have an abnormally high bather load, heavy rainfall, cloudy water conditions, or any other condition that requires a large amount of purification be introduced.

Push Max until all 10 LEDS ARE ON. This electronically “Max chlorinates” (shocks) the water for 24 hours (filter pump must be on during this time) or until you turn the power OFF.

At the end of the Max chlorination period, be sure to push Min to decrease level back to the desired level position.

MIN: Press MIN to decrease the desired level. When all of the 10 LEDs are OFF, it will prevent the Crystal Pure 3.0 ABG from energizing the cell. In this position, no chlorine is generating.

LOW SALT: When flashing, the salt level is low and the Crystal Pure 3.0 ABG is generating at low efficiency. When illuminated steady, the salt level is too low and Crystal Pure 3.0 ABG has shut down.

CHECK CELL: When the cell is working, green light is on.



INDICATOR LED

POWER STATUS: When the LED is on the Crystal Pure 3.0 ABG has input power.

WATER FLOW: When illuminated, the flow switch has detected no flow and the Crystal Pure 3.0 ABG is NOT generating chlorine.

A flashing LED indicates that the flow is restored, but there will be a 60 second delay before generation is re-established.

LOW SALT: When flashing, the salt level is low (below 2500 ppm) and Crystal Pure 3.0 ABG is generating at low efficiency.

When illuminated steady, the salt level is too low and Crystal Pure 3.0 ABG has shut down.

Note: Before adding large quantities of salt, we recommend you to have your salt levels professionally checked.

Note: If your salt level is correct but the Low Salt Light is still on, it's time to replace your cell.

HIGH SALT: When illuminated, the salt level is around 4500 ppm. When illuminated steady, salt level is higher than 5400 ppm and Crystal Pure 3.0 ABG has shut down. The pool water must be diluted with fresh water before operation is restored.

OPERATION

FOUR factors contribute to the amount of chlorine the Crystal Pure 3.0 ABG will generate:

1. Filter time each day (hours)
2. The amount of salt in the pool
3. The “Desired Level %” setting
4. Stabilizer level in the water.

To find the optimum “Desired Level %” setting, start at a fairly high setting and work downward. It may take a few days of adjustments to find the ideal setting for your pool. Once determined, it should only take minor adjustments. The Crystal Pure 3.0 ABG control will not produce chlorine at temperatures below 50°F.

If your pool water is colder than 50°F, you must chlorinate manually.

GENERAL MAINTENANCE

To maintain maximum performance, we recommend that you remove and visually inspect the cell every 3 months. The Crystal Pure 3.0 ABG cell has a self-cleaning feature incorporated into the electronic control logic. In most cases, this self-cleaning feature will keep the cell working at optimum efficiency.

Servicing and Cleaning the Cell

- Turn off power to the Crystal Pure 3.0 ABG before removing the CELL.

- Once removed, check the cell and inspect for scale formation (light colored crusty or flaky deposits) on the plates and for any debris that passed through the filter and gotten caught on the plates.
- If no deposits are visible, reinstall the cell. If deposits are seen, use a high-pressure garden hose and try to flush the scale off. If this is not successful, use a plastic or wood tool to scrape deposits off of the plates. **DO NOT USE A METAL SCRAPER- THIS WILL SCRATCH THE FINISH AND DAMAGE THE PLATES.** A buildup on the cell indicates that there is an unusually high calcium level in the pool (old pool water is usually the cause). If this is not corrected, you will need to clean the cell more frequently. The simplest way to avoid this is to bring the pool chemistry to recommended levels.

Mild Acid Washing

Use only in severe cases where flushing and scraping will not remove the majority of deposits. To acid wash:

- Turn off power to Crystal Pure 3.0 ABG.
- Remove cell from piping
- In a clean plastic container, carefully mix a 4:1 solution of water to muriatic acid (one gallon of water to one quart of muriatic acid).

NOTE Always pour acid into water. (Never pour water into acid!) Be sure to wear protective glasses, clothing, and chemical resistant gloves The level of the solution in the container should just reach the top of the cell so that the wire harness compartment is **NOT** submerged. It may be helpful to coil the wiring before immersing the cell.

- The cell should soak for **FIVE** minutes, then rinse with a high-pressure garden hose
- If any deposits are still visible, repeat soaking and rinsing

WINTERIZING

Similar to other pool equipment that require proper winterization, the Crystal Pure 3.0 ABG electrolytic cell and flow detection switch will damage by freezing water. In areas of the country that experience severe or extended periods of freezing

temperatures, be sure to drain all water from the pump, filter, and supply and return lines before freezing conditions occur.

The electronic control is capable of withstanding any winter weather and should not be removed.

TROUBLESHOOTING

Low or no chlorine residual in pool:

1. Increase Output Level. This is often required seasonally with increasing temperatures.
2. Increase run time to at least 1 hour per 10° ambient temp.
3. Activate Super CL mode or chemically shock pool.
4. Remove Cell from plumbing, inspect and clean
5. Cold water (below 50F) can cause Crystal Pure 3.0 ABG to stop generating
6. Low pH levels and Low pH oxidizes chlorine quickly, making it difficult to maintain desired chlorine levels. Adjust pH levels to re-balance water.
7. Warm pool water increases the chlorine demand— Increase the Desired Level% or filter run time.
8. The POWER switch in OFF position.
9. Desired Level% adjustment setting is too low.

“No Flow” LED illuminated or flashing:

1. Check that the flow switch is plugged into the connector on the bottom of the control unit and that the wire is not cut or damaged.
2. Make sure you have at least 12” of straight pipe before the flow switch.
3. If there is adequate flow and the LED is still on, check that the arrows on the flow switch are pointing in the direction of flow.

Low Salt / High Salt LED is on:

1. Verify salinity and Cell Version in Status Menu.
2. Ensure correct connections.
3. Clean cell if necessary.

Replace the new cell:

1. Remove and inspect the cell for scale. If the cell is scaled, follow the directions for cleaning the cell.
2. If the pool has the proper amount of salt and the LOW SALT LED is still illuminated, the cell may be depleted and needs to be replaced.

Water leak:

1. Ensure O-Rings are clean and in good condition.
2. Inspect threads for damage and ensure there is no resistance when you screw back on

No Power:

1. Check fuses on Control Module.
2. Have a professional test input power & ensure correct wiring configuration & connections.
3. Make sure 120V AC input power is connected to the control.

2 YEAR LIMITED WARRANTY

PureLine Pool Crystal Pure 3.0 ABG is warranted to be free from defects in materials and workmanship, under normal use and non-commercial application, for a period of **ONE year**. Proof of purchase may be required. This limited warranty is extended exclusively to the original purchaser of the Crystal Pure 3.0 ABG system and is non-transferable. Crystal Pure 3.0 ABG is intended for residential above ground pool use and any commercial application voids all warranties.

EXCLUSIONS:

- Problems arising from failure to maintain proper water chemistry levels, per manufacturer's recommendations, as outlined in the Owner's Manual.
- Problems arising from failure to use Crystal Pure 3.0 ABG in accordance to manufacturer's recommendations, as outlined in the Owner's Manual.
- Problems resulting from tampering, accident, electrical surges, abuse, neglect, unauthorized or unqualified repairs, product alteration, fire, flood, freeze damage, Acts of Nature or Acts of God.
- Damaged or degrading of concrete, natural stone, wood or synthetic surfaces adjacent to the swimming pool or spa.
- Problems or damages incurred due to improper installation and/or improper electrical supply.

DISCLAIMERS:

- This limited warranty constitutes the entire warranty. No other warranties apply, expressed or implied. This limited warranty gives you specific legal rights, which vary from state to state. Under no circumstances shall Crystal Pure 3.0 ABG or authorized agent/installer be responsible for consequential, special, or incidental damage(s) of any kind, including but not limited to personal injury, property damage, or damage to or loss of equipment. Crystal Pure 3.0 ABG or agent/installer is not liable for any other expenses that may be incurred during installation or servicing. Authorized agents/installers may charge a trip fee for warrantable service work.
- Labor not included. Some states do not allow the exclusion of limitations of incidental or consequential damages. Listed exclusions and limitations may not apply to you.