

# Hot Spring® Spas ACE™ Salt Water Sanitizing System Frequently Asked Questions

## Compatibility

### ACE System-ready Starting Serial Numbers

- |   |                  |     |           |
|---|------------------|-----|-----------|
| <b>1. Is the ACE salt water sanitizing system backwards compatible?</b>   | Vista            | SS  | SS3L2076  |
|   | Vista Export     | SSE | SSE3L2032 |
| <ul style="list-style-type: none"> <li>• The ACE system is an option for Hot Spring spas built on or after August 5, 2009.</li> </ul> | Grandee          | GG  | GG3L2227  |
|   | Grandee Export   | GGE | GGE3L2023 |
| <b>2. My spa is older than August 5, 2009. Can the ACE salt water sanitizing system work with my spa?</b>                             | Envoy            | KK  | KK3L2134  |
|   | Envoy Export     | KKE | KKE3L2123 |
|   | Aria             | AR  | AR3L2059  |
|   | Aria Export      | ARE | ARE3L2058 |
|   | Vanguard         | VV  | VV3L2234  |
|   | Vanguard Export  | VVE | VVE3L2032 |
|   | Sovereign        | II  | II3L2122  |
|   | Sovereign Export | IIE | IIE3L2100 |
|   | Prodigy          | H   | H3L2160   |
|   | Prodigy Export   | HE  | HE3L2013  |
|   | Jetsetter        | JJ  | JJ3L2232  |
|   | Jetsetter Export | JJE | JJE3L2123 |
- In order for the ACE system to function properly it must be installed on a Hot Spring spa with August 5<sup>th</sup> 2009-or-newer control box (rev. D or later) and control panel (rev. C or later) panel. If the spa is older than 2009, we recommend considering it a trade-in opportunity.

## Technology

- 3. How long have chlorine-based salt systems been used in the pool & spa market?**
  - Over 30 years
  
- 4. Why have the chlorine-based salt systems worked for pools but failed for portable spas in the past?**
  - Spas have a much smaller body of water at much higher temperatures, creating a variety of challenges for chlorine-based salt systems.
    - High levels of salt in unstable water can be corrosive
    - High water temperature shortens the life of chlorine
    - High bather loads and low water volume can cause rapid swings in chlorine levels
    - High water temperature increases the rate of scale formation of equipment (electrodes)
  
- 5. How long has the ACE salt water sanitizing system been in testing?**
  - Watkins has been testing the diamond technology for over 3 years. The components of the current ACE system have been in testing for 1.5 years.
  
- 6. How does the ACE salt water sanitizing system overcome challenges relating to salt water based chlorine generation in a spa?**
  - The system is sized specifically for a spa
  - The diamond technology allows us to generate chlorine at lower salt levels - 1000ppm.
  - The Vanishing Act calcium remover allows us to keep water hardness much lower (50ppm) than with traditional water care.
  - The chlorine generating cell is easy to access and easy to clean.

**7. How is the ACE salt water sanitizing system different from a traditional chlorine generating system?**

- Common generator cells use titanium electrodes capable of producing only chlorine. The ACE system uses unique solid diamond electrode along with two titanium electrodes. The patented diamond electrode increases the sanitizing power in the water while using less salt.

**8. How much salt does the ACE salt water sanitizing system use, and will it cause corrosion?**

- Pools systems use up to 5000ppm of salt. High salt levels, like those used in a pool, combined with unstable water in a spa can corrode equipment overtime. The unique diamond technology used by the ACE system allows us to minimize salt levels to 1000 – 1500ppm and prevent corrosion. Note that high levels of chlorine 10ppm or more can be corrosive regardless of salt concentration.

**9. How does the ACE salt water sanitizing system use diamond technology to generate chlorine?**

- Unlike common titanium electrodes that convert chloride or bromide salt directly into chlorine or bromine, a diamond electrode used in the ACE system generates high energy Active Oxygen from water. The active oxygen can then clean the water without chlorinated or brominated byproducts. Once the water is clean, the active oxygen produces the chlorine residual as well as ozone, hydrogen peroxide, and MPS. (Note that MPS generation is dependent on having pH down present in the water.)

**10. Why is diamond technology so much better than any other media?**

- Diamond electrode technology is superior to conventional titanium electrodes in regards to how the energy is imparted to the water. Ordinary salt water systems are limited to creating only chlorine. Diamond electrodes allow for significantly higher energy to be transferred to the water and first create Active Oxygen. The Active Oxygen scours the water breaking waste down. Then the chlorine generation takes place in the water as a reaction between the chloride from the salt and the Active Oxygen.

**11. Why are most salt water sanitizing systems for spas based on bromine?**

- Bromine is easier to generate than chlorine and is more stable in a spa environment. Unfortunately bromine has a strong chemical odor and can be more corrosive to spa components than chlorine.

**12. Why is it recommended to remove the ozone unit? Can I leave it in?**

- Ozone is compatible with the ACE system however ozone is known to break down chlorine. For light users it is recommended to remove the ozone and allow the ACE to cover all sanitation. For high demand users, ozone will reduce waste and take some of the load off of the ACE and therefore maybe left in.

## **Water Chemistry**

**13. Is the ACE compatible with other sanitizer systems (bromine)?**

- **The ACE is compatible with all chemicals used in the ever fresh system. ACE is not compatible with Baqua (biguanides) or bromine.**

**14. Can I use table salt in place of Spa Salt in the spa?**

- **Table salt is not recommended for use with the ACE system because it contains iodine and anti-caking agents that will interfere with the ACE operation and may cause staining of the shell.**

**15. What is the Vanishing Act™ calcium remover and why should I use it?**

- The Vanishing Act calcium remover is a patent-pending product that removes calcium from the water. This is the best option to achieve the desired hardness level of 50ppm for proper ACE system operation and minimize cell cleaning.
- 16. The recommended calcium level for the ACE salt water system is 50ppm, much lower than the industry norm. Can we damage the spa at these levels?**
- The industry recommended calcium levels of 150 – 400ppm are based on the Langelier Saturation Index which was developed to lay down a thin layer of scale on the water distribution piping of cities to prevent corrosion of cast iron pipes. A high calcium level in in-ground pools and spas prevents the water from attacking the plaster. For a portable spa built of acrylic, stainless steel, and titanium, there is little concern of corrosion. A reduced calcium level will not affect the spa as long as the pH is kept within range.
- 17. I have been told that my water has high hardness and that an anti-scalant or scale control product is needed. What should I add?**
- The use of an anti-scalant or scale control product, such as FreshWater® Stain and Scale Defense, is **not recommended with the ACE system**. The powerful oxidizers generated by the ACE system break down the anti-scalant and scale control products very quickly and may cause phosphate compounds to form a scale with calcium that is very difficult to remove. Instead use the Vanishing Act™ calcium remover. It removes calcium and hardness with no phosphate residual.
- 18. How do I remove phosphates from the water?**
- Phosphates should be controlled to 0 – 300 ppb. Phosphate removers can be purchased through local distribution.
- 19. I used the Vanishing Act calcium remover and the Alkalinity is very low. Is that ok?**
- The removal of calcium will cause the alkalinity to drop initially. It will increase over time as the water is used and pH Down is added. pH is the critical parameter for water balance and should be maintained at all times with pH Up or Down as needed.
- 20. Does the soft water required for the ACE salt water sanitizing system cause the water to be foamy?**
- Softer water allows detergents to foam better than hard water. This is typically a problem for spas because regular chlorine does not remove most detergents and foaming agents. The ACE system's Active Oxygen and mixed oxidants remove detergents better than chlorine, so foaming is not typically an issue.
- 21. My test strip shows purple on the bromine pad but very little color on the chlorine pad. What does this mean?**
- The ACE system produces mixed oxidizers that are not all chlorine based and don't register on the chlorine pad. A purple bromine pad indicates that your water is being cleaned but your chlorine level is very low. It is advisable to let the system increase the chlorine level with time, a boost, or a manual dichlor addition.
- 22. Can we be at lower levels of chlorine because there are oxidizers in the water?**
- The EPA recommends a chlorine level between 3- 5ppm. That said, the system produces oxidizers other than chlorine that work to remove waste which allow for more effective chlorine utilization.
- 23. What is the difference between bottled chlorine and natural chlorine? Is it sodium hypochlorite we are creating?**
- The ACE system generates sodium hypochlorite. Bottled chlorine typically contains stabilizers like cyanuric acid that can accumulate and irritate skin and eyes.
- 24. How do you maintain a chlorine residual if chlorine is burned off at above 90 degrees?**

- Temperature does not cause the chlorine to burn off but rather increase the rate at which it reacts. If the water is clean and the spa system sanitized, the mixed oxidizers of the ACE system can maintain a residual for an extended period of time.

**25. Have we tested the Silk Balance or AquaFinesse water care products with the ACE salt water sanitizing system?**

- The ACE system has not been tested with Silk Balance or AquaFinesse and neither product is endorsed by Watkins Manufacturing.

## System Operation

**26. The system is showing salt or operational errors and there are menus displayed that aren't in the manual.**

- If after setting up the ACE in a previously used spa the system does not work properly, first check the spa's serial number, control box, and control head for compatibility. Although ACE software is in the older production equipment, it for test only and will not support the production ACE unit.

**27. After starting the ACE salt water system with new water and the correct amount of salt, why does the system status message say Low Salt?**

- At initial start-up the spa will often read low salt, because the salt has not full dissolved into the water. Allow the system to stabilize 24 hours before considering adding more salt.
- The salt will also read low on a fresh fill when the water has not come to temperature. Allow the water to come to temperature (98°– 104° F) and retest.

**28. After having the ACE salt water sanitizing system on the spa for some time, the system status message says Low Salt. Should I add more salt?**

- The salt typically does not leave the spa except for through splash out. If the spa has been topped off recently and there is a Low Salt message, then add salt as recommended in the ACE owner's manual. If the spa water has not been recently topped off the "Low salt" message can also be attributed to the following:
  - Running the Salt Test while the jets are on
  - A dirty cell
  - A dirty circulation filter

**29. The system status message reads High Salt, but no additional salt has been added. How does this happen?**

- In most cases the salt level of the water should not increase with out manually adding additional salt to the water. Regular bather load and usage combined with evaporation will increase the salt level I the water. If there is a salt water pool nearby, it is possible to transfer salt from the pool into the spa. If this occurs, dilute the hot tub water with fresh water until it is back in range.

**30. How often should the cell be cleaned?**

- We recommend cleaning the cell once every 3 months. The cell can be cleaned repeatedly with a mild acid (pH down mixed with spa water will work) without causing harm to the electrodes.

**31. For how long should the cell be left in the cleaning solution?**

- Soak the cell in cleaning solution for 10 minutes at a time. If bubbles continue to come off the cell, change the solution and repeat. Do not leave the cell in solution for longer than 30 minutes at a time.

**32. How long does a Boost cycle take?**

- A boost runs for 24 hours from time of activation and the system status window will show boost while that mode is active.

**33. If a second Boost function is initiated while a Boost is already in progress, will boost again after the first one is complete?**

- No. The system will accept one boost command at a time.

**34. Can the spa be over Boosted?**

- No. The boost function is available to allow the user to increase the chlorine level on demand. If you find that the chlorine level is always running low and you are constantly boosting, it is recommended to increase the Use Level.

**35. How can I stop a Boost Cycle once activated?**

- A Boost Cycle can be stopped by power cycling the spa.

**36. The Use Level is set to 5 and the system is still not producing enough chlorine.**

- The ACE system is designed for the typical user and has a finite daily generation rate. If the Use Level is set to 5, the Spa Size can be increased to produce more chlorine. If that change is not sufficient, additional salt can be added to increase the production rate. Keep the salt level in the green at all times. If the user's demand exceeds the ACE capacity, manual dichlor or MPS addition is needed. Reinstalling the ozone will also help.

**37. The salt level is in the yellow and the system status message reads Low Salt. Is the ACE salt water sanitizing system still producing chlorine?**

- Yes. When the ACE is in a low salt condition, it will continue to produce chlorine but at a slower rate.

**38. The salt level is in the red and the system status message reads High Salt. Is the ACE still producing chlorine?**

- No. High salt conditions will shorten the life of the electrodes. To prevent damage to the system, the ACE stops producing chlorine until the high salt condition is corrected by the owner. After dilution the water, perform a salt test to clear the error.

**39. The system status message reads “High Salt” or “Low Salt” but the salt levels are within range per test strip.**

- The salt reading is an approximate value and is subject to several conditions in the spa therefore false readings can occur. If the error persists, check your manual or call your dealer.

## **SERVICE CONCERNS**

**40. Will the ACE salt water sanitizing system cause damage (oxidization) to components above the water line – like the cover and the pillows?**

- The ACE system greatly minimizes damage to components above the waterline because it minimizes chemicals in the air space. Because the ACE system generates chlorine over time there is very little vapor escaping compared to large manual doses. The ACE system also minimizes chloramine generation that can enter the air space, and removing the ozone system will help avoid damage.

**41. Will salt collect behind the pillows and on the fittings above the water?**

- The salt concentration is slightly more than tap water. When using the Vanishing Act you should see reduced water lines and salt/scale formation.

**42. Will the salt water harm decks or plants?**

- No. The salt level of water when using the ACE system is not high enough to cause damage. However, it is recommended to regularly hose down decks and nearby plants, as high levels of salt can damage and discolor decking as well as kill plants. When draining the spa, follow all local codes and guidelines.

**43. What is the best method to disconnect the Freshwater ozone system when installing the ACE system?**

- The best method to disconnect the FreshWater ozone system is to completely remove it, venture and all, from the spa. The ACE kit will ship with an ozone tubing plug. Remove the ozone tube from the generator and insert the plug into the tube. Leave the ozone unit and injector system in the spa for future use.

**44. The blue water care icon is not illuminated and the water care menu is not accessible. What happened?**

- When the water care icon is not lit, the ACE salt water sanitizing system is not communicating with the spa. Inspect the system for properly connected communication cables and see if the RX and TX lights are lit. Contact Watkins Tech Support for direction.

**45. The system status message says, “Contact Dealer for Service”. What causes this error?**

- The “Contact Dealer for Service” message may be the result of the following:
  - Failed cell
  - Failed controller
  - Poor electrical or communication connection

**46. Does the ACE have zinc electrodes or do I need to get my own?**

- The ACE system does not require a zinc electrode or diode to inhibit corrosion. The reason for this is that the salt level added to the water is only 1000ppm of 1/5<sup>th</sup> of that used in pool chlorinators. Because of this, the risk of corrosion is greatly reduced. Zinc can be added to the spa if desired, but is not required.

**47. Will the conductivity of the salt solution cause a galvanic reaction detrimental to stainless steel and other metal parts?**

- The diamond technology uses significantly less salt to clean the water than conventional salt water systems that have been on the market for over 30 years. Additionally, the spa contains very little metal which is mainly high grade stainless steel, titanium, and incoloy. Spas using the system have shown no corrosion after 3 years exposure.