

2019-1474

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Replacement Cell Label

ACE
Replacement cell for the ACE
Salt Water Sanitizing System
Reg. No. 30251 P.C.P. ACT
This cell must only be used
on this model of chlorine
generator

PN 1339801 REV A

Read the label, the
installation and Operation
Manual of the ACE Salt Water Sanitizing
System before using

Watkins Manufacturing
1280 Park Center Dr.
Vista, CA 92081
800-999-4688

ACE SALT WATER SANITIZING SYSTEM

CHLORINE GENERATOR

CONTROLS BACTERIA AND ALGAE
In Spa Waters

Domestic

A maximum of 2000 L of water can be treated with the ACE Salt Water Sanitizing System unit. Maximum output of hypochlorous acid equivalent to 16 g of free available chlorine per day.

A range of 3-5 ppm of free available chlorine must be maintained.

READ THE LABEL AND OPERATING MANUAL BEFORE USING
KEEP OUT OF REACH OF CHILDREN
REGISTRATION NO. 30251 *PEST CONTROL PRODUCT ACT*

WARNING: operating ACE Salt water sanitizing system without water flow through the cell can cause a buildup of flammable gases which can result in FIRE OR EXPLOSION.

WATKINS MANUFACTURING CORPORATION
1280 PARK CENTER DRIVE
VISTA, CALIFORNIA 92081, USA
800-999-4688

INSTALL ON OR NEAR ACE CONTROLLER PN 1339901 REV A



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Important Safety Instructions **(Read, Follow, and Save all Instructions)**

WARNING: Operate the ACE salt water sanitizing system only according to these instructions.

WARNING: To reduce the risk of electric shock, replace damaged cords or cell immediately.

WARNING: Remove power from the spa before performing any maintenance or troubleshooting.

CAUTION: To avoid damage DO NOT insert any objects into the cell.

CAUTION: Prior to using the spa, check water parameters and adjust if necessary.

- When using the spa, the free available chlorine level must be maintained between 3-5 ppm.
- Ozone, Granular Dichlor, Potassium Monopersulfate (MPS) are compatible with the ACE system.
- The ACE system is **NOT** compatible with bromine.
- Do not use this device with bromide products

NOTE: For outdoor spas, chlorine residuals can be protected from destruction by sunlight by addition of stabilizer (cyanuric acid).

DISCLAIMER: This is not an automatic water care system. The system is sized for the typical user. If additional chlorine is required due to heavy bather loads, use sodium dichlor or potassium Monopersulfate (MPS) to maintain an appropriate chlorine residual in the water.

THE SPA OWNER IS ULTIMATELY RESPONSIBLE FOR MAINTAINING PROPER SANITARY WATER CONDITIONS.

This Owner's Manual will acquaint you with the operation of the ACE salt water sanitizing system. We suggest that you carefully review the entire Owner's Manual before using the ACE system. Please keep this manual available for reference. If you have any questions about any aspect of your ACE salt water sanitizing system's set-up, operation, or maintenance, contact your authorized Hot Spring® dealer.

Welcome

Congratulations on your purchase of the ACE® salt water sanitizing system which generates chlorine making it easy to keep spa water sparkling clean.

Product Contents

Your complete ACE salt water sanitizing system kit includes:

- Owner's Manual
- Cell (accessible through spa's filter compartment)
- Vanishing Act™ Calcium Remover
- FreshWater® Spa Salt

- Cell-cleaning Bottle
- 5-way FreshWater Test Strips
- FreshWater Salt Test Strips
- Controller, Power Supply, Hardware, and Installation Instructions

NOTE: Installation of the ACE salt water sanitizing system can only be done on Hot Spring® and Limelight® spas, and must be performed by an authorized Hot Spring technician to ensure proper operation. The ACE salt water sanitizing system is compatible with all Hot Spring spas built on or after August 1, 2009 and LimeLight spas built after August 1, 2010. Your local Hot Spring dealer can verify if your spa is ACE system-ready.

Purchase these items separately from your local Hot Spring dealer. Not included:

- Clean Screen™ Pre-Filter
- Additional Vanishing Act Calcium Removers (if necessary)
- Hot Spring Freshwater chemicals for balancing and start-up including Concentrated Chlorinating Granules, pH Up, pH Down.

Overview of the ACE System

The ACE salt water sanitizing system makes water care easy by:

- Generating the right amount of sanitizer needed based on spa size and Use Level, parameters that are easily input through your spa's control panel.
- Testing for high or low salt levels, using the ACE system Salt Test.
- Increasing chlorine levels to meet high chlorine-demand situations as needed with a convenient Boost function.
- Alerting you when your spa needs maintenance with the flashing green Hot Spring On/Ready Indicator light.

Enjoy peace of mind while the illuminated water care icon and system status messages on the spa's main control panel confirm that the ACE® system is keeping your spa water clean and crystal clear.

Spa Owner Responsibilities

- Thoroughly reading & understanding the Spa Manual, Operation & Water Quality sections.
- Balancing the pH level and Total Alkalinity to the "OK" range.

NOTE: The generation of chlorine from salt will cause the pH to drift upwards over time. Check the pH level and free available chlorine daily. Adjust as needed to maintain water quality. An extensively high pH will cause premature failure of the system, cloudy water, and decreased effectiveness of the sanitizer.

- Maintaining a low Hardness level of 50 ppm by using the Vanishing Act calcium remover as needed.

NOTE: The ACE system works best with low levels of calcium and minerals in the water. Softened water prolongs the life of hot tub equipment, while enhancing the soaking experience.

- Inputting Spa Size and Use Level.
- Checking chlorine level frequently after initial start-up to determine best Use Level to maintain healthy water quality.

NOTE: The ACE System has a 30-day cycle that begins when the Use Level is confirmed at start-up, and resets any time the Use Level is changed or re-confirmed. The water care icon will flash as a reminder to test and balance the spa water, and reconfirm the Use Level when each 30-day cycle is over.

- Establishing a 5 ppm free available chlorine residual at start up and monthly flushing plumbing lines by super-chlorinating or “shocking” the spa monthly. **IMPORTANT:** Ensure that the free available chlorine level is always between 3-5ppm before using the spa. Add chlorine manually if needed.

Before Start-Up

1. Fill your spa with water using the Clean Screen pre-filter.

NOTE: If you are not filling your spa for the first time, clean your filters with FreshWater Filter Cleaner or replace with new filters, before refilling spa.

2. Once your spa is filled, use a FreshWater test strip to measure the pH, Total Alkalinity, and Hardness. Use the table below to determine if your spa water is in the “OK” range. The “OK” ranges listed below are specific for use with the ACE salt water sanitizing system and may vary from the back of your test strip bottle.

The following water parameters are to be maintained as part of daily maintenance.

ACE Salt Water Sanitizing System Spa Water Guidelines

Parameter Sub.	Target	Min - "OK" Range - Max
Salt	1500 ppm	1000 ppm - 1750 ppm
Hardness	50 ppm	25 ppm - 75 ppm
Alkalinity	80 ppm	40 ppm - 120 ppm
pH	7.4	7.2 - 7.6
Free Chlorine	3 ppm	1 ppm - 5 ppm

Different Parameters than those in Spa Manual

As the hardness is removed from the water, the alkalinity may initially drop as low as 40 ppm. Over the first month of use of the ACE, the alkalinity will gradually increase. However, it will need to be adjusted to ~ 80 ppm. Note: maintaining alkalinity at or near the lower range can result in greater pH variation.

3. Adjust pH and Total Alkalinity following the instructions in the Water Quality and Maintenance section of your spa's Owner's Manual. The pH, and Total Alkalinity must be in the “OK” range as indicated in the table above, before starting

the ACE system.

4. The Vanishing Act calcium remover, included with your ACE salt water sanitizing system, will help you reduce the Hardness level of the water if needed. Rinse the calcium remover with a garden hose then follow the Vanishing Act instructions.

NOTE: The ACE system start-up procedure can begin while the calcium remover is in the spa working to decrease Hardness.

IMPORTANT: It is critical that the Hardness level is in the “OK” range of 25-75ppm to ensure effectiveness of the ACE system. Use additional calcium removers if necessary.

Hot Spring Spas Operation

System Status

- Water Care Icon – The water care icon, located on the icon bar below the screen of the main control panel, will be illuminated once the ACE salt water sanitizing system is installed. The icon will flash when the ACE system requires attention.
- Status Messages – The ACE® system provides feedback via the spa’s main control panel. A status message will always be displayed on the main ACE salt water sanitizing system screen. Refer to the System Status Messages section for a complete listing of system status messages and their meanings.
- Hot Spring On/Ready light – The green light will slowly flash when the ACE System requires attention.



Green On/Ready light



Start-Up and Refill Procedures

At this point your spa should have balanced water, new or properly cleaned filters, and power. The water care icon on your spa’s main control panel should be flashing, indicating that action is required.

STEP 1 – Add Salt

1. With the jets running, slowly add 100% of the directed amount of salt (see SPA MODEL table below) to the filter compartment, one cup at a time.
NOTE: Your fill water may require slightly more or less salt than what is recommended here.

- Run jets an additional 5 minutes to ensure salt is totally dissolved.
NOTE: After adding the salt at start-up, the water care icon may continue to flash and the display may read "Low Salt". **Allow 24 hours** for the spa to come to temperature (38-40C, 100-104F), and **for the ACE® cell to stabilize, before retesting and adding salt to reach 40 - 75% in the OK range.**

Spa Model Table

Spa Model	Salt (cups) or (grams)	Spa Size Value	Estimated Increase in ppm per 1 cup/290g	
Vista®/ Summit*	9.5	2750	8	170 ppm
Grandee®	9.5	2750	8	170 ppm
Envoy®	8	2500	7	170 ppm
Aria®	7.5	2200	6	210 ppm
Vanguard®	7.75	2250	6	190 ppm
Sovereign®	6.75	1950	6	220 ppm
Prodigy®	6.25	1800	5	235 ppm
Jetsetter®	4.0	1150	3	360 ppm

* 50Hz Models only

STEP 2 – Access Water Care System menu

- On the main control panel, press the *Options* hard button.
- Press the **Water Care** soft button.

STEP 3 – Enter Use Level

- In the Water Care System menu, press the **Use Level** soft button.
- Adjust Use Level setting using the arrow soft buttons. The following are approximate guidelines for determining use level.
 - 1 = Low bather load (1 person less than 1 hour per week, vacation mode).
 - 2-4 = Normal bather load (1-2 persons less than 3 hours per week).
 - 5 = High bather load (2 or more persons more than 3 hours per week).

NOTE: If you are unsure of your Use Level at start-up, an initial Use Level of 3 is recommended. Daily testing your water during the first weeks after start-up will help you best determine your correct Use Level setting.

- Adjusting the Use Level will cause the value on the screen to flash. Once the correct Use Level is displayed, press the **Confirm?** soft button to enter your selection. The value will stop flashing, and the "?" next to the word **Confirm** will disappear.
- Press the *BACK* hard button to return to the main menu.

STEP 4 – Set Spa Size "Initial Start-Up only"

- Determine the value (1-8) associated with your spa model using the Spa

Model Table on page 4.

2. In the Water Care System menu, press the **Set-up** soft button.
3. Press the **Spa Size** soft button.
4. Adjust spa size using the soft buttons next to the arrows.
5. Adjusting the Spa Size will cause the value on screen to flash. Once the correct Spa Size is displayed, press the **Confirm?** soft button to enter your selection. The value will stop flashing, and the “?” next to the word **Confirm** will disappear.
6. Press the **BACK** hard button to return to the main menu.

STEP 5 – Establish Chlorine Residual

1. Once your Ace® System is programmed with the expected USE level check the chlorine level with a FreshWater 5-Way test strip. Depending on your spa model and water quality, it will take approximately 24 hours for the ACE system to generate enough sanitizer to establish a free available chlorine residual of 3-5 ppm.
2. Add granular sodium dichlor as directed on the bottle to bring the spa water to 5ppm free available chlorine as described in the spa’s Owner’s Manual, to create a sanitized residual until the ACE system is generating sanitizer at full capacity.
3. Allow jets to run 5 minutes per jet system (rotating the diverter valves).

NOTE: Ensure that the Vanishing Act calcium remover is repositioned after running jets

STEP 6 – Remove Vanishing Act calcium remover after 24 hours – discard in your normal trash

1. Using a new test strip, test spa water for Hardness. If Hardness level still reads above the recommend range of 25-75ppm, additional calcium removers will be needed at this time.

Target →



2. Run a salt test with the ACE and add balance of salt. Dose 250 grams (1 cup) at a time to achieve 40 - 75% green on the salt meter.

Step 7- Following Initial Start-Up

Following initial start-up, test the chlorine level and pH level of your spa before each use of the spa. Adjust the Use Level up if the chlorine level is low, or down if the chlorine level is high, to find the level that produces a stable free available chlorine level of 3-5 ppm. This will help maintain water quality. Allow 24 hours for a change in Use Level to register in the chlorine reading on a test strip.

ACE® 30-Day Check-up

In addition to the regular maintenance of the spa to be performed by the user, ACE salt water sanitizing system will remind you that you must check your spa water at least once every 30 days. To remind you, the ACE water care icon will flash and the status message will read, Check Water/Confirm Use Level at the end of each 30-day cycle. If the USE level has not been changed 3 days after the reminder started, the USE level will automatically drop to 1 and continue to flash. After 40 days the Spa Size Value drops to 2. This protects your hot tub from excessive levels of chlorine.

STEP 1 – Test and Balance Water

1. Use a FreshWater test strip to measure the pH, Total Alkalinity, and Hardness. Use the Spa Water Guidelines in this manual to determine if your spa water is in the “OK” range.
2. Adjust pH and Total Alkalinity following instructions in the Water Quality and Maintenance section of your spa’s Owner’s Manual.
3. To decrease the Hardness level of the water, place a new Vanishing Act calcium remover over the heater return at the bottom of the spa for 24 hours.

STEP 2 – Access Water Care system menu

Press the *Options* hard button, followed by the **Water Care** soft button on the spa’s main control panel.

STEP 3 – Confirm Use Level

1. In the Water Care system menu, press the **Use Level** soft button
2. If Use Level is correct, then use the soft buttons next to the up or down arrows to change the Use Level and then change it back to the original setting. If chlorine level has been too low or too high, adjust Use Level accordingly.
3. Adjusting the Use Level will cause the value on screen to flash. Once the correct Use Level is displayed, press the **Confirm?** soft button to enter your selection. The value will stop flashing, and the “?” next to the word **Confirm** will disappear. Allow 24 hours for a change in Use Level to register in the chlorine reading on a test strip.
4. Press the *BACK* hard button to return to the main menu.

NOTE: If the Use Level has not changed, you must still change the Use Level setting on the spa’s control panel and then change it back, in order to re-set the thirty day timer and stop the water care icon from flashing.

STEP 4 – Superchlorinate/Shock Spa and Plumbing Lines

1. Use a Freshwater 5-Way test strip to measure chlorine levels.
2. Activate spa's automatic clean cycle using the main control panel.
3. Increase free available chlorine level to 5 ppm using granular sodium dichlor.

Chlorine Boost

If the spa is being used more often than usual, it may be necessary to add more chlorine to the water by “boosting” the ACE® system. To increase the chlorine level:

1. Access the Water Care system menu by pressing the *Options* hard button, followed by the **Water Care** soft button on the spa's main control panel.
2. Press the **Boost** soft button.
3. Press the **Yes** soft button to confirm the manual Boost operation.
4. The system will automatically initiate a salt test before the Boost. Once salt test is complete, the status will display "Water Care System Boosting" when active.

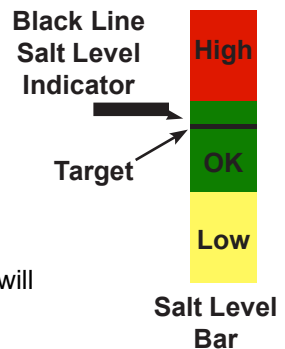
IMPORTANT: It takes 24 hours to complete the Boost cycle. The free available chlorine level must be maintained between 3-5ppm at all times. Manually add sodium dichlor if necessary for regular use or shocking the spa.

Salt Test

The ACE system automatically tests the water's salt level. A manual Salt Test is only required if the water care icon is flashing and the status screen indicates **High salt** or **Low salt** levels. The ACE System is **offline/stops generating** when High or Low salt is measured. Freshwater Salt Test Strips should be used to verify the sodium chloride level.

To conduct a manual Salt Test:

1. Access the Water Care system menu by pressing the *Options* hard button, followed by the **Water Care** soft button, on the spa's main control panel.
2. Press the **Set-up** soft button, followed by the **Salt Test** soft button.
3. The red/green/yellow salt level bar on the left side of the screen will display a black line, which indicates the salt level of the water. The green portion of the bar represents the OK range for salt, the red portion means high salt, and the yellow portion means low salt
4. Press **Yes** soft button to start the salt test and wait 20 seconds for the test to complete. Do not attempt to conduct a Salt Test while the jets are running.
 - a. Target salt level is 40 - 75% green
 - b. If proper amount of salt is present, the screen will display **“Water Care System Functioning”**.
 - c. If **“Low Salt”** or **“High Salt”** is displayed, proceed as follows:



POSSIBLE CAUSES OF A LOW SALT READING: The salt level reading can be affected by cell age, scale build-up (dirty cell), cold water, high chlorine, dirty filters, or dirty water (do not add salt until the previous conditions have been inspected). A salt test strip or meter can be used to manually verify the system's salt level reading before adding additional salt.

For Low Salt –

1. Verify the actual salt level of the water using the salt test strips included with your ACE® system.
2. If the reading on the test strip confirms that the salt level of the water is low add 250 grams (1 cup) of salt to the water and circulate for 5 minutes. Activate a second salt test.
3. If the proper amount of salt is present, the screen will display “**Water Care System Functioning**”. If the screen still displays Low Salt repeat the process as needed. If the salt indicator does not change position on the screen, or if the strips show that the level is ok, inspect the spa for other causes indicated above.
4. If 50% of the spa’s recommended salt has been added and the icon continues to flash, contact your Hot Spring Service Professional for assistance.

For High Salt –

1. If the salt indicator is half way or less up the red part of the salt level bar, drain 25% of the water from the spa and refill with clean, clear water.
2. Run the jet pumps for 5 minutes, then conduct another manual Salt Test.
3. If the proper amount of salt is present, the screen will display “**Water Care System Functioning**”. If the screen still displays High Salt, repeat steps as needed.
4. If the salt indicator is more than half way up the red part of the salt level bar, drain completely and refill following the Start-up and Refill Procedure.

System Status Messages

Status Message On Screen	Meaning or Action Required
Water Care System Functioning	Operating normally
Water Care System Off	System Off Use 1 Size 1
Water Care System Low Use Mode	Low Output Use 1 Size 2
Water Care System Boosting	Increasing Chlorine level (pg. 6)

Water Care System Testing Water	Salt test initiated/in progress (pg. 7)
Water Care System Check Water/Confirm Use Level	Update Use Setting (pg. 6)
Water Care System Offline - Circ Pump	ACE [®] is disabled for 8 hours when Summer Timer is active
Water Care System Offline - High Salt	Non-operational High salt level detected - Correct salt level Clean/Inspect Cell (pg. 7)
Water Care System Offline - Inspect Cell/Check Salt	Clean/Inspect cell for scale then test water with salt test strips and add salt if needed (pg. 7 & 15)
Water Care System Contact Dealer For Service	Contact Dealer For Service

Limelight Hot Tubs Operation

System Status

- Water Care Icon – The water care icon, located on the lower left side of the main control panel, will be illuminated once the ACE salt water sanitizing system is installed. The icon will flash when the ACE system requires attention.
- Status Indication – The ACE system provides feedback via the spa's main control panel. Refer to the System Status Messages section for a complete listing of system status messages and their meanings.



Start-Up and Refill Procedures

At this point your spa should have balanced water, new or properly cleaned filters, and power. The water care icon on your spa's main control panel should be flashing, indicating that action is required.

STEP 1 – Add Salt

1. With the jets running, slowly add 100% of the directed amount of salt (see SPA MODEL table on below) to the filter compartment, one cup at a time.
NOTE: Your fill water may require slightly more or less salt than what is recommended here.

- Run jets an additional 5 minutes to ensure salt is totally dissolved.
NOTE: After adding the salt at start-up, the water care icon may continue to flash and the display may read "Low Salt". **Allow 24 hours** for the spa to come to temperature (38-40C, 100-104F), and **for the ACE cell to stabilize, before retesting and adding salt to reach a value of 4 - 6.**

Spa Model Table

Spa Model	Salt		Spa Size Value	Estimated Increase in ppm per 1 cup/290g
	(cups)	or (grams)		
Pulse	7	2030	6	210 ppm
Flair	6	1750	5	250 ppm
Glow	5	1450	4	310 ppm

STEP 2 – Access ACE® + System Menu

- On the main control panel, press the **MODE ▲** button until the ACE menu is reached.
- Press the **ON ▲** button to enter the ACE system menu.

STEP 3 – Enter Use Level

- In the ACE menu, press the **MODE ▲** button to scroll until USE is displayed.
- Adjust USE level setting by scrolling through the values by pressing the **ON ▲** button.

The following are approximate guidelines for determining use level.

- 1 = Low bather load (1 person less than 1 hour per week, vacation mode).
- 2–4 = Normal bather load (1-2 persons less than 3 hours per week).
- 5 = High bather load (2 or more persons more than 3 hours per week).

NOTE: If you are unsure of your Use Level at start-up, an initial Use Level of 3 is recommended. Daily testing your water during the first weeks after start-up will help you best determine your correct Use Level setting.

- Press the **OFF ▼** button twice to select and confirm the setting. The water care icon will flash to indicate that the setting has been updated.

STEP 4 – Set Spa Size "Initial Start-Up only"

- Determine the value (1-8) associated with your spa model using the Spa Model Table on page 10.
- In the ACE menu, press the **MODE ▲** button to scroll until SIZE is displayed.
- Adjust the Spa Size by scrolling through the values by pressing the **ON ▲** button.
- Press the **OFF ▼** button twice to select and confirm the setting. The water care icon will flash to indicate that the setting has been updated.
- Press the **MODE ▲** button until EXIT+ is displayed. Press **ON ▲** to return to the main menu.

STEP 5 – Establish Chlorine Residual

1. Once your spa is programmed, check the chlorine level with a FreshWater test strip. Depending on your spa model and water quality, it will take approximately 24 hours for the ACE® system to generate enough sanitizer to establish a free available chlorine residual of 3-5 ppm.
2. Add granular sodium dichlor to the water as directed on the bottle to bring the spa water to free available chlorine 5ppm as described in the spa's Owner's Manual, to create a sanitized residual until the ACE system is generating sanitizer at full capacity.
3. Allow jets to run 5 minutes per jet system (rotating the diverter valves).

STEP 6 – Add Salt 24 Hours Later

Test Salt level with a Salt Test Strip and add balance of salt. Dose 250 grams (1 cup) at a time to achieve a value of 5 or 6.

STEP 7 – Following Initial Start-Up

Following initial start-up, test the chlorine level and pH level of your spa and before each use of the spa. Adjust the Use Level up if the chlorine level is low, or down if the chlorine level is high, to find the level that produces a stable free available chlorine level of 3-5 ppm. This will help maintain water quality. Allow 24 hours for a change in Use Level to register in the chlorine reading on a test strip.

ACE 30-Day Check-up

In addition to the regular maintenance of the spa to be performed by the user, ACE salt water sanitizing system will remind you that you must check your spa water at least once every 30 days. To remind you, the ACE water care icon will flash and the status message will read, Check Water/Confirm Use Level at the end of each 30-day cycle. If the USE level has not been changed 3 days after the reminder started, the USE level will automatically drop to 1 and continue to flash. After 40 days the Spa Size Value drops to 2. This protects your hot tub from excessive levels of chlorine.

STEP 1 – Test & Balance Water

1. Use a FreshWater test strip to measure the pH, Total Alkalinity, and Hardness. Use the Spa Water Guidelines in this manual to determine if your spa water is in the "OK" range.
2. Adjust pH and Total Alkalinity following instructions in the Water Quality and Maintenance section of your spa's Owner's Manual.
3. To decrease the Hardness level of the water, place a new Vanishing Act On the low speed pump suction for up to 3 pump cycles.

STEP 2 – Access ACE + system menu

On the main control panel, press the **MODE ▲** button until the ACE menu is reached Press the **ON ▲** button to enter the ACE system menu.

STEP 3 – Confirm Use Level

1. In the ACE menu, press the **MODE ▲** button to scroll until USE is displayed. If Use Level is correct, then use the **ON ▲** button to scroll

through the Use Level values until the original value is displayed attain. If chlorine level is too low or too high, adjust Use Level accordingly.

2. Press the **OFF ▼** button twice to select and confirm the setting. The water care icon will flash to indicate that the setting has been updated. Allow 24 hours for a change in Use Level to register in the chlorine reading on a test strip.
3. Press the **MODE ▲** button to reach EXIT+. Press **ON ▲** to return to the main menu.

NOTE: If the Use Level has not changed, you must still change the Use Level setting on the spa's control panel and then change it back, in order to re-set the thirty day timer and stop the water care icon from flashing.

STEP 4 – Superchlorinate/Shock Spa and Plumbing Lines

1. Use a Freshwater 5-Way test strip to measure chlorine levels.
2. Activate spa's automatic clean cycle using the main control panel.
3. Increase free available chlorine level to 5 ppm using granular sodium dichlor.

Chlorine Boost

If the spa is being used more often than usual, it may be necessary to add more chlorine to the water by "boosting" the ACE® system. To increase the chlorine level:

1. In the ACE Menu, press the **MODE ▲** button until bBOOST appears. Once in the bBOOST screen, press the **ON ▲** button to enter the bBOOST menu.
2. Press the **OFF ▼** button twice to select and confirm the boost. The water care icon will flash to indicate that the setting has been updated. The system will automatically initiate a salt before the boost cycle. Once the test is complete (up to 20 seconds) the bBOOST screen will flash to indicate that the system is boosting.
3. Press the **MODE ▲** button to reach EXIT+. Press **ON ▲** to return to the main menu.

IMPORTANT: It takes 24 hours to complete the Boost cycle. The chlorine level must be maintained between 3-5ppm at all times. Manually add sodium dichlor if necessary for regular use or shocking the spa.

Salt Test

The ACE system automatically tests the water's salt level. A manual Salt Test is only required if the water care icon is flashing and the status screen indicates **High salt** or **Low salt** levels. The ACE System is offline/stops generating when High or Low salt is measured. Freshwater Salt Test Strips should be used to verify the sodium chloride level.

To conduct a manual Salt Test:

1. Press Mode until the ACE menu appears, followed by pressing the On button.
2. Scroll to SALT menu by pressing the Mode button. In the SALT menu, press the Off button twice to select and confirm the Salt Test. The water care icon will flash to indicate that the setting has been updated. The SALT menu item will flash while the

system is testing. Do not attempt to conduct a Salt Test while the jets are running

3. When the test is complete the menu will display one of the following:
 - a. SALT 1 - 2: salt low (SALT menu item will flash)
 - b. SALT 3 - 6: salt in range (target 5 or 6)
 - c. SALT 7 - 9: salt high (SALT menu item will flash)
4. If “**Low Salt**” or “**High Salt**” is displayed, proceed as follows:

Target →



POSSIBLE CAUSES OF A LOW SALT READING: The salt level **Salt Level** reading can be affected by cell age, scale build-up (dirty cell), cold water,

high chlorine dirty filters, or dirty water (do not add salt until the previous conditions have been inspected). A salt test strip or meter can be used to manually verify the system's salt level reading before adding additional salt.

For Low Salt –

1. Verify the actual salt level of the water using the salt test strips included with your ACE® system.
2. If the reading on the test strip confirms that the salt level of the water is low add 250 grams (1cup) of salt to the water and circulate for 5 minutes. Activate a second salt test.
3. If 50% of the spa's recommended salt has been added or the salt indication has not moved and the icon continues to flash, contact your Hot Spring Service Professional for assistance.

For High Salt –

1. Drain 25-50% of the water, depending on the salt level reading, from the spa and refill with clean, clear water.
2. Run the jet pumps for 5 minutes, then conduct another manual Salt Test.
3. If the proper amount of salt is present, the screen will display SALT 5-6 and the water care icon will be solid. If the screen still displays High Salt 7-9, repeat steps as needed.
4. If the water is more than 6 months old, drain completely and refill following the Start-up and Refill Procedure.

System Status Messages

Status Message On Screen	Meaning or Action Required
Solid water care Icon	Operating normally
Solid Icon - Off	Use 1 Size 1
Solid Icon - Low Use	Use 1 Size 2
bBOOST flashing	System boosting (pg.13)
SALT flashing	Salt test initiated/in progress (pg.13)
Flashing Icon and USE flashing	Update Use Setting (pg. 12)
Summer timer icon	ACE is disabled for 8 hours when summer timer is active
Flashing Icon and SALT 1-2	Clean/Inspect cell for scale then test water with salt test strips and add salt if needed (pg. 13)

Flashing icon and SALT 8-9	High salt – system offline Correct salt level and clean/Inspect cell (pg. 14)
Flashing water care icon 4 times per second	Dealer service required

Cell Cleaning

Periodic cleaning of the ACE® cell is recommended to maximize the life of your equipment. Use of the Vanishing Act calcium remover will help reduce the cleaning frequency. On average, the cell should be cleaned every 3 months. When the status message on the screen indicates Low Salt and the water has not been changed or topped off recently, it may be time to inspect and clean the cell.

CAUTION: To avoid damage DO NOT insert any objects into the cell.

1. Turn off the power to the spa. Open the spa cover and remove the filter lid.
2. Unscrew gray filter cap and gently pull the cell out of the filter.
3. Inspect the cell for scale by looking between the electrodes.
4. Unscrew the lid to the cleaning bottle included with the ACE system and fill with spa water to the fill-line indicated on the bottle. Add 3 tablespoons of pH down to the cleaning bottle and secure lid. Shake bottle to create cleaning solution.

NOTE: A stronger cleaning solution of 1 part muriatic pool acid & 10 part water can be used. **WARNING:** ALWAYS ADD ACID TO WATER, NEVER WATER TO ACID

5. Remove the lid from the cleaning bottle. Place the cell in the bottle, ensuring that the bottom of cell is floating.
6. Soak the cell for 10 minutes or until bubbles stop coming from the cell. If bubbles are still releasing from the cell after 10 minutes, change the cleaning solution and repeat until the cell is clean and all scale is removed.
7. Replace cell into the filter standpipe. Screw on the gray filter cap, replace the filter lid, and power up the spa. Ensure that the cell is at the bottom of the filter standpipe by feeling for the pull of the pump's suction.

Tips

- **Prevent Cell Damage:** Do not insert anything into the cell or pressure wash it. This will damage the electrodes.
- **Salt:** Salt is not consumed during sanitizer production. The salt level is only reduced by adding water to the spa. Using the spa and adding chemicals will increase the salt level over time.
- **Turning the ACE System off:** By setting both USE and SIZE levels to 1, the system will stop generating sanitizers.

- **Vacation or limited use.** When the spa is not going to be in use, shock the spa by increasing chlorine to 3-5 ppm and then run the automatic clean cycle. Clean or replace filters. Lower Use Level setting to 1. For extended vacations, also lower the Spa Size to 2 for low output mode.
- **If heavy bathing is expected.** Initiate a Boost a few hours prior. Periodically measure the chlorine and add granular sodium dichlor as need.
- **MPS use.** Granular MPS (Potassium Peroxymonosulfate) can be used for shocking the spa at each 30-day check up but is not a sanitizer. Adjust the ACE system to produce the appropriate free available chlorine level or add granular sodium dichlor.
- **Ozone.** The ACE salt water sanitizing system is safe to use with ozone; however, except for high use situations, it is not recommended.
- **Calcium & Metal Treatment:** Use the Vanishing Act calcium remover to keep total hardness levels low and minimize the need for anti-scalant & metal control. If metals are an issue, use the Clean Screen Pre-filter and follow your dealer recommended treatment program. Excessive use of phosphate anti-scalant will promote high phosphate levels & will be difficult to remove scale.
- **Phosphates.** High levels of phosphates (above 300 ppb) may cause reduced sanitizer output, ask your local Hot Spring® dealer to help you test for phosphates.
- **Summer Timer.** The Summer Timer will decrease the chlorine generation time of the ACE system. If the spa's Summer Timer is activated, the Use Level will most likely need to be increased to compensate. If chlorine level is low, adjust Use Level up by one each day until 3-5 ppm is maintained. If Use Level is 5, increase the Spa Size to generate more chlorine.
- **Avoiding salt buildup.** Periodically hose off your spa and the deck or concrete surrounding your spa after use to prevent salt buildup that can occur from splash-out.

Troubleshooting

- **Flashing On/Ready Light and Water Care Icon:**
 - Attention is needed. Access the ACE system menus on the main control panel to read the System Status Message (pg. 9 & 14).
- **The water is cloudy:**
 - Use a 5-way FreshWater test strip. If chlorine is low, manually add granular dichlor as needed, or initiate a chlorine Boost.
 - Check filters and clean as needed (see your spa's Owner's Manual).
 - Use a 5-way FreshWater® test strip to check spa pH level. Add pH down as needed.
- **Low Sanitizer level:**
 - Check settings. Your use level may require you to increase the setting to a higher number. If use level is at 5, increasing spa size will

generate more sanitizer.

- Install a ozone unit if the ACE system is running at capacity. Increase salt until the Salt Level display reads 75% within the green section.
- **High Sanitizer level:**
 - Check settings. Your use level may require you to decrease the setting to a lower number. If use level is at 1, decreasing spa size will generate less sanitizer.
 - Reduce chlorine level by adding 1 cup hydrogen peroxide with jets running. Check chlorine level after 10 minutes and repeat as needed.
- **Low salt reading:**
 - Water temperature may be low. Allow water temperature to reach 37.5C/100F and re-test.
 - Filters may be dirty. Remove cell from filter and place in main tub. Re-test the salt level. If the salt shows in the OK range, replace or clean the filters as needed.
 - Cell may require cleaning. Review Cell Cleaning section.
 - Cell may need to be replaced.
- **Water Care icon is not lit when Main Control Panel is illuminated:**
 - Contact your local authorized Hot Spring® dealer.

NOTE: You may continue to use your spa as long as the chlorine level on the FreshWater test strip is in the OK range (3-5ppm of free available chlorine).

Important Additional Information

WARNING: Operating ACE without water flow through the cell can cause a build up of flammable gas.

WARNING: To reduce the risk of injury, do not permit children to operate this device.

WARNING: Heavy spa usage and higher temperatures may require higher chlorine output to maintain proper free available chlorine residuals.

WARNING: Maintaining high salt and chlorine levels above recommended range can contribute to corrosion of spa equipment.

Check the expiration date of test strips as test results may be inaccurate if used after that date.

The life expectancy of the electrolytic cell is 14,000 hours of operation under normal use conditions.

When replacing the cell, only use replacement cells having a label that clearly states that it is a replacement cell for the chlorine generating ACE device.

REGISTRATION NUMBER 30251, *PEST CONTROL PRODUCTS ACT*

Follow all aspects of the local and Canadian Electrical Code(s) when installing ACE.

For proper sanitation, spas must be completely drained periodically. The number of days between COMPLETE SPA DRAINAGE is equal to the volume of spa water in liters, divided by 10 times the maximum number of daily spa users. Refill spa with water and repeat DIRECTIONS FOR USE of the device.

People with a medical condition should consult a physician before entering spa water.

Maximum spa water usage temperature is 40° C (104° F). Bathing in spa water at maximum temperature should not exceed 15 minutes.

NOTICE TO USER: This pest control product is to be used only in accordance with the directions on the label. It is an offence under the Pest Control Products Act to use this product in a way that is inconsistent with the directions on the label. The user assumes the risk to persons or property that arises from any such use of this product.

Specifications

- System designed to treat 2000 liters (530 gallons).
- The maximum output of hypochlorous acid equivalent to 16 grams of free available chlorine per day.
- Input:100-240VAC 0.55A 50/60Hz
- Output: 12VDC 1.67A

Customer Service

If you have any questions about your ACE salt water sanitizing system that have not been answered by this manual, consult your authorized Hot Spring dealer.

Watkins Manufacturing Corporation can be reached at: 1-800-999-4688 (extension 8432) inside the USA or +1 760-598-6464 outside the USA Monday through Friday, 8 a.m. to 5 p.m. Pacific Standard Time (PST) or e-mail custsvc@watkinsmfg.com.

Watkins Manufacturing Corporation, 1280 Park Center Drive, Vista, CA 92081 USA.

ACE™ Salt Water Sanitizing System Warranty

One-Year Limited Warranty

Watkins warrants to you, the original consumer purchaser, that the components of the ACE salt water sanitizing system will be free from defects in materials and workmanship for one year.

Extent of Warranty

This warranty extends only to the original consumer purchaser of the Hot Spring spa when purchased and originally installed within North America . This warranty begins on your delivery date of the spa, but in no event later than one year from the date of purchase. This warranty terminates upon any transfer of ownership,

or if the spa is installed or relocated outside the boundaries of the original country of purchase by the original consumer purchaser prior to the expiration of the warranty period.

Warranty Performance

To make a claim under this warranty, contact your dealer. In the event you are unable to obtain service from the dealer, please contact Watkins Manufacturing Corporation, 1280 Park Center Drive, Vista, California, 92081. Attn: Customer Service Department (800) 999-4688 inside the USA or +1 760-598-6464 outside the USA or via e-mail, custsvc@watkinsmfg.com. You must give Watkins and/or your dealer written notice of any warranty claim, along with a copy of your original purchase receipt indicating the date of the purchase, within ten (10) days of the time you discover the claim. Watkins reserves the right to inspect the malfunction or defect on location.

Watkins or its Authorized Service Agent will repair any defects covered by this warranty. Except as described herein, you will not be charged for parts, labor or the freight costs for parts necessary to repair the ACE system for defects covered by this warranty. In some cases, the servicing dealer may charge you a reasonable repairperson travel/service charge that is not covered by this warranty. Please contact the dealer for information regarding any such charges.

Limitations

Except as described above, this warranty does not cover defects or damage due to normal wear and tear, improper installation, alteration without Watkins' prior written consent, accident, acts of God, misuse, abuse, commercial or industrial use, use of an accessory not approved by Watkins, failure to follow Watkins' Owner's manual, or repairs made or attempted by anyone other than an authorized representative of Watkins. Alteration includes, but is not limited to, any component change, or electrical conversion. Visit www.hotspring.com or contact your dealer for a list of manufacturer approved accessories.

Disclaimers

TO THE EXTENT PERMITTED BY LAW, WATKINS SHALL NOT BE LIABLE FOR LOSS OF USE OF THE SPA OR OTHER INCIDENTAL OR CONSEQUENTIAL COSTS, EXPENSES OR DAMAGES, INCLUDING BUT NOT LIMITED TO THE REMOVAL OF ANY DECK OR CUSTOM FIXTURE OR ANY COST TO REMOVE OR REINSTALL THE SPA, IF NEEDED.

ANY IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE DURATION OF THE APPLICABLE WARRANTY STATED ABOVE.



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