AquaCal
SWIMMING POOL/SPA HEAT PUMPS

AUTOPILOT
SALT CHLORINE GENERATORS

Spa-PILOT®
SPA SANITIZING SYSTEM

Owner's Manual
Models: SP_-_ _ _

WARNING: Read manual before installation or operation.
INSTALLER: This manual is the Purchaser's Property and is to remain with the SpaPilot®.

LTP0091 REV V1.0

RECORD YOUR SPAPILOT® INFORMATION

Control Unit model	
Control Unit serial number	
Model = SP_-O__ or Model = SPW (all)	Cell type = Over the Wall (Convection)
Model = SP_-I__	Cell type = Inline
Cell serial number	
Installer	
Install Date	

CONTACT INFORMATION

Web	www.AutoPilot.com
Phone	(727) 823-5642
Customer Service Hours	8 a.m. to 5 p.m. EST, Monday – Friday
Address	AquaCal AutoPilot, Inc. 2737 24th Street North St. Petersburg, Florida 33713 USA

If you should need to call AquaCal AutoPilot, Inc. for questions, service or parts, please have your model and serial numbers available. Please also have the name of your installer and date of your equipment's installation. If you have questions, please refer to our website for the latest manual revisions, additional information and helpful service advice.

SYMBOL KEY

CAUTION

WARNING

READ MANUAL BEFORE INSTALLATION & OPERATION

WASTE ELECTRICAL & ELECTRONIC EQUIPMENT DIRECTIVE

TABLE OF CONTENTS

RECORD YOUR SPAPILOT® INFORMATION I
CONTACT INFORMATION I
SYMBOL KEY I
IMPORTANT SAFETY INSTRUCTIONS IV
HOW THE SPAPILOT® WORKS 1
DISPLAY, LED INDICATORS, BUTTONS 1
SPA WATER PREPARATION 2
Add Water 2
Add Salt 2
Establish Sanitizer Residual 3
Recommended Water Parameters 3
DECIDE WHICH MODE TO USE: PERCENTAGE OR USAGE 4
PERCENTAGE MODE – MENU TREE 5
PERCENTAGE MODE – SETTING THE OUTPUT % 6
Percentage Setting - Set a % Output for the Spa Size 6
Percentage Setting – Add to % to Increase Output for Regular Usage .. 6
Percentage Mode Example: 7
PERCENTAGE MODE 8
Boost – How and When to Use 8
The “Day” Feature 9
The “Reversing” Feature 10
The “Configuration” Feature 11
The “Spa Size” Feature 12
The “Information” Feature 13
USAGE MODE – MENU TREE 14
USAGE MODE – SETTING THE OUTPUT 15
Set Sanitizer Output Based on Spa Size 15
Set Sanitizer Output Based on Spa Usage 16
Usage Mode Example 16
USAGE MODE 17
Boost – How and When to Use 17
The “Day” Feature 18
The “Reversing” Feature 20
The “Configuration” Feature 21
The “Spa Size” Feature 22
The “Information” Feature 23
WINTERIZING THE SPAPILOT® 24
CLEANING THE OVER THE WALL (CONVECTION) CELL 25
CLEANING THE INLINE CELL 26

WHAT IS INCLUDED WITH THE SPAPILOT® 27
INSTALLATION – SURFACE MOUNT CONTROL UNIT 28
OEM – INSTALLATION – FLUSH MOUNT CONTROL UNIT 29
OEM – INSTALLATION CONT. – POWER, INLINE CELL..... 30
OEM – INSTALLATION CONT. – POWER, INLINE CELL..... 31
INSTALLATION - WIRELESS REMOTE CONTROL..... 32
TROUBLESHOOTING 33
SPECIFICATIONS..... 37
Model Breakdown – AC Power, Cell Type, etc..... 37
Control Unit Specifications 37
Bezel Cutout Diagram 38
Bezel Diagram..... 38
Control Unit Diagram..... 38
Cell Specifications..... 39
Chlorine Output - lbs/day (g/day) 39
Inline Cell Diagram..... 40
Over the Wall (Convection) Cell Diagram 40
AGENCY CERTIFICATIONS 41
NOTES: 42

IMPORTANT SAFETY INSTRUCTIONS

WARNING: READ MANUAL BEFORE INSTALLATION AND OPERATION: This manual contains important information on the installation, use, and safety recommendations for the SpaPilot®. It is your responsibility to install and use the SpaPilot® safely.

WARNING: Failure to heed the following may result in injury or death:

- Disconnect all AC power when installing or servicing this system. If the supply cord is damaged, it must be replaced immediately by the manufacturer or a qualified service representative. Follow all state, local, and National Electrical Code(s) (provincial and Canadian Electrical Code(s) if applicable).
- The SpaPilot® must be connected only to a supply circuit that is protected by a ground-fault circuit-interrupter (GFCI). Contact a qualified electrician if you cannot verify that the circuit is protected by a GFCI. The GFCI must be tested on a routine basis. To test, push the GFCI test button. Power should be interrupted. Push the reset button. Power should be restored. If the GFCI fails to operate in this manner, it is defective. If the ground-fault circuit-interrupter (GFCI) interrupts power to the equipment without the test button being pushed, a ground current is flowing and there is a possibility of an electrical shock. Do not use equipment. Disconnect the equipment and have the problem corrected by a qualified service representative before using.
- SpaPilot® models that use an AC/DC adaptor require the AC/DC adaptor be installed on a GFCI protected outlet with an approved weather protective shielded enclosure that covers the adaptor.
- Do not open the SpaPilot® control unit or power adapter. There are no owner/user-serviceable components inside. Repairs must not be attempted by untrained and/or unqualified individuals. If service is deemed necessary, contact the installing dealer or AquaCal AutoPilot Customer Support.
- Do not immerse. The SpaPilot® control unit is not intended for submersion, but may be installed in the spa zone. The SpaPilot® control unit must be located or fixed so that it cannot fall into the spa.
- Suitably rated CERTIFIED/APPROVED power supply cord, plug and strain relief or cable gland appropriate for the applicable country are intended to be installed and replaced by a manufacturer's authorized agent or qualified personnel.
- Removable, Over the Wall type, cell should be lifted out of the spa and stored out of the way when the spa is occupied. Do not drop, throw, or otherwise mishandle the cell. Place the cell back in spa when unoccupied. (This warning does not apply to the "Inline" cell.)
- Children must be closely supervised at all times around the spa and spa equipment. Children should be supervised so that they do not play with the SpaPilot® Unit, Bromine/Chlorine Cell, or the wireless remote.

IMPORTANT SAFETY INSTRUCTIONS

- This unit (including the wireless remote) is not to be operated by children. Likewise, the SpaPilot® remote should be mounted or stored so that it is not accessible by the same.
- The SpaPilot® unit (including the wireless remote) is intended to be installed, operated and maintained by qualified/trained personnel without reduced physical, sensory and mental capabilities.
- The proper residual of chlorine or bromine and water parameters must be maintained. Improper water parameters can present a serious health hazard. See the section, *Recommended Water Parameters*, on page *3*.
- This is not an automatic water care system. The spa owner/user is ultimately responsible for maintaining proper sanitary water conditions. The user must regularly test the spa water to ensure that adequate levels of bromine or chlorine are generated to achieve proper sanitizer levels.
- Heavy spa usage and higher water temperatures may require a higher SpaPilot® output or manual shocking in order to maintain proper free available chlorine / bromine residuals.
- Supplemental sanitation may be needed under some conditions such as:
  - The “Inline” cell unit is required to operate only when the filtration pump is running. SpaPilot® sanitizer output may be reduced when the filtration pump operation is reduced.
  - The “Over the Wall” cell will not generate sanitizer when it is removed during spa usage.
- For proper sanitation, spas must be completely drained periodically.
  - Replacement Interval (days) = (Spa Gallons ÷ 3) ÷ Average Users per day

    For example: 300 gallon spa used by 2 adults 2 times a day 2 times a week ➔

    $=(300 \div 3) \div \left(\frac{2x2x2}{7}\right) = 88$ days
  - Or Replacement Interval (days) = (Spa Liters ÷ 11.35) ÷ Average Users per day

    For example: 1000 liter spa used by 2 adults 1 time a day 5 times a week ➔

    $= (1000 \div 11.35) \div \left(\frac{2x1x5}{7}\right) = 62$ days
  - Refill spa with water and prepare the spa water for use again. See the section, *Spa Water Preparation*, on page 2**.**
- Users should always shower before entering the spa.
- Filter cartridges should be cleaned or replaced at regular intervals; otherwise part of the sanitizer created by the SpaPilot® will only serve to oxidize the accumulated dirt trapped in the filter.
- Check the expiration dates of test strips/kits. Test results may be inaccurate after expiration dates.
- To avoid damaging splashes, always add acid to water, never water to acid. Wear safety glasses and use other appropriate personal protection equipment.

IMPORTANT SAFETY INSTRUCTIONS

- Always follow the instructions on the manufacturer's label whenever handling or using chemicals.
- Leave spa cover open for at least 30 seconds prior to use to allow the escape of trapped gases.
- The SpaPilot® cell may be cleaned manually by the owner if needed. Hazardous fumes/liquids could be present during this process. Remove power from unit before cleaning. Determine your cell type and then refer to the appropriate procedure, *Cleaning the Over the Wall (Convection) Cell* procedure on page 25, *Cleaning the Inline Cell*, on page *26*.

⚠**CAUTION: Failure to heed the following may result in equipment damage not covered under warranty:**

- The SpaPilot® must be installed and operated as specified in this manual.
- Maintain water parameters as listed in this manual. Cell life may be shortened due to excessive scale (calcium) formation in the cell if pH, Total Alkalinity, and Calcium Hardness guidelines are not followed.
- Never use sharp or metallic objects to remove calcium build-up. Scraping or scratching the titanium blades will damage the cell's catalyst coating, causing premature failure of the SpaPilot® cell. Follow the directions in this manual for properly cleaning the SpaPilot® cell.
- Operating the SpaPilot® at reduced salt levels or with low water temperatures will shorten the life of the cell.
- Water must be drained from the SpaPilot® cell when winterizing the spa.
- Do not operate the wireless remote while in the spa. The wireless remote is not waterproof. Do not submerge the remote. The SpaPilot® wireless remote should be located and/or used in a manner so that it cannot fall into the spa.
- Only sodium bromide and sodium chloride salt products approved for use in pools/spas should be used. Do not allow granular salt to pile up in one location as staining of the spa may occur. Circulate water until the salt is dissolved.
- Maintaining excessively high bromine, chlorine, sodium chloride, or sodium bromide levels above the recommended range may contribute to the corrosion or damage of the spa or the spa components.
- SpaPilot® operation with UV or ozone units is not recommended.
- The SpaPilot® is intended for use on covered spas, not swimming pools.
- The SpaPilot® is intended to operate at an altitude of less than 6500 ft (2000 m) above sea level.

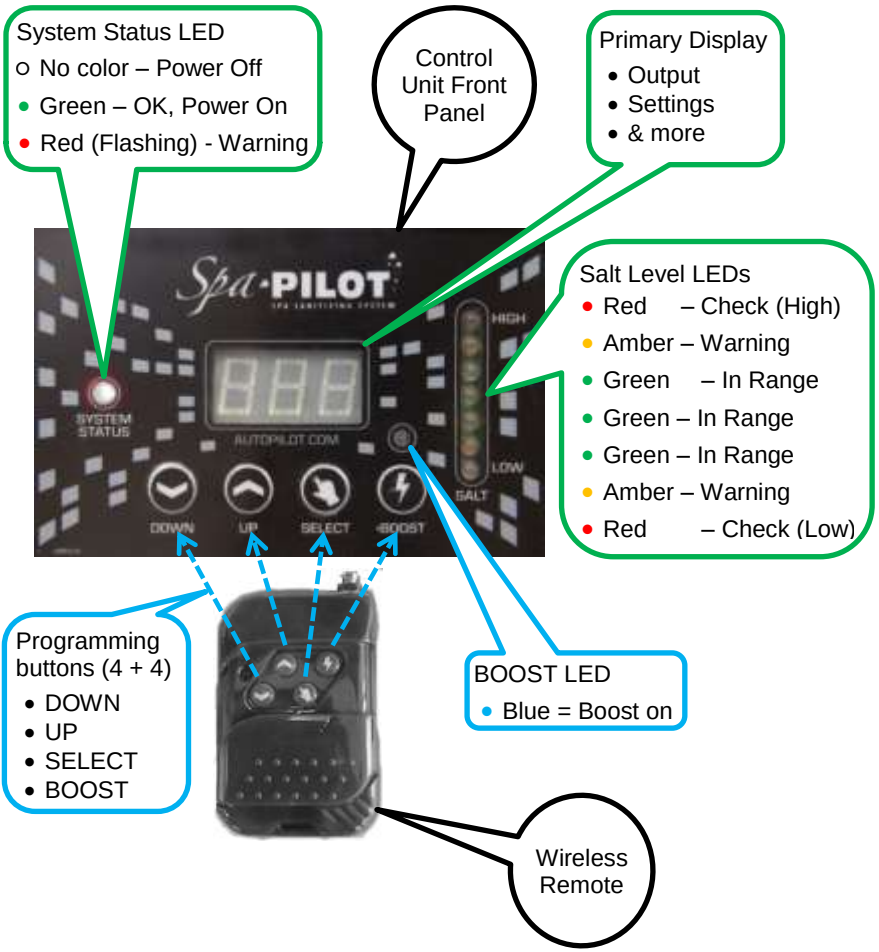
PRODUCT DISPOSAL: The SpaPilot® unit must be disposed separately in accordance with the local waste disposal legislation in force.

SAVE THESE INSTRUCTIONS

HOW THE SPAPILOT® WORKS

- Salt is dissolved in the water. Sodium Chloride is used for Chlorine Production. Sodium Bromide is used for Bromine Production. The salt concentration level is normally maintained below the taste threshold.
- The SpaPilot® automatically converts the salt into a sanitizer.
- The sanitizer reverts back to salt after treating the water. The salt is not consumed.
- Salt is only lost when spa water is replaced, overflows, splashes out or leaks. A small amount may also be lost on bathers or their apparel.

DISPLAY, LED INDICATORS, BUTTONS



SPA WATER PREPARATION

ADD WATER

1) Fill the spa with clean water and heat it to at least 80°F (27°C).
2) Test the water using an AquaChek® Spa 6-in-1 test strip. Check for pH, Total Alkalinity and Calcium Hardness. Obtain the following water parameters using additives recommended by your spa manufacturer.

PARAMETER	TARGET	MIN	MAX	UNITS
pH	7.5	7.2	7.8	pH
Total Alkalinity	90	80	100	ppm (mg/l)
Calcium Hardness	200	150	250	ppm (mg/l)

ADD SALT

1) For chlorine generation (Chlorinator) add pool salt (sodium chloride). For bromine generation (Brominator) add either 99% pure sodium bromide or a combination of sodium chloride and 99% pure sodium bromide. [The SpaPilot® system will create a bromine residual (Brominator) when the combination mixture is used. Sodium chloride is much less expensive than sodium bromide. Using option 2 below (a mixture of sodium chloride and sodium bromide) will still provide all of the benefits of a Brominator but at a lower cost for salt.]

SALT ADDITION TABLE					
DESIRED SANITIZER	SALT	ADD PER 100 GALLONS		ADD PER 500 LITERS	
Chlorine	Sodium Chloride	1 lb.	(1 ½ cups)	550 g	(2 cups)
Bromine (option 1)	Sodium Bromide	1 lb.	(1 ¼ cups)	550 g	(1 ¾ cups)
Bromine (option 2)	Sodium Chloride	16 oz.	(1 ½ cups)	550 g	(2 cups)
	Sodium Bromide	2 oz.	(1/8 cup)	50 g	(1/8 cup)

2) Confirm the water circulation pump remains on until the salt has fully dissolved.
3) If after adding salt you see a red salt LED on your SpaPilot®, test the level of salt (sodium chloride) in the spa; use an AquaChek® Salt test strip. To test the level of sodium bromide; use an AquaChek® Sodium Bromide Test strip (not included).
   - If salt level is low, then add additional salt.
   - If salt level is high, then partially drain the spa and refill to dilute salt.
   - Always fill spa completely before measuring salt level. (Evaporation will increase salt concentration; dilution will reduce.)

PARAMETER	TARGET	MIN	MAX	UNITS
Salt	1300	1000	3000	ppm (mg/l)

SPA WATER PREPARATION

ESTABLISH SANITIZER RESIDUAL

1) Add a shock sanitizer approved by your spa manufacturer to prepare the spa for quick use. **CAUTION:** Do not use hydrogen peroxide.
2) Or if time permits, let the SpaPilot® generate the sanitizer residual.
   a) Press the "BOOST" button. Set the boost time for 2-3 hours per 100 gallons (4-5 hours per 500 liters). Additional boost time may be required if combined chlorine levels are high.
   b) Test the water when Boost is complete, using an AquaChek® Spa 6-in-1 test strip. Confirm water parameters are met for free chlorine or bromine. Repeat Boost for additional hours if needed.

PARAMETER	TARGET	MIN	MAX	UNITS
Free Chlorine	4	3	5	ppm (mg/l)
Bromine	5	4	6	ppm (mg/l)

RECOMMENDED WATER PARAMETERS

Maintain water parameters as shown below. High pH can reduce the effectiveness of sanitizers. High Calcium Hardness can result in scaling on spa or cell. Excessively high Chlorine/Bromine sanitizer or salt levels can potentially damage spa equipment. Check your spa manual for acceptable additives to raise or lower pool water parameters to recommended levels. See the table on the previous page for adding salt.

PARAMETER	TARGET	MIN	MAX	UNITS
Free Chlorine	4	3	5	ppm (mg/l)
Bromine	5	4	6	ppm (mg/l)
pH	7.5	7.2	7.8	pH
Total Alkalinity	90	80	100	ppm (mg/l)
Calcium Hardness	200	150	200	ppm (mg/l)
Salt	1300	1000	3000	ppm (mg/l)

The following test strips are recommended for measuring the water parameters:

- AquaChek® Spa 6-in-1 test strips (for measuring Total Chlorine, Total Bromine, Free Chlorine, Total Alkalinity, pH and Calcium Hardness)
- AquaChek® Pool & Spa Salt test strips (for measuring sodium chloride)
- The AquaChek® Pool & Spa Sodium Bromide test strips (for measuring sodium bromide) (not included)

DECIDE WHICH MODE TO USE: PERCENTAGE OR USAGE

Your SpaPilot® operates in one of two modes, “Percentage” or “Usage”. The SpaPilot® is shipped from the factory in the “Percentage” mode.

- The “Percentage” mode is the simpler of the two. The output can be adjusted up or down from 0 to 100% to set the desired sanitizer output level. The sanitizer is dispensed evenly over time at the set percentage.
- The “Usage” mode is still simple but has a few more features. Sanitizer demand is entered by adjusting two different settings independently: Size and Usage.
    - The Size of the spa is entered. This setting is used to determine the minimum amount of sanitizer generated to maintain sanitizer levels when the spa is not in use.
    - The Usage is entered. This setting is used to determine the additional amount of sanitizer based on the actual bather usage of the spa.

  If the SpaPilot® detects that there have been no key presses for 30 days, the usage will automatically drop to 0. Only the chlorine generation based on the Size of the spa will remain active. This can assist in protecting your spa from excessive sanitizer levels during periods of non-use.

  Your spa may have a “summer” mode that reduces circulation pump time to minimize pump kinetic energy from overheating the spa. Selecting the SpaPilot® “Day” (operating hours) setting to match the circulation pump run time will result in the SpaPilot® automatically generating the sanitizer faster. This is needed to compensate for the reduced daily operating hours.
- The “Boost” feature works the same for both “Percentage” and “Usage” modes. Press the “BOOST” button and the sanitizer output can be set to 100% for the next 1 to 24 hours.

Select the mode that works best for you, “Percentage” or “Usage”, and then proceed to the appropriate section that follows. Remember, you can change modes again later if desired.

PERCENTAGE MODE – MENU TREE

Percentage PCt
output displayed
(0 to 100%)
(100)

If ***Boost*** bSt is active the blue LED will be on

- (0-24 hours) -24
- Boost countdown will be displayed
- (23.9 to 0.1 hours) 23.9 to -0.1

On the Normal Displays:

- Press BOOST to toggle off/on
- Press UP/DOWN to change parameter value
- Press SELECT for 5 seconds to go to secondary menu

~~***Day*** (1 to 24 hours)[1]
(dAY -24 Hr)~~

Reversing
(2, 4, or 8 hours)
(rEU -04 Hr)

Configuration (Mode)
(Percentage or Usage)
(CnFG -Pct)

~~***Spa Size in gallons***[1]
(0 to 1200)
(SPA -1200)~~

Information
(Volts, Amps, Life Remaining, Program, Year, Day, Serial)
(InF)

End – Exit Menu
(End)

On the Secondary Menu Displays:

- Current parameter value will be displayed
- Press SELECT to change parameter
  - Then current parameter value will flash
  - Press UP/DOWN to scroll thru values
  - Press SELECT to save new value and return to Secondary Menu display
- Press UP/DOWN to skip parameters

[1] Not active in Percentage Mode

PERCENTAGE MODE – SETTING THE OUTPUT %

The following pages outline operation in “Percentage” mode (factory default). To change your SpaPilot® from “Usage” mode to “Percentage” mode, refer to the section, *The “Configuration” Feature,* on page *11*.

If the SpaPilot® is now in “Usage” mode and you want to keep it that way, refer to the section, *USAGE MODE – Menu Tree,* on page *14*.

WARNING: It is the user’s responsibility to regularly maintain and adjust the sanitation output settings as required.

The amount of sanitizer required will vary depending on various factors including spa size, water temperature, spa cover usage, exposure to direct sunlight, filtration pump runtime, blower activation times, and bather load. The output range is from 0% (Off) to 100% (Continuous On).

For simplicity, the sanitizer demand is separated into 3 factors:

1) Output percentage (%) required when the spa is idle – primarily based on size and other non-use factors
2) Output percentage (%) required for regular bather usage
3) Spikes in usage – which will be handled by BOOST (1-24 hours)

PERCENTAGE SETTING - SET A % OUTPUT FOR THE SPA SIZE

1) Press the “UP” or “DOWN” button to adjust the SpaPilot® output. As a starting point, you can set the output percentage to approximately 2% per 100 gallons (400 liters) of water. Additional adjustments may be needed for the other non-usage factors.
2) Wait 24 hours, then test the water using an AquaChek® 6-in-1 test strip.
   - If free chlorine level is above 5 ppm (mg/l) (or bromine is above 6 ppm (mg/l)), decrease the percentage level.
   - If free chlorine level is below 3 ppm (mg/l) (or bromine is below 4 ppm (mg/l), increase the percentage level.

PERCENTAGE SETTING – ADD TO % TO INCREASE OUTPUT FOR REGULAR USAGE

1) Press the “UP” or “DOWN” button to add output percentage as needed for each bather who regularly uses the spa.
2) As a starting point, add an additional 10% per bather per day, per ½ hour of usage, to the output percentage used for the spa size. This will need to be adjusted up or down for your particular application.
3) After using the spa, test the water.
   - If free chlorine level is above 5 ppm (mg/l) (or bromine is above 6 ppm (mg/l)), decrease the percentage level.
   - If free chlorine level is below 3 ppm (mg/l) (or bromine is below 4 ppm (mg/l)), increase the percentage level.

PERCENTAGE MODE

PERCENTAGE MODE EXAMPLE:

Amelia has a 400 gallon (1500 liters) spa. Based on the size, Amelia had set the minimum output to 8% for her spa. Two people will be using it for ½ hour each on a regular basis. She added a 20% output for two bathers. Total = 28%

After using the spa, Amelia tested the water and noticed the sanitizer level was low. She adjusted the percentage up another 5% for two bathers. After using the spa and re-testing, she found the percentage output was ideal.

SPA	Spa Output Percent	+	Usage Output Percent	=	Total Percentage
Original %	08	+	2 Bathers (20%)	=	28
Bather Adjustment	08	+	2 Bathers (25%)	=	33

PERCENTAGE MODE

BOOST – HOW AND WHEN TO USE

The “Boost” feature is normally used to temporarily increase the SpaPilot® sanitizer production to the maximum possible for the selected time period to handle unusual spikes in sanitizer demand, such as might be expected by:

- Spa usage above the daily norm.
- After a water change.
- The owner does not want to adjust the “Percentage” setting to correspond to varying daily usage. (Note: The output percentage setting must be manually changed to reduce sanitizer generation but BOOST will automatically turn off after the selected run time.)

As a starting point: After a water change, set the boost time for 2-3 hours per 100 gallons (400 liters). Additional boost time may be required if the combined chlorine level in the source water is high.

Another reference starting point: The boost time can be set to 2 hours per ½ hour of bather use. This will need to be adjusted up or down based on individual spa conditions.

1) Press the “BOOST” button. The blue LED above the “BOOST” button will turn on. The previously selected boost cycle time will be displayed. (will flash then or the last selected time value will display steady. The default boost time is 1 hour; range is 0 to 24 hours.)
2) If desired, use the “UP” or “DOWN” button to adjust the number of hours the SpaPilot® will operate in boost mode. The boost cycle will automatically turn off when the boost time expires. The most recent boost cycle time will be recalled the next time “BOOST” is pressed.

   For example: If set to 1 hour, display will show then after 6 minutes , then …….. Boost expires after 1 hour; the display reverts to usage setting .
3) After the boost cycle is complete, test the water using an AquaChek® Spa 6-in-1 test strip.
   - If free chlorine level is above 5 ppm (mg/l) (or bromine is above 6 ppm (mg/l)), boost hours were set too high.
     - Confirm boost is off (Blue LED will be off).
     - The next time the boost feature is used, it will need to be set to a shorter number of hours.
   - If free chlorine level is below 3 ppm (mg/l) (or bromine is below 4 ppm (mg/l)), boost hours were set too low.
     - Press “BOOST” button and add additional boost hours to raise sanitizer level.
     - Test periodically with an AquaChek® Spa 6-in-1 test strip.

PERCENTAGE MODE

THE “DAY” FEATURE

dAY (Displays dAY then -24 then hr)

The “Day” setting is not used when in the “Percentage” mode. To use this feature, change to the “Usage” mode.

If your SpaPilot® has an “Inline” cell, not an “Over the Wall” cell, then the following applies:

- When required, some spa controllers allow the owner to shorten the spa circulation pump operation to reduce the spa heat gain (overheating) associated with kinetic energy imparted by the circulation pump.
- If the circulation time of the spa is reduced, then the output of the chlorine generator with an “Inline” cell is reduced proportionally. The SpaPilot® maximum sanitizer output capacity will decrease when the circulation pump run time is reduced. See the table entry, *Chlorine Output - lbs/day (g/day)*, in the section, *Cell Specifications*, on page *39* to determine the SpaPilot® chlorine output if the Spa circulation pump does not run continuously.

WARNING: A SpaPilot® with an “Inline” cell must be electrically interlocked with the spa circulation pump to prevent sanitizer generation when there is no circulation.

WARNING: The sanitizer output capacity of a SpaPilot® with an “Inline” cell will be reduced if the spa circulation pump hours of operation are reduced. Supplemental sanitation may be required.

PERCENTAGE MODE

THE "REVERSING" FEATURE

rEv (Displays rEv then 04 then hr)

The SpaPilot® has an automatic cleaning feature to prevent calcium buildup between the cell blades. The cell polarity is reversed every 4 hours (factory default).

CAUTION: The reverse setting is optimized for cell life and normally should not be changed.

The reversing feature is very effective on the "Inline" cell. Reversing is less effective on the "Over the Wall (Convection)" cell due to the lower water flow through the cell. Periodic manual cleaning of the "Over the Wall" cell may be required. Locating the cell in the path of the circulation return jet will minimize manual cleaning cycles.

1) Press and hold the "SELECT" button for five seconds until dAY appears on the display.
   - dAY then 24 then hr displays repeatedly.
   - (24 hours is the normal default setting.)
2) Press the "DOWN" button once and the reversing menu is displayed.
   - rEv then 04 then hr displays repeatedly.
   - (4 hours is the default)
3) Press the "SELECT" button once to change hours.
   - 04 The "04" value will flash.
4) Press "UP" or "DOWN" button to adjust reversal intervals. Intervals are 2, 4, or 8 hours.
5) Press the "SELECT" button once to lock in the interval. The new value will display.
6) Press the "DOWN" button until End appears. Press the "SELECT" button to exit secondary menu. (Or wait 15 seconds to automatically exit.)

PERCENTAGE MODE

THE “CONFIGURATION” FEATURE

CFG (Displays CFG then 000 then PCT)

This feature allows you to select one of two SpaPilot® operational modes: “Percentage - PCT” or “Usage - USE”. The factory default is “Percentage” mode. Before changing the “Configuration” mode, review the section, *Decide which mode to use: Percentage or usage*, on page 4.

Press and hold “SELECT” button for five seconds until dAY appears on the display.

- dAY then 024 then hr displays repeatedly.
- (24 hours is the normal default setting.)

1) Press the “DOWN” button twice to skip parameters until the configuration selection is displayed.
   - If in Usage mode the display will show repeatedly: CFG then 000 then USE
   - If in Percentage mode the display will show repeatedly: CFG then 000 then PCT
2) Press “SELECT” button once to change mode.
   - 000 then USE will flash repeatedly or
   - 000 then PCT will flash repeatedly.
3) Press the “UP” or “DOWN” button to select USE or PCT.
4) Press the “SELECT” button once to lock in the new selection. The new value will display.
5) Press the “DOWN” button until End appears. Press the “SELECT” button to exit secondary menu. (Or wait 15 seconds to automatically exit.)

PERCENTAGE MODE

THE “SPA SIZE” FEATURE

The Size of the spa is not used in the “Percentage” mode. The size setting is used to determine the minimum amount of sanitizer generated to maintain sanitizer when in the “Usage” mode. To use this feature, change to the “Usage” mode.

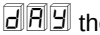
Although not used in the “Percentage” mode, the Spa Size can be changed by entering the secondary menus. Size can only be entered in gallons.

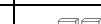
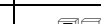
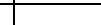
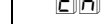
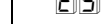
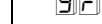
DISPLAY	SPA SIZE	
	GALLONS	LITERS
S-1	100	380
S-2	200	760
S-3	300	1140
S-4	400	1510
S-5	500	1890
S-6	600	2270
S-7	700	2650
S-8	800	3030
S-9	900	3410
S10	1000	3790
S11	1100	4160
S12	1200	4540

PERCENTAGE MODE

THE “INFORMATION” FEATURE

This feature allows you to view SpaPilot® operational status and information. This is helpful when troubleshooting.

1) Press and hold “SELECT” button for five seconds until appears on the display.
 then then displays repeatedly.
(24 hours is the normal default setting.)
2) Press the “DOWN” button to skip parameters until is displayed.
3) Press the “SELECT” button once to display information diagnostics. Each reading will be displayed twice. (Press the “UP” arrow to back up or the “DOWN” arrow to advance to the next reading.) After all values are shown, the display will automatically return to .
4) Press the “DOWN” button until appears then press the “SELECT” button to exit secondary menu. (Or wait 15 seconds to automatically exit.)

DESCRIPTION	DISPLAY SYMBOL	VALUE EXAMPLE	EXAMPLE EXPLANATION
Voltage			In this example the cell voltage is “9.81”
Amperage			In this example the cell amperage is”1.61”
Cell Life Remaining			In this example the cell has a remaining life of 99%
Software Program Version			In this example the software version is “C1.0”)
Service Parameter			Used by customer service for troubleshooting
Service Parameter			Used by customer service for troubleshooting
Year of manufacture			In this example the year of manufacture is “2013”
Day of manufacture			In this example the day of manufacture is “340”
Unit Number			In this example the unit number is “999”

USAGE MODE – MENU TREE

Usage USE output displayed
(0 to 10)
(U-3)

If ***Boost*** bSt is active the blue LED will be on

- (0-24 hours) -24
- Boost countdown will be displayed
- (23.9 to 0.1 hours) 23.9 to -0.1

On Normal Displays:

- Press BOOST to toggle off/on
- Press UP/DOWN to change parameter value
- Press SELECT for 5 seconds to go to secondary menu
- Press SELECT for 1 second for shortcut to change the ***Spa Size in gallons*** setting (S-3)

Day (1 to 24 hours)
(dAY -24 hr)

Reversing
(2, 4, or 8 hours)
(rEv -04 hr)

Configuration (Mode)
(Percentage or Usage)
(CFG -- USE)

Spa Size in gallons
(0 to 1200)
(SPA -01 200)

Information
(Volts, Amps, Life Remaining, Program, Year, Day, Number)
(InF)

End – Exit Menu
(End)

On the Secondary Menu Displays:

- Current parameter value will be displayed
- Press SELECT to change parameter
  - Then current parameter value will flash
  - Press UP/DOWN to scroll thru values
  - Press SELECT to save new value and return to Secondary Menu display
- Press UP/DOWN to skip parameters

USAGE MODE – SETTING THE OUTPUT

The following pages outline operation in “Usage” mode. To change your SpaPilot® from “Percentage” mode to “Usage” mode, refer to the section, *The “Configuration” Feature,* on page *21*.

If your SpaPilot® is configured to “Percentage” mode and you want to keep it that way, refer to the section, *PERCENTAGE MODE – MENU TREE,* which starts on page *5* for operating instructions.

WARNING: It is the user’s responsibility to regularly maintain and adjust the sanitation output settings as required.

The amount of sanitizer required will vary depending on various factors including spa size, water temperature, cover usage, exposure to direct sunlight, filtration pump runtime, blower activation times, and bather load.

For simplicity, the sanitizer demand is separated into 3 factors:

1) Sanitizer required when the spa is idle – primarily based on size and other non-use factors (Size = 0 to 1200 gallons)
2) Sanitizer required for regular bather usage (Usage = 1 to 10)
3) Spikes in usage – which will be handled by BOOST (1 to 24 hours)

SET SANITIZER OUTPUT BASED ON SPA SIZE

1) Look up the spa water capacity in your spa owner’s manual.
2) Press the “SELECT” button. Current spa size value will be displayed. (- default size is 100 gallons)
3) Press the “UP” or “DOWN” button to scroll through sizes: 0 to 1200 gallons. (to)
4) Press the “SELECT” button to lock in the size closest to your spa size.
5) Wait 24 hours then test the water using an AquaChek® 6- in-1 test strip.
   - If free chlorine level is above 5 ppm (mg/l) (or bromine is above 6 ppm (mg/l))**,** decrease the size level.
   - If free chlorine level is below 3 ppm (mg/l) (or bromine is below 4 ppm (mg/l)), increase the size level.

VALUE	DESCRIPTION	DISPLAY SEQUENCE:
	Value is approximately 100 gallons	
	Value is approximately 1200 gallons	

USAGE MODE

SET SANITIZER OUTPUT BASED ON SPA USAGE

1) Press the “UP” or “DOWN” button to set the usage level. The output range is from 0 (Off) to 10. (U-0 - default usage is 0)
2) As a starting point, we suggest you can set the usage level to 1 per user per half hour of use. This will need to be adjusted up or down for your particular application.
3) After using the spa, test the water.
    - If free chlorine level is above 5 ppm (mg/l) (or bromine is above 6 ppm (mg/l)), decrease the usage level.
    - If free chlorine level is below 3 ppm (mg/l) (or bromine is below 4 ppm (mg/l)), increase the usage level.

USAGE MODE EXAMPLE

Leo has a 400 gallon (1500 liter) spa. Leo and his wife will be using it for a half hour on a regular daily basis. He has already set his minimum output to 4 (Spa Size S-4) He sets the usage level to 2 (U-2). After using the spa, he noticed the sanitizer level was low. He increased the usage level by 1 (U-3). After using the spa and re-testing, he found the usage level was ideal.

	VALUE	USAGE LEVEL
Original Bather Level	2 Bathers = 2	U-2
Bather Adjustment	2 Bathers = 3	U-3

AUTOMATIC SANITIZER USAGE OUTPUT CUTOFF DUE TO INACTIVITY

If the SpaPilot® detects that there have been no button presses for 30 days, the Usage will automatically drop to 0 (U-0 after 30 days of inactivity). Only sanitizer generation based on the Size of the spa will remain active. This feature can assist in protecting your spa from excessive sanitizer levels during periods of non-use.

USAGE MODE

BOOST – HOW AND WHEN TO USE

The boost feature is normally used to temporarily increase the SpaPilot® sanitizer production to the maximum possible for the selected time period to handle unusual spikes in sanitizer demand, such as might be expected by:

- Spa usage above the daily norm.
- After a water change.
- The owner does not want to adjust the "Usage" setting to correspond to varying daily usage. (Note: The usage setting must be manually changed to reduce sanitizer generation but BOOST will automatically turn off after the selected run time.)

As a starting point: After a water change, set the boost time for 2-3 hours per 100 gallons (400 liters). Additional boost time may be required if the combined chlorine level in the source water is high.

Another reference starting point: The boost time can be set to 2 hours per ½ hour of bather use. This will need to be adjusted up or down based on individual spa conditions.

1) Press the "BOOST" button. The blue LED above the "BOOST" button will turn on. The previously selected boost cycle time will be displayed. (bSt will flash then 001 or the last selected time value will display steady. The default boost time is 1 hour; range is 0 to 24 hours).
2) If desired, use the "UP" or "DOWN" button to adjust the number of hours the SpaPilot® will operate in boost mode. The boost cycle will automatically turn off when the boost time expires. The most recent boost cycle time will be recalled the next time "BOOST" is pressed.

   For example: If set to 1 hour, display will show 001, then after 6 minutes 00.9, then …….00.1. Boost expires after 1 hour; the display reverts to usage setting U=0.
3) After the Boost cycle is complete, test the water using an AquaChek® Spa 6-in-1 test strip.
   - If free chlorine level is above 5 ppm (mg/l) (or bromine is above 6 ppm (mg/l)), boost hours were set too high.
     - Confirm Boost is off (Blue LED will be off).
     - The next time the boost feature is used it will need to be set to a shorter number of hours.
   - If free chlorine level is below 3 ppm (mg/l) (or bromine is below 4 ppm (mg/l)), boost hours were set too low.
     - Press the "BOOST" button and add additional boost hours to raise sanitizer level.
     - Test periodically with an AquaChek® Spa 6-in-1 test strip.

USAGE MODE

THE “DAY” FEATURE

dAY (Displays dAY then -24 then hr)

The SpaPilot® “Day” setting is only used in “Usage” mode. The “Day” setting should remain at 24 hours for a SpaPilot® using an “Over the Wall (Convection) cell”.

If your SpaPilot® has an “Inline” cell, the following applies:

- For the “Inline” cell the “Day” setting should match the actual operating hours of the spa circulation pump so that the SpaPilot® can automatically correct sanitizer output for pump operations less than 24 hours.
- When required, some spa controllers allow the owner to shorten the spa circulation pump operation time to reduce the spa heat gain (overheating) associated with kinetic energy imparted by the circulation pump.
- If the circulation time of the spa is reduced, then the output of the chlorine generator with an “Inline” cell is reduced proportionally. The SpaPilot® maximum sanitizer output capacity will decrease when the circulation pump run time is reduced. See the table entry, *Chlorine Output - lbs/day (g/day)*, in the section, *Cell Specifications*, on page *39* to determine the SpaPilot® chlorine output if the spa circulation pump does not run continuously.

⚠ **WARNING:** A SpaPilot® with an “Inline” cell must be electrically interlocked with the spa circulation pump to prevent sanitizer generation when there is no circulation.

⚠ **WARNING:** The sanitizer output capacity of a SpaPilot® with an “Inline” cell will be reduced if the spa circulation pump hours of operation are reduced. Supplemental sanitation may be required.

If your SpaPilot® has an “Inline” cell, adjust the “Day” setting to match the runtime of the circulation pump in order to generate sanitizer output correctly, as follows:

The hours of SpaPilot® operation are adjustable in hourly increments.

1) Determine from your spa manual and the settings on your Spa Control Panel how many hours per day your spa circulation pump is operating.
2) Press and hold the “SELECT” button for five seconds until dAY appears on the display.
   - Displays dAY then -24 then hr repeatedly.
   - (24 hours is the normal default setting.)
3) Press the “SELECT” button once to change hours. -24 value will flash.
4) Press the “UP” or “DOWN” button to scroll though values. Adjust hours of operation to match the spa circulation pump. For example 4 hours: -04

5) Press the “SELECT” button once to lock in the hours. The new value will display.
6) Press the “DOWN” button until End appears. Press the “SELECT” button to exit the secondary menu. (Or wait 15 seconds to automatically exit.)

Example of “DAY” set properly to match the circulation pump runtime:

- The spa circulation pump is only running for 4 hours per day.
- "Day" on the SpaPilot® has been set to 4 hours.
  (dAY then -04 then hr shows in the secondary menu.)
  - Let’s assume that the spa size has been set correctly to 100 gallons and the usage has been set to 1 to reflect current usage.
- At this point, the SpaPilot® has been set so the sanitizer needed in a normal day will be created in the 4 hour period that the spa circulation pump runs each day.

Example of “DAY” set improperly:

- The spa circulation pump is running 24 hours per day.
- “Day" on the SpaPilot® has been set to 4 hours.
  (dAY then -04 then hr shows in the secondary menu.)
  - Let’s assume that the spa size has been set correctly to 100 gallons and the usage has been set to 1 to reflect current usage.
- At this point, the programming has been set so all of the daily sanitizer needed in a normal day will be created in a 4 hour period. However, if the spa circulation pump is running for 24 hours instead of 4 hours, the SpaPilot® will create the full daily amount needed every 4 hours; thus creating 6 times more sanitizer than desired.
- The SpaPilot® “Day” should be reset to 24 hours to match the Spa. dAY then -24 then hr should show in the secondary menu when correct.

USAGE MODE

THE “REVERSING” FEATURE

rEv (Displays rEv then 04 then hr)

The SpaPilot® has an automatic cleaning feature to prevent calcium buildup between the cell blades. The cell polarity is reversed every 4 hours (factory default).

CAUTION: The reverse setting is optimized for cell life and normally should not be changed.

The reversing feature is very effective on the “Inline” cell. Reversing is less effective on the “Over the Wall (Convection)” cell due to the lower water flow through the cell. Periodic manual cleaning of the “Over the Wall” cell may be required. Locating the cell in the path of the circulation return jet will minimize manual cleaning cycles.

1) Press and hold the “SELECT” button for five seconds until dAY appears on the display.
   - Displays dAY then 24 then hr repeatedly.
   - (24 hours is the normal default setting.)
2) Press the “DOWN” button once and the reversing menu is displayed.
   - Displays rEv then 04 then hr repeatedly
   - (4 hours is the default)
3) Press the “SELECT” button once to change hours.
   - 04 The “04” value will flash.
4) Press the “UP” or “DOWN” button to adjust reversal intervals. Intervals are 2, 4, or 8 hours.
5) Press the “SELECT” button once to lock in the interval. The new value will display.
6) Press the “DOWN” button until End appears. Press the “SELECT” button to exit secondary menu. (Or wait 15 seconds to automatically exit.)

USAGE MODE

THE “CONFIGURATION” FEATURE

cFG (Displays cFG then -00 then USE)

This feature allows you to select one of two SpaPilot® operational modes: “Percentage - Pct” or “Usage - USE”. The factory default is “Percentage” mode. Before changing the configuration mode, review the section, *Decide which mode to use: Percentage or usage*, on page 4.

1) Press and hold “SELECT” button for five seconds until dAY appears on the display.
   - Displays dAY then -24 then hr repeatedly.
   - (24 hours is the normal default setting.)
2) Press the “DOWN” button twice to skip parameters until the “Configuration” selection is displayed.
   - If in Usage” mode the display will show repeatedly: cFG then -00 then USE
   - If in Percentage mode the display will show repeatedly: cFG then -00 then Pct
3) Press the “SELECT” button once to change mode.
   - -00 then USE will flash repeatedly or
   - -00 then Pct will flash repeatedly.
4) Press the “UP” or “DOWN” button to select USE or Pct.
5) Press the “SELECT” button once to lock in the new selection. The new value will display.
6) Press the “DOWN” button until End appears. Press the “SELECT” button to exit secondary menu. (Or wait 15 seconds to automatically exit.)

USAGE MODE

THE “SPA SIZE” FEATURE

The Size of the spa is entered. This setting is used to determine the minimum amount of sanitizer generated to maintain sanitizer when the spa is not in use (Used only in Usage Mode).

1) Press the “SELECT” button. which is 100 gallons or the last size saved will appear.
2) Press the “UP” or “DOWN” button to adjust the spa size. Spa size is adjustable in increments of to (100 to 1200 gallons).
3) Press the “SELECT” once to lock in size and the unit will automatically return to the normal “Usage” mode display.

The Spa Size can also be changed by entering the secondary menus. Size can only be entered in gallons.

DISPLAY	SPA SIZE	
	GALLONS	LITERS
S-1	100	380
S-2	200	760
S-3	300	1140
S-4	400	1510
S-5	500	1890
S-6	600	2270
S-7	700	2650
S-8	800	3030
S-9	900	3410
S10	1000	3790
S11	1100	4160
S12	1200	4540

USAGE MODE

THE “INFORMATION” FEATURE

This feature allows you to view SpaPilot® operational status and information. This is helpful when troubleshooting.

1) Press and hold the “SELECT” button for five seconds until appears on the display.
   Displays , then , then repeatedly.
   (24 hours is the normal default setting.)
2) Press the “DOWN” button to skip parameters until is displayed.
3) Press the “SELECT” button once to display information diagnostics. Each reading will be displayed twice. (Press the “UP” arrow to back up or the “DOWN” arrow to advance to the next reading.) After all values are shown, the display will automatically return to .
4) Press the “DOWN” button until appears then press the “SELECT” button to exit secondary menu. (Or wait 15 seconds to automatically exit.)

DESCRIPTION	DISPLAY SYMBOL	VALUE EXAMPLE	EXAMPLE EXPLANATION
Voltage			In this example the cell voltage is “9.81”
Amperage			In this example the cell amperage is”1.61”
Cell Life Remaining			In this example the cell has a remaining life of 99%
Software Program Version			In this example the software version is “C1.0”
Service Parameter			Used by customer service for troubleshooting
Service Parameter			Used by customer service for troubleshooting
Year of Manufacture			In this example the year of manufacture is “2013”
Day of Manufacture			In this example the day of manufacture is “340”
Unit Number			In this example the unit number is “999”

WINTERIZING THE SPAPILOT® ™

CAUTION: When winterizing the spa system, confirm water has completely drained from the SpaPilot® cell. Freeze damage due to improper winterization is not covered under warranty.

The SpaPilot® control unit is not affected by the cold and does not need to be removed. The cell must be completely drained.

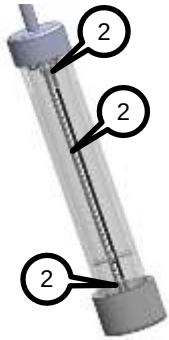
CLEANING THE OVER THE WALL (CONVECTION) CELL

WARNING: Failure to heed the following may result in injury or death.

- Disconnect all AC power when installing or servicing this system. Follow all state, local, and National Electrical Code(s) (provincial and Canadian Electrical Code(s) if applicable).
- To avoid damaging splashes, always add acid to water, never add water to acid. Wear safety glasses and use other appropriate personal protection equipment.
- The SpaPilot® must be turned off prior to cleaning. Dangerous fumes can be generated when the cell is cleaned with acid.

Inspect Cell Blades

1) View the titanium blades through the clear wall of the cell. (It is not possible to remove the cell blades from the cell body.)
2) If there are calcium deposits on the ends or between the cell blades, then clean the cell.
3) Do not use any mechanical means to clean the cell. Do not scrape the blades.



Clean the Cell Blades

4) **WARNING:** Confirm that the SpaPilot® is off before proceeding. Dangerous fumes may be generated during cleaning with acid.
5) Fully immerse cell in a full strength solution of white kitchen vinegar.
   - A solution of 4 parts water to 1 part muriatic acid can also be used.
   - To prevent splash back when using acid, always put water in the bucket first, then add the acid to the water.
6) The solution should bubble as it cleans the cell.
7) Remove Convection cell from the solution and inspect. Repeat cleaning procedure as needed until cell blades have no calcium deposits.
8) Rinse the cell with clean water (not in spa).
9) Properly dispose of cleaning solution.

CAUTION: Automatic reversing is less effective on the "Over the Wall" (Convection) cell due to the lower water flow through the cell. Periodic manual cleaning of the "Over the Wall" cell may be required. Locating the cell in the path of the circulation return jet will minimize cleaning cycles.

CLEANING THE INLINE CELL

WARNING: Failure to heed the following may result in injury or death.

- Disconnect all AC power when installing or servicing this system. Follow all state, local, and National Electrical Code(s) (provincial and Canadian Electrical Code(s) if applicable).
- To avoid excess water loss, it is suggested that the cell be cleaned when the spa is drained of water for routine maintenance.
- To avoid damaging splashes, always add acid to water, never add water to acid. Wear safety glasses and use other appropriate personal protection equipment.
- The SpaPilot® must be turned off prior to cleaning. Dangerous fumes can be generated when the cell is cleaned with acid.

Inspect Cell Blades

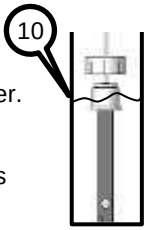
1) Remove the spa skirt access panel to access the cell.
2) View titanium blades through the clear section of tube on the cell. (It may not be necessary to remove the cell blades when inspecting the cell).
3) If there are calcium deposits on the ends or between the cell blades, then clean the cell.

Remove Inline Cell Blades

4) Turn off the water circulation pump and shut off all power.
5) Place a bucket under the cell. A small amount of water spillage will be normal when performing this operation.
6) Unscrew the retaining nut from the cell housing.
7) Slide blade assembly down and out of cell body. Make sure o-ring remains in the cell housing.
8) Screw supplied service plug onto the cell housing.

Clean the Cell Blades

9) Fully immerse the cell blades in a full strength solution of white kitchen vinegar.
   - A solution of 4 parts water to 1 part muriatic acid can also be used.
   - To prevent splash back when using acid, always put water in the bucket first, then add the acid to the water.
10) The solution should bubble as it cleans the cell blades.
11) Remove the cell blades from the solution and inspect. Repeat the cleaning procedure as needed until the blades have no calcium deposits.
12) Rinse the cell with clean water (not in spa).
13) Properly dispose of cleaning solution.



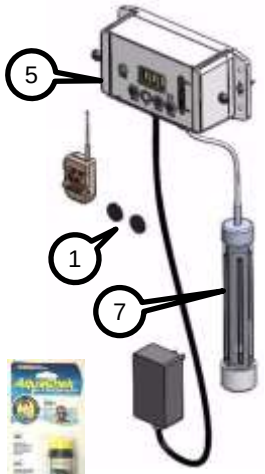
Re-Install Inline Cell Blades

14) Unscrew retaining nut and remove the service plug from the cell housing.
15) Slide blades back into the cell, confirm the o-ring is replaced, and tighten retaining nut.
16) Turn on spa circulation pump and check for leaks before installing the skirt access panel.

WHAT IS INCLUDED WITH THE SPAPILOT®

All Models:

1) Wireless Remote with 2 velcro mounting dots
2) Warranty card(s)
3) 2 bottles of test strips:
   - AquaChek® Spa 6-in-1 test strips (for testing Total Chlorine, Total Bromine, Free Chlorine, Total Alkalinity, pH and Calcium Hardness)
   - AquaChek® Pool & Spa Salt test strips (used for measuring sodium chloride)
4) This manual

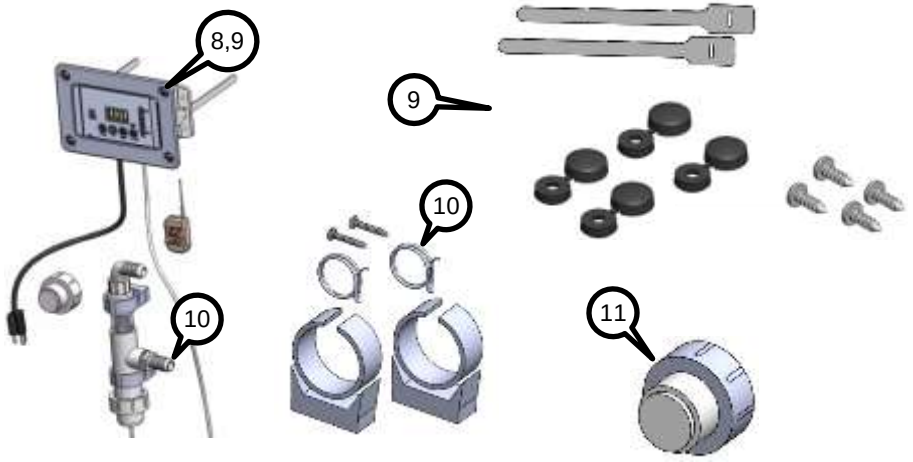


Surface Mount Installation Models:

5) Control Unit with external AC/DC adaptor
6) Control Unit mounting hardware
   - 2 Plastic anchors
   - 2 Mounting screws
   - 2 Snap caps
7) Over the Wall (Convection) cell

OEM Flush Mount Installation Models:

8) Control Unit with internal AC/DC supply (with AC cord)
9) Flush Mount Bezel with:
   - 2 Velcro straps and 1 dot (installed)
   - 4 Mounting screws
   - 4 Snap caps
10) Inline Cell with:
    - 2 Snap clamps
    - 2 Mounting screws
    - 2 Hose clamps
11) Cell service cleaning plug

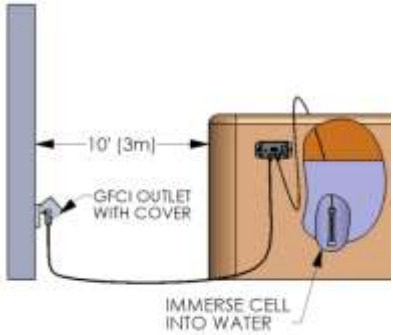


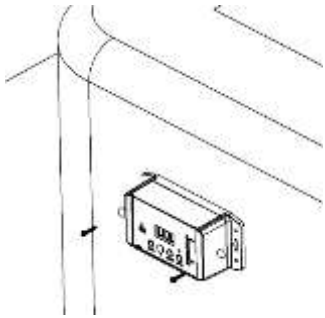
INSTALLATION – SURFACE MOUNT CONTROL UNIT

WARNING: This appliance is intended to be installed, operated and maintained by qualified/trained personnel without reduced physical, sensory and mental capabilities.

Install the SpaPilot® Control Unit on a vertical surface or wall

1) Identify a suitable location for mounting the SpaPilot® Control Unit:
   a) On the spa side/skirt or a vertical wall near the spa.
   b) The unit should be close enough so that SpaPilot® Over the Wall cell can hang over the wall and be fully submerged. (Cable is 10' (3m) long.)
   c) Select a location where the cell and cord can be placed out of the way during spa use.
   d) The SpaPilot® AC/DC power adaptor must be able to be plugged into a GFCI receptacle that is 10' or more from the spa water. (Cable is 15' (4.6 m) long.)
   e) Select a location where the power cable will be out of the way.
   f) **WARNING:** The SpaPilot® AC/DC adaptor requires a GFCI protected outlet with an approved weather protective shielded enclosure that covers the adaptor.





2) Hold the control unit to the mounting surface and use as template to mark the location for 2 mounting holes. Use the center keyhole on each side flange.
3) Drill two mounting holes:
   a) On a wood surface drill a small pilot-hole 3/32" (2 mm) or
   b) On a masonry surface, drill a 9/32" (7 mm) hole and install the 2 plastic anchors that are provided.
4) Hold the control unit to the mounting surface.
5) With the snap cap open, install one of the self-tapping #8-11 x ½" (13 mm) screws through the snap cap, then through the center hole of the flange and into the pilot hole or plastic anchor.
6) Repeat step 5 for the other side.
7) Adjust unit until level and screws are snug. Do not over tighten.
8) Close and press the two snap cap covers firmly until they snap into place.

Connect Power

9) Connect the AC/DC adapter to a GFCI outlet 10' (3 m) from the spa body. For outdoor use, a weather protective shielded cover is required.

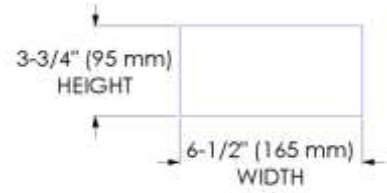
Install the Convection Cell

10) Submerse the Convection cell into the spa's water. See diagram above.
11) Prepare the spa water. See the section, *Spa Water Preparation*, on page 2.

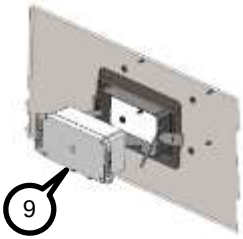
OEM – INSTALLATION – FLUSH MOUNT CONTROL UNIT

⚠ WARNING: This appliance is intended to be installed, operated and maintained by qualified/trained personnel without reduced physical, sensory and mental capabilities.

Install the Bezel



1) ⚠ **WARNING:** Disconnect all AC power when installing this system. Follow all state, local, and National Electrical Code(s) (provincial and Canadian Electrical Code(s) if applicable).
2) Remove spa side skirts and identify a suitable mounting location on the skirt for the bezel. Before cutting out the skirt:
   a) Ensure there will be adequate clearance behind the skirt for the bezel and the SpaPilot® Control Unit.
   b) Ensure that cell and power cables will reach their termination locations
3) Cut out the skirt as shown in the diagram 3.75" high x 6.5" wide (95 x 165 mm).
4) Slide in the bezel as shown in the diagram below with the 2 half circles face down. Seal gaps on edge with silicone sealant if needed.
5) Drill a small pilot-hole 3/32" (2 mm) through the four circular dimples on the bezel and through the skirt.
6) With the snap cap open, install one of the self-tapping #8-11 x ½" (13 mm) self-tapping screws through the snap cap into the bezel/skirt pilot hole.
7) Close and press the snap cap cover firmly until it snaps into place.
8) Repeat step numbers 6 & 7 for the remaining three holes to complete installation of the bezel.


9

Install the Control Unit

9) From the back of the panel/skirt, slide the SpaPilot® Control Unit into the bezel until the unit is flush with the front of the bezel. Install the unit so that the cell and power cords are on the bottom. See the diagram below.
10) Using the provided Velcro and with the unit held firmly in place, pull one strap tight and attach to the circular Velcro dot. Pull the second Velcro strap tight and overlap the first strap, as shown. The Velcro must go through the slots on the bezel and lid as shown in the diagram.

10

OEM – INSTALLATION CONT. – POWER, INLINE CELL

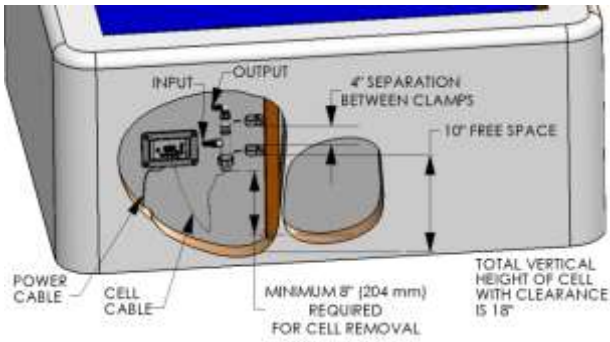
⚠ **WARNING:** When an "Inline" cell is used, the SpaPilot® Control Unit power cable should be connected to the spa control unit so that the SpaPilot® will only be energized when the circulation/filtration pump is running.

⚠ **CAUTION:** Failure to heed the following may result in equipment damage not covered under warranty.

11) Connect the power cable to the mating connector on the Spa Control Unit ozone connection or equivalent. (Do not turn on power yet.)

Install the cell

12) Identify a suitable location for the cell:
    a) The cell must be mounted vertically with the cell cord hanging straight down so that gases will flow out properly when the circulation pump is running – see illustration.



    b) Ideally, a vertical support column in the spa behind the normal equipment skirt panel will be available.
    c) The cell assembly should be readily visible and accessible when the skirt is removed so that the cell blades can be inspected and removed for cleaning.
    d) Leave a minimum of 8" (204 mm) below the cell assembly so that blade insert can be removed for cleaning. Total vertical height with clearance will be 18" (457 mm).
    e) The cell will be spliced into one of the circulation/filtration return lines. It should not be located on a water input line to the pump or heater.
13) Attach the bottom plastic mounting clamp on the vertical support column leaving 10" (254 mm) of clear space below the clamp. (This will allow 8" vertical clearance below the cell for servicing.) (Use #8-11 x 1" (25 mm) self-tapping screw, which is provided.)
14) Attach the top plastic mounting clamp 4" (102 mm) above the bottom clamp. (Use #8-11 x 1" (25 mm) self-tapping screw which is provided.)
15) Install the cell into the clamps – cord hanging down.

OEM – INSTALLATION CONT. – POWER, INLINE CELL

The SpaPilot® Plumbing installation may vary depending on application. The ¾" MPT x ¾" Barb fittings shown below are preinstalled on the cell assembly. (Other ¾" MPT PVC adaptor fittings may be installed instead if needed.)

16) Cut and splice into the appropriate ¾" pvc tube circulation/filtration pump return line.

    ⚠ **CAUTION**: Do not locate the cell on an input water line to a pump or heater.

    a) Connect the cell water input line to the bottom ¾" barb fitting. (Use hose clamp, which is provided)
    b) Connect the cell output water line to the top ¾" barb fitting. (Use hose clamp, which is provided)

Start up and checkout

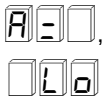
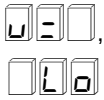
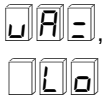
17) Fill spa.
18) Turn on power.
19) Run pump(s) and check for leaks.
20) Verify that SpaPilot® Control Unit display and the LEDs power up only when the circulation/filtration pump is running.
21) Reinstall the skirt.
22) Prepare the spa water. See the section, *Spa Water Preparation*, on page 2.

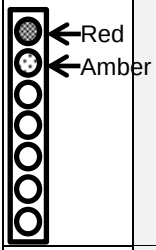
INSTALLATION - WIRELESS REMOTE CONTROL

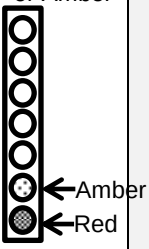
1) Identify a suitable location for the SpaPilot® Wireless Remote Control:
    a) The remote is not waterproof. Pick a dry location.
    b) Do not mount where it can fall into the spa.
    c) The remote is only useful if the SpaPilot® Control Unit display and LED are visible or readable when the remote's buttons are pressed.
    d) Range is 30 feet.
    e) Locate out of reach of children.
2) Mount one Velcro dot on the back of the remote.
3) Mount the other Velcro dot on the surface where the remote will be stored.

Note: To change the battery, remove all three screws on the back cover of the remote. Replace with one 12V A23 type battery.

TROUBLESHOOTING

LED(s)	DISPLAY	PROBLEM	TYPICAL SOLUTION
System Status LED is Green		Normal operation	Indicates unit has power.
System Status LED is flashing Red		Low amperage to cell detected	• Confirm salt level. See page 2. • Inspect the cell cable for damage. • Perform cell inspection as outlined on page *25* or *26*. ○ Inspect the cell for calcium deposits. ○ Cell may be depleted.
System Status LED is flashing Red		Low volts detected	• Confirm salt level. See page 2. • Inspect the cell cable for damage. • Perform a cell inspection as outlined on page *25* or *26*.
System Status LED is flashing Red		Low volts and amps detected	Unit requires service.
Boost LED is Blue		Normal operation Boost feature is active	• Display will show 0.1 to 23.9 hours of boost remaining. • In this example “22.1” hours are shown. • If desired, press the “BOOST” button again to turn off boost cycle. • (Boost can only be set in whole hours 0 to 24; boost count down will be displayed in tenths of an hour.)
None	Blank Display	No displays	• If the display is in bright light, shade the display to read. • **All Inline Cell installations:** If the circulation pump is off, then power to the SpaPilot® unit may be off as required. Normal operation. • Verify local shut off switch and/or main circuit breaker for the SpaPilot® is turned on. • Check whether the GFCI breaker tripped and reset. • Reset SpaPilot® by powering off for 30 seconds.

LED(s)	DISPLAY	PROBLEM	TYPICAL SOLUTION
High Salt LED is Red or Amber 		Possible high salt level in spa[2]	• Confirm the water level is not low due to evaporation. (Salt concentration will increase as water evaporates.) • Test the salt level in the spa using an AquaChek® Salt test strip or take to your local pool store. • If the salt level is higher than desired, then partially drain the spa and refill with fresh water. Allow the water to circulate for one hour and re-test the salt level. Make further adjustments as needed.

Low Salt LED is Red or Amber 		Possible low salt level in spa[2]	• Heat the water to at least 80°F (27°C). If LED status changes from red or amber to green, the spa water temperature was cold causing a false low salt indicator.
			• Test the salt level in the spa using an AquaChek® Salt test strip or take to your local pool store. Add salt if needed. See section, *Spa Water Preparation*, on page *2*.
			• Confirm there is water in the cell.
			• Perform a cell inspection as outlined on page *25* or *26*.
			  ◦ Inspect the cell for calcium deposits. Clean if needed.
			  ◦ Cell may be depleted. Replace the cell.

		High sanitizer level	Decrease the sanitizer level:
			• Reduce boost cycle time as needed.
			• SpaPilot® in Percentage Mode only:
			  ◦ Decrease percentage output as needed.
			• SpaPilot® in Usage Mode:
			  ◦ Reduce spa size or usage settings as needed.
			  ◦ With Inline cell also: Set the SpaPilot® "Day" setting to match the spa circulation pump actual hours of operation. See section, *The "Day" Feature*, on

[2] Salt level indicated by the Salt LEDs is based on normal spa operating conditions for temperature and salinity. Conditions outside of the norm may cause the LED display to show warnings. Use a test strip and/or your local spa store to confirm salt levels if this occurs.

LED(s)	DISPLAY	PROBLEM	TYPICAL SOLUTION
			page *18* for more information on this setting. • Add a spa approved chlorine/bromine reducing agent, if desired.

		Low sanitizer level	Increase the sanitizer level:
			• Run a boost cycle or increase boost time as needed.
			• SpaPilot® in Percentage Mode only:
			  ◦ Increase percentage output as needed.
			• SpaPilot® in Percentage Mode with an Inline cell only:
			  ◦ Increase circulation pump hours of operation
			• SpaPilot® in Usage Mode only:
			  ◦ If 30 days have passed without pressing a SpaPilot® button, then the Usage setting automatically dropped to 0. Increase Usage setting as needed.
			  ◦ Increase usage or spa size settings as needed.
			• SpaPilot® in Usage Mode with an Inline cell only:
			  ◦ Increase the Usage or spa size settings as needed.
			  ◦ Set the SpaPilot® "Day" setting to match the spa circulation pump actual hours of operation. See section, *The "Day" Feature*, on page *18* for more information on this setting.
			  ◦ Increase the circulation pump hours of operation.
			• Sanitizer demand may be exceeding SpaPilot® capability. Supplement with spa manufacturer approved shock.

LED(s)	DISPLAY	PROBLEM	TYPICAL SOLUTION
		Remote does not work	• Confirm the remote is within 30 feet of the control panel. • Antenna may need to be raised. • Check and replace the battery if needed (alkaline 12-volt - type 23A) • The remote may have been damaged by water. Replace.
		Algae in spa	• Check for low sanitizer. • Check the water parameters. See the spa manual for chemistry adjustment procedures.
		Cloudy water in spa	• Check the water parameters. See the spa manual for chemistry adjustment procedures.

SPECIFICATIONS

MODEL BREAKDOWN – AC POWER, CELL TYPE, ETC.

SPu-xyz

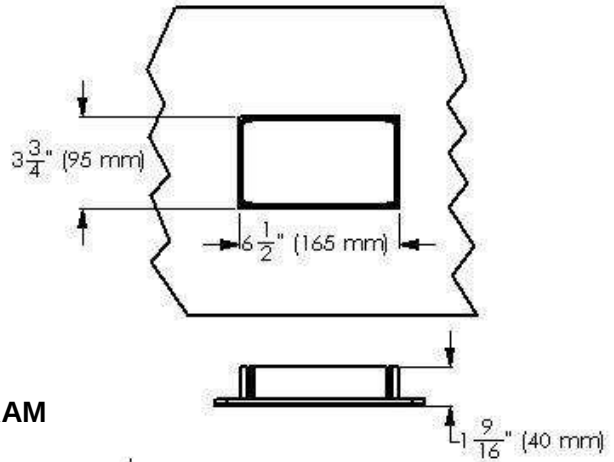
u	= 1	100-240 Vac (nominal), 50/60 Hz, 0.6-0.3 Amps
	= 2	208-240 Vac (nominal), 50/60 Hz, 0.3 Amps
	= U	100-240 Vac (nominal), 50/60 Hz, 0.6-0.3 Amps
	= W	120 Vac (nominal), 50/60 Hz, 0.6 Amps
x	= I	Inline Cell
	= O	Over the Wall (Convection) cell (All SPW models use an Over the Wall cell)
y	= A	Power cable with 4 pin Amp plug
	= G	Power cable with Gecko plug
	= S	Power cable with standard NEMA 15-5P plug
	= X	Power cable provided by installer
z	= B	Flush mount bezel provided
	= N	No Bezel

CONTROL UNIT SPECIFICATIONS

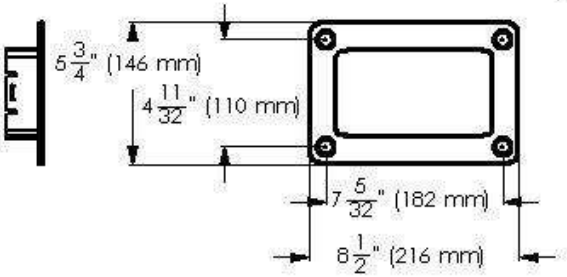
SpaPilot® Control Unit	Standard	Metric
Operating Temperature	-4°F to 130°F	-20°C to 54°C
Storage Temperature	-22°F to 158°F	-30°C to 70°C
Control Unit (no bezel)		
Weight	1 lbs	0.45 kg
Size (Length x Height x Depth)	7.88” x 3.56”x2.44”	200 x 90 x 62 mm
Control Unit with Bezel		
Weight	1.15 lbs	0.52 kg
Size (Length x Height x Depth)	8.5” x 5.75” x 2.44”	216 x 146 x 62 mm

SPECIFICATIONS

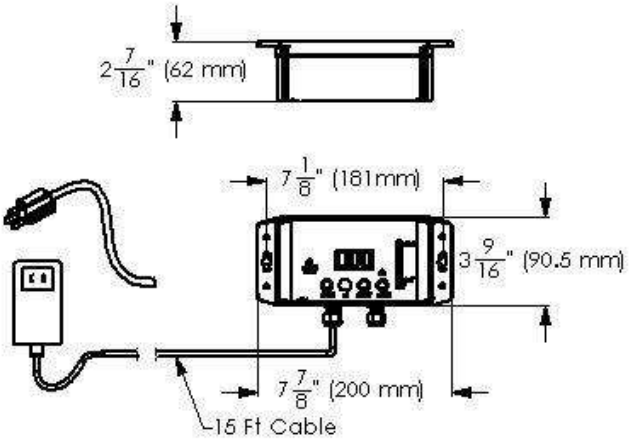
BEZEL CUTOUT DIAGRAM



BEZEL DIAGRAM



CONTROL UNIT DIAGRAM



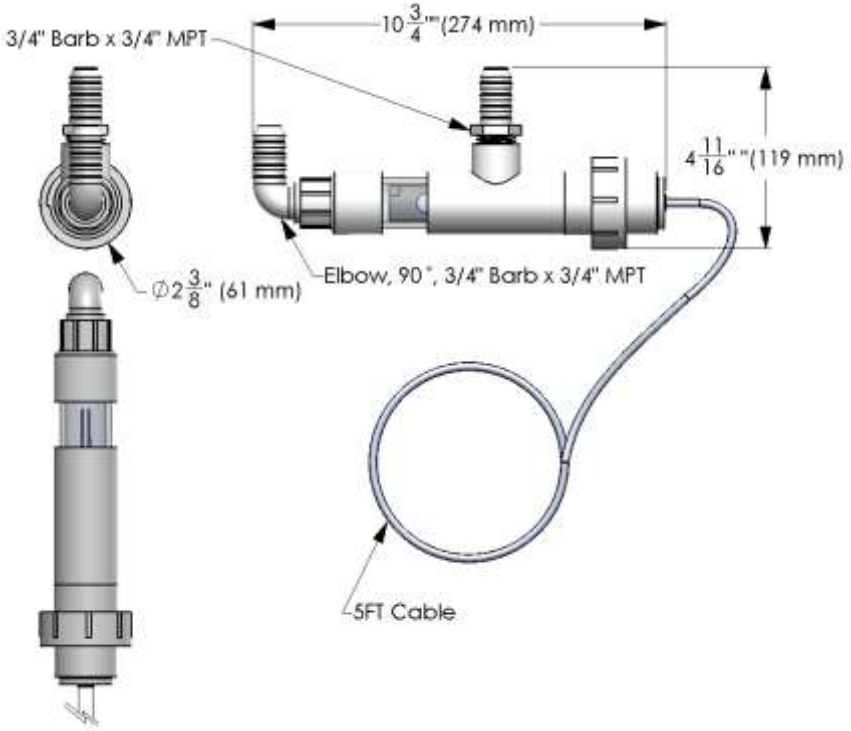
SPECIFICATIONS

CELL SPECIFICATIONS

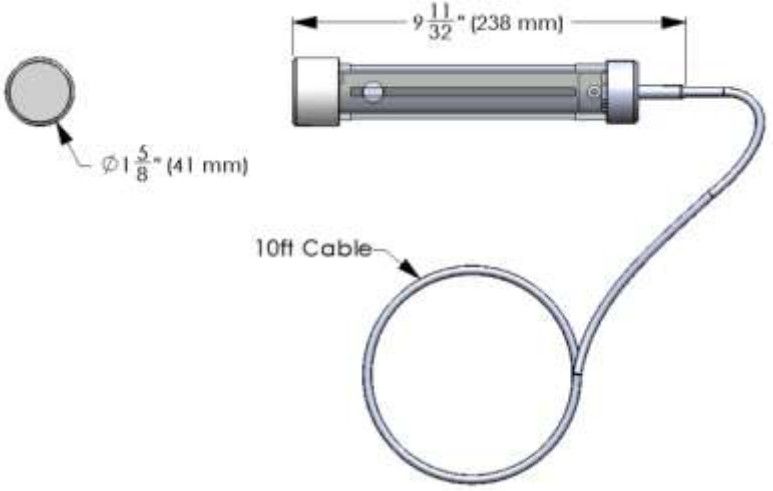
Cell Type	Inline	Over the Wall (Convection)		
Minimum Flow gallons (liters) per minute	0.5 gpm (2 lpm)	N/A		
Circulation Pump = SpaPilot® Hours of Operation?	YES	No - independent		
Chlorine Output - lbs/day (g/day)	0.048 lbs (21.8 g)	0.048 lbs (21.8 g)	24 hrs	**Circulation (Filtration) Pump Hours of Operation**
	0.032 lbs (14.5 g)		16 hrs	
	0.016 lbs (7.25 g)		8 hrs	
	0.008 lbs (3.63 g)		4 hrs	
Operating Temperature	55°F to 108°F (13°C to 42°C)			
Storage Temperature	0°F to 158°F (-18°C to 70°C)			
Weight	0.75lbs (0.34kg)	0.37lbs (0.17kg)		
Size	See illustrations below for dimensions			

SPECIFICATIONS

INLINE CELL DIAGRAM



OVER THE WALL (CONVECTION) CELL DIAGRAM



AGENCY CERTIFICATIONS

AGENCY APPROVALS	DESCRIPTION
FCC Part 15 Subpart B (US) & Industry Canada ICES-003	FCC/IC Class B Compliance CAN ICES-3 (B)/NMB-3(B)
EN 55022:2010	EMC Compliance
UL 1081	Standard for Safety Swimming Pool Pumps, Filters, and Chlorinators
CSA C22.2#218.1	Spas, Hot Tubs, and Associated Equipment – General Instruction No. 2, 3, and 4: 2010/03/01
CENELEC EN 60335-1	Household and similar electrical appliances Safety Part 1: General Requirements
CENELEC EN 60335-2-60	Household and similar electrical appliances – Safety Part 2-60: Particular requirements for whirlpool baths-Includes amendment A1:2005; IEC

FCC Compliance

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

NOTES:

NOTES:

www.aquacal.com

www.autopilot.com

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