| PATIO & PATIO PLUS |

Congratulations! You are now the owner of the finest spa built. Now you will experience true comfort and relaxation as you never had before. We at Cal Spas® focus on quality, design and comfort in order to create a truly luxurious experience like no other.

Welcome to the Cal Spas® family.

It is important that you register your Cal Spas product as soon as possible. By taking just a few quick minutes to register, you can enjoy product alerts, more efficient support, and quicker service. Go to https://calspas.com/register-your-spa.php. Fill in your information and click "SEND WARRANTY INFO"

Locating the product serial number

The serial number of your spa is located on a metal plate attached to the right side of the spa panel. You will need this number to properly register your spa and activate coverage. Write this information in the space provided below.

Spa Model: _____

Spa Serial Number: _____

Date Purchased: _____

Date Installed: _____

Dealer's Phone Number: _____

Dealer's Address: _____

LTR20221000, REV. E
10/17/22

CONTACT INFORMATION
For customer service, please contact your authorized dealer immediately. If you need additional information and/or assistance, contact:
LMS Customer Service Department
1462 East Ninth Street
Pomona, CA 91766.
Toll Free: 1-800-CAL-SPAS
Fax: 1-909-629-3890

Table of Contents

1.IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY!

When using installing and using this spa, basic safety precautions should always be followed, including:

1. ⚠️ **DANGER:** RISK OF SEVERE INJURY OR DROWNING!
   - DO NOT allow children to be in or around a spa unless a responsible adult supervises them.
   - Keep the spa cover on and locked when not in use.
   - See instructions enclosed with your cover for locking procedures.

2. ⚠️ **DANGER:** RISK OF SEVERE INJURY OR DROWNING!
   - The suction fittings in this spa are sized to match the specific water flow created by the pump. Should the need arise to replace the suction fittings, or the pump be sure the flow rates are compatible.
   - Never operate the spa if the suction fitting or filter baskets are broken or missing. Never replace a suction fitting with one that is rated less than the flow rate marked on the original suction fitting.

3. ⚡ **DANGER:** RISK OF SEVERE INJURY FROM ELECTRIC SHOCK OR DEATH FROM ELECTROCUTION!
   - Install the spa at least 5 feet (1.5 meters) from all metal surfaces. As an alternative, a spa may be installed within 5 feet (1.5 meters) of metal surfaces if each metal surface is permanently bonded by a minimum #8 AWG solid copper conductor to the outside of the spa's control box.
   - DO NOT permit any external electrical appliances, such as lights, telephones, radios, televisions, and etc., within 5 feet (1.5 meters) of the spa. Never attempt to operate any electrical device from inside the spa.
   - Replace a damaged power cord immediately.
   - DO NOT bury the power cord.
   - Connect to a grounded, grounding-type receptacle only.

4. ⚠️ **WARNING:** RISK OF HYPERTHERMIA (OVER-HEATING) CAUSING SEVERE INJURY, BURNS, WELTS OR DEATH!
   - Water temperature in excess of 104°F (40°C) may be injurious to your health.
   - The spa water should never exceed 104°F (40°C). Water temperatures between 100°F (38°C) and 104° F (40°C) are considered safe for a healthy adult.
   - Lower water temperatures are recommended for young children and when spa use exceeds 10 minutes.
   - Before using the spa, the user should measure the water temperature since the tolerance of water temperature-regulating devices varies.

5. ⚠️ **WARNING:** To reduce risk of injury
   - Prolonged exposure to hot air or water can induce hyperthermia. Hyperthermia occurs when the internal temperature of the body reaches a level between 3°F (2°C) to 6°F (4°C) above the normal body temperature of 98.6°F (37°C). While hyperthermia has many health benefits, it is important not to allow you body;s core temperature to rise above 103°F(39.5°C).
   - High water temperatures have a high potential for causing fetal damage during pregnancy. Women who are pregnant, or think they are pregnant should always check with their physician prior to spa usage.
   - The use of alcohol, drugs or medication before or during spa use may lead to unconsciousness, with the possibility of drowning.

- Persons suffering from obesity, a medical history of heart disease, low or high blood pressure, circulatory system problems or diabetes should consult a physician before using the spa.
- Persons using medications should consult a physician before using the spa since some medications may induce drowsiness while others may affect heart rate, blood pressure and circulation.

6. Hyperthermia

- Symptoms of excessive hyperthermia include dizziness, lethargy, drowsiness and fainting. The effects of excessive hyperthermia may include:
  - Failure to perceive heat
  - Failure to recognize the need to exit spa or hot tub
  - Unawareness of impending hazard
  - Fetal damage in pregnant women
  - Physical inability to exit spa
  - Unconsciousness

⚠️ **WARNING:** The use of alcohol drugs or medication can greatly increase the risk of fatal hyperthermia.

7. ⚡ WARNING:

- This product is provided with a ground-fault circuit-interrupter in the spa control box. The GFCI must be tested before each use. With the product operating open the service door. When the product stops operating this merely indicates that the door is equipped with an electrical interlock. Next, push the test button on the GFCI and close the service door. The product should now operate normally. When the product fails to operate in this manner, there is a ground current flowing indicating the possibility of an electric shock. Disconnect the power until the fault has been identified and corrected.

8. ⚡ DANGER: RISK OF ELECTRIC SHOCK

- Do not permit any electric appliance, such as a light, telephone, radio, or television within 5 feet (1.5m) of a spa.

9. ⚠️ WARNING: people with infectious diseases should not use a spa or hot tub.

10. ⚠️ WARNING: to avoid injury exercise care when entering or exiting the spa or hot tub.

11. ⚠️ WARNING: Do not use spa or hot tub immediately following strenuous exercise.

12. ⚠️ WARNING: Prolonged immersion in a spa or hot tub may be injurious to your health.

13. ⚠️ CAUTION: Maintain water chemistry in accordance with manufacturer's instructions.

SAVE THESE INSTRUCTIONS.

2. Preparing for Your New Portable Spa

Pre-Delivery Checklist

Most cities and counties require permits for exterior construction and electrical circuits. In addition, some communities have codes requiring residential barriers such as fencing and/or self-closing gates on property to prevent unsupervised access to the property by children. Your dealer can provide information on which permits may be required and how to obtain them prior to the delivery of the spa.

<u>**Before Delivery**</u>
- ☐ Plan your delivery route
- ☐ Choose a suitable location for the spa
- ☐ Lay a 5-8 cm concrete slab
- ☐ Install dedicated electric supply

<u>**After Delivery**</u>
- ☐ Place spa on Slab
- ☐ Connect electrical components

2.1 Planning the Best Location

Safety First

Do not place your spa within 10 feet (3m) of overhead power lines.

Consider How You Will Use Your Spa

How you intend to use your spa will help you determine where you should position it. For Example, will you use your spa for recreational or therapeutic purposes? If your spa is mainly used for family recreation be sure to leave plenty of room around it for activity. If you will use it for relaxation and therapy, you will probably want to create a specific mood around it.

Plan for Your Environment

If you live in a region where it snows in the winter or rains frequently, place the spa near a house entry. By doing this, you will have a place to change clothes and not be uncomfortable.

Consider Your Privacy

In a cold-weather climate, bare trees won't provide much privacy. Think of your spa's surroundings during all seasons to determine your best privacy options. Consider the view of your neighbors as well when you plan the location of your spa.

Provide a View with Your Spa

Think about the direction you will be facing when sitting in your spa. Do you have a special landscaped area in your hard that you find enjoyable? Perhaps there is an area that catches a soothing breeze during the day or a lovely sunset in the evening.

Keep Your Spa Clean

In planning your spa's location, consider a location where the path to and from the house can be kept clean and free of debris.

Prevent dirt and contaminants from being tracked into your spa by placing a foot mat at the spa's entrance where the bathers can clean their feet before entering your spa.

Allow for Service Access

Make sure the spa is positioned so that access to the equipment compartment and all side panels will not be blocked.

Many people choose to install a decorative structure around their spa. If you are installing your spa with any type of structure on the outside, such as a gazebo, remember to allow access for service. It is always best to design special installations so that the spa can still be moved, or lifted off the ground.

2.2 Clearance for Service Access

While you are planning where to locate your spa, you need to determine how much access you will need for service.

All spa models require a minimum of three feet / one meter access to all sides of the spa for potential service. For this reason, the spa should never be placed in a manner where any side is permanently blocked. Examples include placing the spa against a building, structural posts or columns, or a fence.

Spa models require access to all sides in case they need service or repair. See the figure to the right.

If you are planning to enclose or surround your spa with a deck, make sure there is easy access for service or repair.

NOTE: Spas require clearance on all sides of the spa.

3 feet / 1 meter

3 feet / 1 meter

3 feet / 1 meter

3 feet / 1 meter
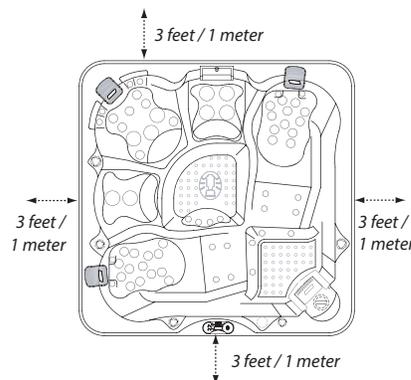
2.3 Preparing a Good Foundation

NOTE: We strongly recommend that a qualified, licensed contractor prepare the foundation for your spa. Damage caused by inadequate or improper foundation support is not covered by the warranty. It is the responsibility of the spa owner to provide a proper foundation for the spa.

Your spa needs a solid and level foundation. The area that it sits on must be able to support the weight of the spa, with water and occupants who use it. If the foundation is inadequate, it may shift or settle after the spa is in place, causing stress that could DAMAGE YOUR SPA SHELL AND FINISH. Place the spa on an elevated 3 to 4" / 30 cm concrete slab. Pavers, gravel, brick, sand, timbers or dirt foundations are **not** adequate to support the spa. If you are installing the spa indoors, pay close attention to the flooring beneath it. Choose flooring that will not be damaged or stained. If you are installing your spa on an elevated wood deck or other structure, it is highly recommended that you consult a structural engineer or contractor to ensure the structure will support the weight of 150 lbs per square foot (732 Kg/m^2).

12" / 30 cm minimum distance from edge

NOTE: The following electrical connections must be performed by a licensed electrical contractor.

 Unscrew and remove the two corner panels on each side of the spa's front door.

Carefully unscrew the black outer drain knob and then unscrew and remove the front door **panel.**

Pictured above is the inside of the spa behind the front door. The electrician now has access to connect the spa for power. While the front door is off, refer to page 12 for instructions on ensuring the plumbing fittings are secure (but do not be tempted to over-torque or over-tighten these fittings).

2.5 240 Volt Electrical Installation

NOTE: These instructions describe the only acceptable electrical wiring procedure. Spas wired in any other way will void your warranty and may result in serious injury. The electrical circuit must be installed by an electrical contractor and approved by a local building or electrical inspector. Failure to comply with state and local codes may result in a fire or personal injury and will be the sole responsibility of the spa owner.

All 240V spas must be permanently connected (hard wired) to the power supply. When installed in the United States, the electrical wiring of this spa must meet the requirements of the NEC 70 and any applicable local, state, and federal codes. The power supplied to the spa must be on a dedicated GFCI protected circuit as required by NEC 70 with no other appliances or lights sharing the power. Use copper wire with THHN insulation. DO not use aluminum wire. Use the table below to determine your GFCI and wiring requirements. Wires that run over 100 feet must increase wire gauge to the next lower number. For example: A normal 50 amp GFCI with four #6 AWG copper wires that run over 100 feet would require you to go to four #4 AWG copper wires.

2.6 GFCI Wiring Requirement

Control System	GFCI Required	Wires Required
NEO 1500	One 40-amp GFCI	Four #8 AWG Copper Wires
BP501G1	One 40-amp GFCI	Four #8 AWG Copper Wires

GFCI Breaker Box

Front View of GFCI

GREEN (GROUND)

WHITE (NEUTRAL)

RED (HOT)

BLACK (HOT)

LINE IN (BLACK)

LINE IN (RED)

ON

OFF

TEST

LOAD OUT (BLACK)

LOAD OUT (RED)

WHITE

GREEN (GROUND)

BLACK (LOAD HOT)

RED (LOAD HOT)

WHITE (LOAD NEUTRAL)

GREEN (GROUND)

GFCI (Bottom View)

OFF

TEST

LOAD OUT (BLACK)

LOAD OUT (RED)

RED (HOT)

BLACK (HOT)

WHITE

WHITE (LOAD NEUTRAL)

Spa Control Box

SH1

SH2

SH3

SH4

NEU/WHT/BLU

LINE1/BLK

LINE2/RED

GROUND

NEO 1500

House Breaker Box

ON ON ON ON ON

OFF OFF OFF OFF OFF

RED (HOT)

BLACK (HOT)

WHITE (NEUTRAL)

GREEN (GROUND)

NOTE: See the Cal Spas Pre-Delivery Guide for more information on spa placement for service access and electrical service.
www.calspas.com/manuals

GFCI Wiring Diagram (Balboa)

GFCI Breaker Box

Front View of GFCI

LINE IN (BLACK) LINE IN (RED)

ON
OFF

TEST

GRN (GROUND)
WHT (NEUTRAL)
RED (HOT)
BLK (HOT)

LOAD OUT (BLACK) LOAD OUT (RED)

WHT

GRN (GROUND)

BLK (LOAD HOT)
RED (LOAD HOT)
WHT (LOAD NEUTRAL)
GRN (GROUND)

GFCI (Bottom View)

OFF
TEST

LOAD OUT (BLACK) LOAD OUT (RED)

RED (HOT)
BLK (HOT)
WHT
WHT (LOAD NEUTRAL)

System Box

WHITE (NEUTRAL)
BLACK (HOT)
RED (HOT)

GREEN (GROUND)

CIRCUIT BOARD

House Breaker Box

ON ON ON ON ON
OFF OFF OFF OFF OFF

RED (HOT)
BLK (HOT)
WHT (NEUTRAL)
GRN

GROUND TERMINAL BLOCK
(ATTACHED TO OUTSIDE
OF SYSTEM B0X)

2.9 120 Volt Electrical Installation

Always follow applicable local, state and federal codes and guidelines.
Use only a dedicated electrical line with a 15 amp breaker.
Cord-and-plug connections may not use a cord longer than 15 feet (4.6 m) and must be plugged into a dedicated 15 amp GFCI connection (NEC 680.42(A)(2)). Do not use extension cords!
Always use a weatherproof-covered receptacle.
Receptacle shall be located not less than 5 feet (1.5 m) from and not exceeding 10 feet (3.0 m) from the inside wall of the spa. (NEC 680.43(A))
Do not bury the power cord. If your cord becomes damaged, replace it before next usage.
All 120V spas must have a GFCI. This can be either a 15 amp GFCI receptacle or a 15 amp GFCI cord and plug kit as shown (CKIT110 - P/N ELE09700086).

Testing the GFCI plug

Test the GFCI plug prior to first use and periodically when the spa is powered.
1.   Plug in the GFCI into the power outlet. The indicator should turn on.
2.   Press the TEST button. The GFCI will trip, the indicator will turn off, and the spa will stop operating.
3.   Press the RESET button. The GFCI will reset, the indicator will turn on again, and the spa will turn back on. The spa is now safe to use.
If the GFCI trips while the spa is in use, press the RESET button. If the GFCI does not reset, unplug the spa and call your local Cal Spas dealer for service. DO NOT USE THE SPA!

2.10 Testing the 240 Volt GFCI Breaker

Test the GFCI breaker prior to first use and periodically when the spa is powered. To test the GFCI breaker.

1.   Press the TEST button on the GFCI. The GFCI will trip and the spa will shut off

2.   Reset the GFCI breaker by switching the breaker to the full OFF position, wait a moment, then turn the breaker on. The spa should have power again.

Step 1. Inspect the spa equipment.

Inspect all plumbing connections in the equipment area of your spa.
- Make Sure unions in the equipment pack are tight. (Be careful not to over-tighten the plumbing fittings.)
- If your spa has gate valves, make sure they are all in the UP or OPEN position.
- Make sure the drain valve is closed and capped. (See page 43 for a description of drain valves)
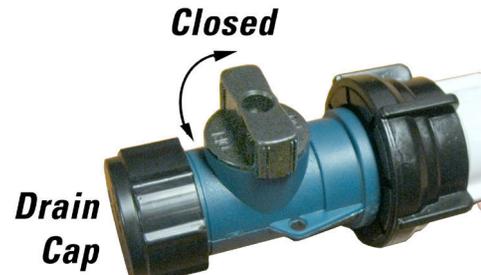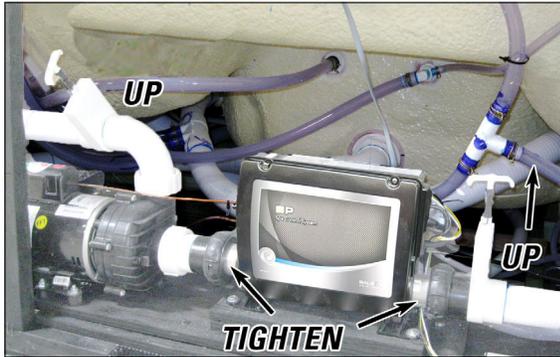
NOTE: Never run the spa with the gate valves closed or without water circulating for long periods of time.

Step 2. Remove the cartridge from the filter canister.

Unscrew the cartridge and remove it.

If you have a skimmer like this:
Grip the filter by the handle and unscrew it from the canister. Never try to pull the filter cartridge while the spa is running in low or high speed (i.e., any speed).

Teleweir Mega filter skimmer
- 75 square feet filtration
- Smooth cap

If you have a skimmer like this:
Remove the black skimmer cap and barrel, grip the filter by the handle and unscrew it from the canister.

Teleweir filter skimmer
- 50 square feet filtration
- Spoked cap

If you have a skimmer like this:

Rotate and remove the black locking ring. Remove the black skimmer cap and barrel, grip the filter by the handle and unscrew it from the canister.
Replace and lock the locking ring and slide the skimmer cap and barrel back in the canister.

Note: The skimmer cap and barrel were locked in place at the factory to prevent damage during shipment. It must be unlocked and replaced in the filter canister so that it can float when the spa is filled. If you do not remove the cap and barrel, your spa's filtration system will not perform as it was designed to.

NOTE: After you remove the filter, remove the plastic wrapper and soak it in water for 30 minutes before you replace it. A dry filter can allow air into the filtration system which can cause the pump to fail to prime. Never try to pull the filter cartridge while the spa is running in low or high speed (i.e., any speed).

Step 3. Fill the spa.

Place a garden hose in the filter canister and fill your spa with ***regular tap water*** about six inches from the top. If the water level is too low or too high, your spa will not operate properly.

Water level
About six inches from the top
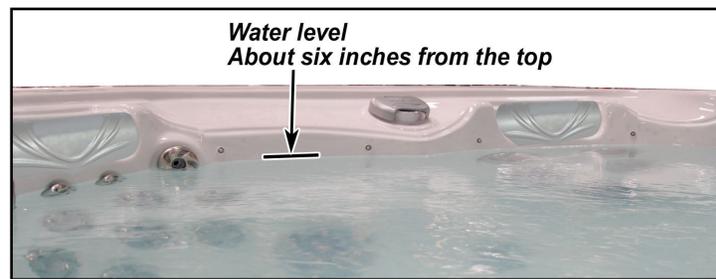
NOTE: Never fill your spa with soft water.
Soft water makes it impossible to maintain the proper water chemistry and may cause the water to foam, which will ultimately harm the finish of the spa and void your warranty.

You may fill your fill your spa with well water provided the following conditions are met:
1. Purchase and use a pre-filter to run the well water on the fill-up. The pre-filter will be placed before the spa filter in the fill-up flow of water.
2. Have a Total Dissolved Solids (TDS) and metals test performed by a qualified person after the fill-up process but before any spa use

Step 4. Turn on power to the spa.

When the spa is filled to the correct level, turn on the power at the GFCI breaker. (Ensure that the 120V spas are connected to the proper electrical outlet.)

Step 5. Prime the pump.
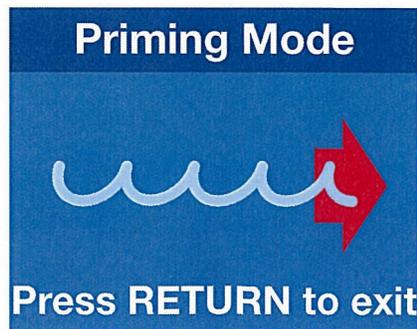
The system will enter the priming mode. **Priming Mode** will display on the control panel. In Priming Mode, all devices such as jets and lights are operable. Jets can be turned on and off to help prime the pump. The system will exit Priming Mode and go to the Main display when the RETURN button is pressed, or after four minutes of inactivity.

Step 6. Install the filter into the filter canister.

NOTE: Make sure the filter has soaked at least 30 minutes before you install it. Insert the filter all the way and screw it in. Do not over-torque the cartridge during installation, just hand tighten gently.

Step 7. Adjust water chemistry.

Test and adjust the water chemistry. See the section on page 28 for instructions on water clarity.

Step 8. Let the spa heat up.

When the spa has finished priming the heater will activate. Put the cover on and let the spa heat to the set temp.

2.12 Priming the Pump

New spa owners often have difficulty the first time they start their spa and the pump fails to prime. This can be frustrating, but these simple instructions can help you.

Sometimes air can become trapped in the pump while filling the spa. You will know this has happened when after you have filled and started the spa, the pump does not seem to function. You will hear the pump operating, but no water will be moving.

NOTE: The pump will not work properly while air is trapped in it. Continuing to operate the pump in this way will cause damage.

Starting up: Priming Mode

Priming Mode - NEO-Pack Systems

The system will enter the priming mode. **Priming Mode** will display on the control panel. In Priming Mode, all devices such as jets and lights are operable. Jets can be turned on and off to help prime the pump. The system will exit Priming Mode and go to the Main display when the RETURN button is pressed, or after four minutes of inactivity.
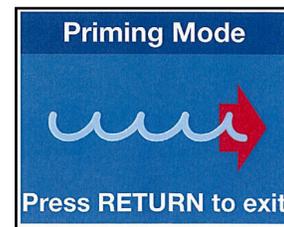
Exiting of Priming Mode

NEO-Pack Systems

You can manually exit Priming Mode by pressing the RETURN button. Note that if you do not manually exit the priming mode, the priming mode will be automatically terminated after 4 to 5 minutes. Be sure that the pumps have been primed by this time.

Bleeding Air from the Pump

If you have tried priming the pump several times unsuccessfully using the control panel, you can bleed the air from the pump manually.
1. Shut off power to the spa.
2. Using a Phillips head screwdriver, remove the front panel from the spa and locate the pump.
3. Close the gate valve on the discharge side of the pump (if your spa is installed with one.)
4. Turn the bleeder valve counter clockwise with a small pair of pliers until the air has been released from the pump.
5. If this is unsuccessful, loosen the Union nut on the side of the pump with channel locks. When air is bled out tighten the nut.
6. Turn on power to the spa and press the JETS button If there is still air trapped in the pump, repeat steps 2 through 5 until the pump primes.
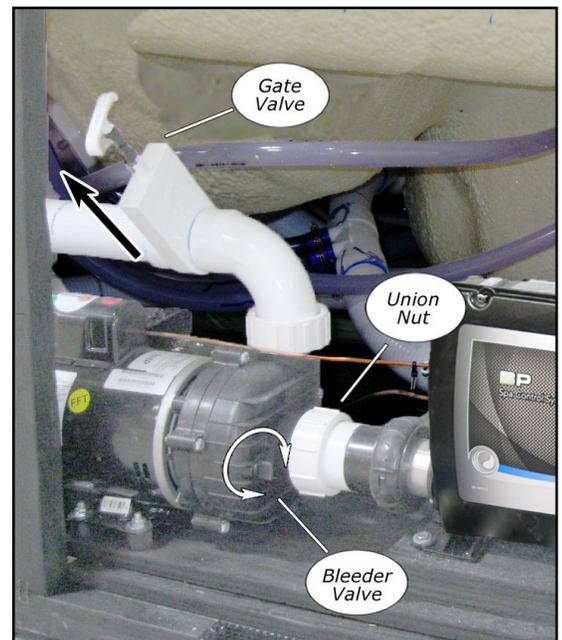
3. Operating Your Spa

3.1 NEO Control Panel Operation

Primary Navigation and Functions

Two-pump system

One-pump system

MAIN SCREEN:

The main screen displays current time, water temperature, and status of the system accessories. The screen below from bottom, left to right indicates LIGHT ON, BLOWER ON, JET 1 at low speed.

PRIMING MODE:

When power is ON, the system will enter a priming mode with priming screen display on the panel. In this mode, all devices such as JETS, BLOWERS or LIGHT are operable. JETS can be turned on and off to prime the pump. System will exit priming mode and go to MAIN display when RETURN button is pushed, or after 4 minutes of inactivity.

Priming Mode
Press RETURN to exit
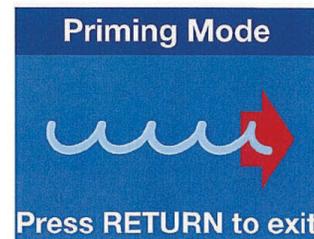
SPA OPERATION:

Turn system accessories ON and OFF by pushing appropriate button on the right side of panel (LIGHT, JET 1, BLOWER, JET 2…) These accessories have timeout defaults from the manufacturer and will turn OFF automatically after the time has expired. Timeout time for LIGHT default is 60 minutes; BLOWER default is 15 minutes; JET at low speed default is 60 minutes; and JET at high speed is 15 minutes. User can change these default times in "DEVICE TIMEOUT" setting menu.

MENU NAVIGATING:

• MENU button: use to enter setting menu and sub-menu screens. For screens with several settable fields (example: DATE-TIME screen), use MENU button to navigate between different fields within the screen.

• UP and DOWN button: use to navigate between different options or changing values of a field.

• RETURN button: use to confirm the setting and goes back to previous screen.

SETTING TEMPERATURE:

To change water set temperature, use UP and DOWN buttons to set the desired temperature. The screen will display "SET TEMP" with the current set temperature. After 5 seconds without any change to the set temperature, the screen will reverse back to MAIN screen with current water temperature display. Changing set temperature will make heat pump turn on to get accurate water temperature to determine if water needs to be heated up.

Set Temp

100°F

Control Panel Quick Reference

1. Press **UP** button to set desired temperature. If in a **MENU** mode, then the **UP** to navigate the screen up.

2. Press **DOWN** button to set desired temperature. If in a **MENU** mode, then the **DOWN** to navigate the screen down.

3. Press **MENU** button to get into the **MENU** for setting. Use **UP** or **DOWN** button to navigate, press **MENU** button then **UP** or **DOWN** button to set your desire. Refer to your Instruction Manual for additional details.

4. Press **RETURN** button to activate or back to previous setting.
  Optional: The **RETURN** button can be used for **BLOWER, JET** or **AUX**

5. Press **LIGHT** button, the Spa Light turns **ON**, press **LIGHT** button again, the Spa Light turns **OFF**.

WARM — UP   LIGHT — LIGHT
COOL — DOWN   JET — JET
MENU — MENU
RETURN — RETURN
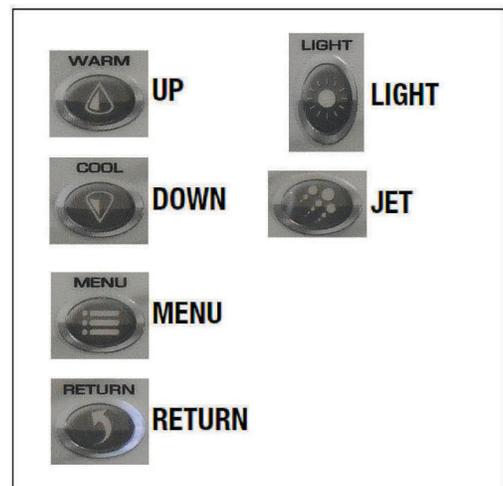
Default Timeout setting: Spa **LIGHT** is 60 minutes; **BLOWER** is 15 minutes, **JET** at low speed is 60 minutes; and **JET** at high speed is 15 minutes. User can change these default times in **DEVICE TIMEOUT** setting menu.

SELECTION ICONS:

1 FILTER CYCLE 1

2 FILTER CYCLE 2

3 FILTER CYCLE 3

4 FILTER CYCLE 4

LIGHT ON

HEATER ON

HEATER START-UP

E ENERGY SAVING HEAT MODE

V VACATION HEAT MODE

C CLEANER CYCLE

P POLLING CYCLE

TEMPERATURE LOCK

PANEL LOCK

O3 OZONE ON

JET ON LOW SPEED

JET ON HIGH SPEED

BLOWER ON

SPECIAL TEMP SELECT

OPTION

PANEL TIMEOUT:

If user is in Setting Menus and no button is pushed within 15 seconds, the screen will timeout, current screen setting will be lost and panel reverts back to MAIN screen.

In MAIN screen, if no buttons is pushed within 60 minutes, all LED and LCD lights will turn off and panel goes to sleep. Any button pushed in this time will wake the panel up, LED and LCD lights will turn back on and panel will poll for water temperature.

ENTER SETTING SCREENS:

Press MENU button to display a list of set up screens.

Use UP and DOWN to navigate between various set up screens.

Press MENU again to enter a particular set up screen or press RETURN to go back to MAIN screen.

```
Rotate View
Special Temp
Heat Mode
Filter Cycles
Date-Time
```

```
Rotate View
Special Temp
Heat Mode
Filter Cycles
Date-Time
```
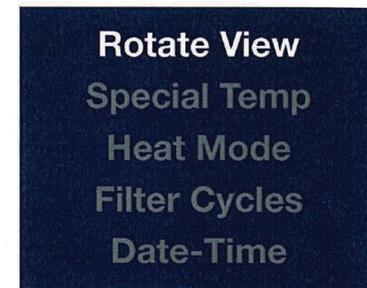
- **ROTATE VIEW:** rotate the view 180 degrees, the UP and DOWN buttons also swap when rotated. With ROTATE VIEW highlighted, press MENU to enter ROTATE VIEW setting. Use UP/DOWN to select desired setting and RETURN to exit and confirm the setting.

- **SPECIAL TEMP:** to temporarily heat spa to 105°F or 106°F once, and return to previous temperature setting. With SPECIAL TEMP highlighted, press MENU to enter SPECIAL TEMP setting. Use UP/DOWN to select the desired setting and RETURN to exit and confirm the setting.

- **HEAT MODE:** select STANDARD heating mode for most users or ENERGY SAVING mode (reduces polling for water temperature) or VACATION mode (set temp set to 60°F). With HEAT mode highlighted, press MENU to enter HEAT mode setting. Use UP/DOWN to select the desired setting and RETURN to exit and confirm the setting.

- **FILTER CYCLES:** set up filter cycle START TIME, DURATION and DATE for filtering the spa. For FILTER CYCLE 1 and 2, if DURATION is set to ZERO the system will do a purge cycle at the start time setting. With FILTER CYCLE highlighted, press MENU to enter FILTER CYCLE 1, 2, 3, or 4 setting. Select a FILTER CYCLE and press MENU again to enter TIME/DURATION setting screen. In this screen, press MENU to move between HOURS, MINUTES and DAYS setting; use UP/DOWN to change the values and RETURN to exit and confirm the setting. FILTER CYCLES 3 & 4 default OFF. To select it, enter START TIME, DURATION and enable ALL DAY or specific day for both FILTER CYCLES 3 & 4.

- **DATE-TIME:** set up date and time for the spa. With DATE-TIME highlighted, press MENU to enter DATE-TIME setting. In this screen, pressing MENU will move and highlight various fields that can change the setting; UP/DOWN to change the values and RETURN to exit and confirm the setting.

- **DEGREE F/C**: displays spa temperature in Celsius or Fahrenheit. This option is only available for 60 Hz countries. Unit automatically displays Celsius for 50 Hz. With DEGREE F/C highlighted, press MENU to enter DEGREE F/C setting. Use UP/ DOWN to select the desired setting and RETURN to exit and confirm the setting.

- **TIME DISPLAY:** displays spa time in AM/PM or 24 hours time. With TIME DISPLAY highlighted, press MENU to enter TIME DISPLAY setting. Use UP/DOWN to select the desired setting and RETURN to exit and confirm the setting.

- **DEVICES TIMEOUT:** allows changes to timeout setting for various devices. LIGHT can be set to a maximum of 4 hours; PUMP in high speed and BLOWER can be set to a maximum of 1 hour; and PUMP in low speed can be set to a maximum of 2 hours. With DEVICES TIMEOUT highlighted, press MENU to enter and select various devices setting. Use UP/DOWN to select the desired time setting and RETURN to exit and confirm the setting.

- **PANEL LOCK:**   provides a choice to lock out panel buttons.
  1) Press MENU 2) Use COOL (also known as Down button) to get to the PANEL LOCK option
  3) Press MENU button to select, then scroll down to the MENU option 4) Press RETURN button to confirm this selection
  5) Press RETURN button again – to resume to the Temperature screen.
  At this point, the spa user is locked out of changing menu options.

  To cancel MENU LOCK and resume all spa control functions, perform the following procedure:

  1) Turn off the circuit breaker supplying mains power to the SpaPak and wait 10 seconds 2) Turn back on the circuit breaker supplying mains power to the SpaPak. 3) Wait for the topside to start up. 4) When the screen displays, "Priming Mode …. Press Return to exit", **do not press Return; press the Menu button instead.** 5) Step through the menu to the Panel Lock entry. (The screen should now show Panel Lock at the top, and Menu Lock highlighted below). 6) Press the WARM (also known as Up button) until **Off** is highlighted. 7) Press the RETURN button.

  MENU LOCK is now cancelled.

- **NO HEAT TIME:** set the time frame for not allowing heater to turn on. With NO HEAT TIME highlighted, press MENU to enter NO HEAT TIME setting. In this screen, pressing MENU will move and highlight various fields that can change the setting; use UP/DOWN to change the values and RETURN to exit and confirm the setting.

- **SERVICE MODE:** *only available for Authorized Dealers and Spa Manufacturer.*

- **DEMO MODE:** to demonstrate all device capabilities of the spa. With DEMO MODE highlighted, press MENU to enter MODE setting. Use UP/DOWN to select the desired setting and RETURN to exit and confirm the setting.

- **GENERAL INFORMATION:** displays general information for the spa. With GENERAL INFORMATION highlighted, press MENU to enter GENERAL INFORMATION menu. Use UP/DOWN to view different pages and information and RETURN to exit the page. Screen will indicate which plug should be inserted to correct side connector.

- **LANGUAGES:** to select various languages for the spa display. With LANGUAGES highlighted, press MENU to enter and select a specific language. Use UP/DOWN to select the desired setting and RETURN to exit and confirm the setting.

- **SERENITY MODE:** set to turn off all outputs and provide quiet while in spa. With SERENITY MODE highlighted, press MENU to enter and select a specific time. Use UP/DOWN to select the desired time setting. Press MENU again to navigate to EXIT/START. Select the desired option and RETURN to exit and confirm the setting.

- **ENERGY INTERVAL:** *only available for Non-Circ systems.* With ENERGY INTERVAL highlighted, press MENU to enter ENERGY INTERVAL setting. Use UP/DOWN to select the desired minutes setting and RETURN to exit and confirm the setting.

- **CLEANER CYCLE:** *only available for Non-Circ systems.* To turn on filtration after using the spa for short cleaning period. With CLEANER CYCLE highlighted, press MENU to enter and select a specific duration. Use UP/DOWN to select the desired time setting. Press Menu again to navigate to Exit/Start. Select the desired option and RETURN to exit and confirm the setting.

- **Reset Wi-Fi**: only available with Wi-Fi module in the system. To reset Wi-Fi network setting in Wi-Fi module. With RESET Wi-Fi highlighted, press MENU to enter. Use UP/DOWN to select the desired setting and RETURN to exit and confirm the setting.

Plumbing Error

Press RETURN to clear

◄ Error caused when SENSOR 1 and SENSOR 3 have been plugged in incorrectly. Swap the SENSOR 1 and SENSOR 3 plug in controller to correct this problem.

Check SENSOR 1 connection. ►

Sensor 1 open

1

Press RETURN to clear

Insufficient Flow
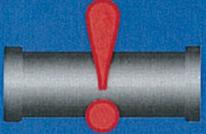
Press RETURN to clear

◄ Error caused by no water flow through heater or no water in heater. Check to be sure there is enough water flow through heater.

Check SENSOR 1 connection or replace SENSOR 1. ►

Sensor 1 short

1

Press RETURN to clear

Low Flow
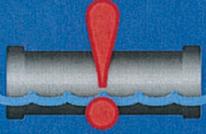
Press RETURN to clear

◄ Check to be sure there is enough water flow through heater.

Check SENSOR 2 connection. ►

Sensor 2 open

2

Press RETURN to clear

Water Overheat

110F
43C

Press RETURN to clear

◄ Wait for water temperature to cool down.

Check SENSOR 2 connection or replace SENSOR 2. ►

Sensor 2 short

2

Press RETURN to clear

Heater Overheat

118F
48C

Press RETURN to clear

◄ Wait for water temperature to cool down. Check to be sure there is enough water flow through heater.

Check SENSOR 3 connection. ►

Sensor 3 open

3

Press RETURN to clear

Potential Freeze

Press RETURN to clear

◄ Error casued when SENSOR 1, 2, or 3 detects low temperature. All JETS and BLOWERS will turn on automatically to protect plumbing from freezing. JETS and BLOWERS will shut down when all 3 SENSORS reach a desired temperature.

Check SENSOR 3 connection or replace SENSOR 3. ►

Sensor 3 short

3

Press RETURN to clear

3.2 Neo Settings for Cold Climates

It may be necessary to adjust some settings of the NEO Spa controller in cold climates. The guidance below will help to make certain you will continue to enjoy your spa despite the change in season.

Make certain:

The cover of the spa is securely fastened to the spa when the spa is not in use.

- Keeping the cover on the spa will conserve heat and energy.

The 'ENERGY INTERVAL' is set to 15 minutes:

- Press MENU
- Select 'ENERGY INTERVAL'
- Use WARM/COOL to adjust the interval to 15 minutes.
- Press RETURN to save the setting.

This will make certain the spa checks the temperature of the water every 15 minutes to maintain the Set Temperature.

A video guide can be found here:
https://www.youtube.com/watch?v=K3I9iOlTL-k

The system is in 'STANDARD' heat mode:

- Press MENU
- Press WARM/COOL to select 'HEAT MODE'.
- Press MENU to enter 'HEAT MODE'.
- Press WARM/COOL to select 'STANDARD'.
- Press RETURN to save the setting.

A temperature higher than 104 degrees (F) may be desired on occasion.
'SPECIAL TEMP' can be used for these instances:

- Press MENU
- Press WARM/COOL to select 'SPECIAL TEMP'.
- Press MENU to enter 'SPECIAL TEMP'.
- Press MENU to enter or RETURN to exit.
- Press WARM/COOL to select '105' or '106'.
- Press RETURN to save the setting.

'Special Temp' will heat the spa one time to the selected temperature.
The spa will then maintain the previous 'Set Temperature'.

Operating the NEO Wi-Fi App

To connect and operate your Smart Device with Waterway Spa Pack WiFi please follow these instructions:

1

2

1. Download and install the App from App Store or Google Store.

2. Click on Create an Account .

3

4

3. Enter your email address, password, confirm and submit.

4. Click on Configure a Device.

5

6

5. Make sure your Spa Control pack is powered on and press Next .

6. Go to your phone setting, WiFi, and connect to the Waterway Wi-Fi device temporary network. For example: WATERW-XXXX.

7

8

9

10

11

12
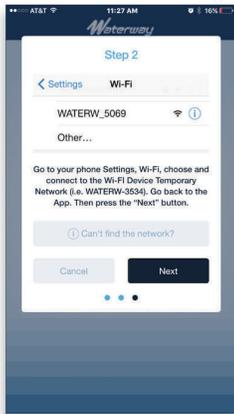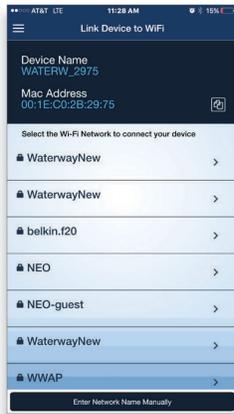
7. Go back to the App, press Next .

8. Select your home network from the list (If your network name is not on the listed, it can be entered manually).
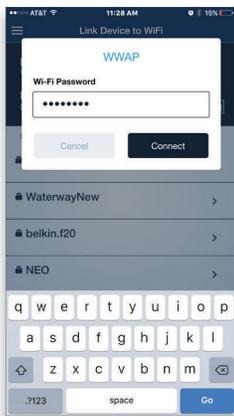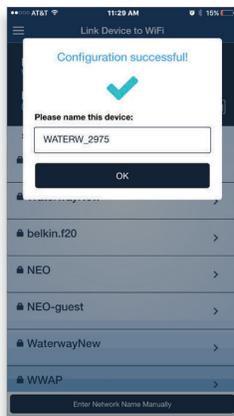
9. Enter your home network password and press Connect .

10. Then the device will configure and connect to your home WiFi network and the Worldwide Web, Press OK .

11. Click on configured Waterway Wi-FI device, i.e. WATERW-XXXX .

12. Now you can control your spa from anywhere in the world using your smart phone. You can set the temperature, heating operation mode and turn the light ON/OFF. In order to access the application menu press ON in top left corner.

Main Menus

Navigation / TP-500

Navigating the entire menu structure is done with 2 or 3 buttons on the control panel.

Some panels have separate WARM (Up) and COOL (Down) buttons, while others have a single Temperature button. In the navigation diagrams Temperature buttons are indicated by a single button icon.

Panels that have two Temperature buttons (Warm and Cool) can use both of them to simplify navigation and programming where a single Temperature icon is shown. The MENU/SELECT Button is used to choose the various menus and navigate each section.

Typical use of the Temperature button(s) allows changing the Set Temperature while the numbers are flashing in the LCD. The menus can be exited with certain button presses. Simply waiting for a few seconds will return the panel operation to normal.

Power-up Screens

Each time the System powers up, a series of numbers is displayed.
After the startup sequence of numbers, the system will enter Priming Mode (See Page 3).

Key

▮ (red)	Indicates Flashing or Changing Segment
▮ (blue)	Indicates Alternating or Progressive Message - every 1/2 second
♪	A temperature button, used for "Action"
☰	Menu/Select button
•••••	Waiting time that keeps the last change to a menu item.
★★★★★	Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

Indicates a Menu Item that Depends on a Manufacturer Configuration and may or may not appear.

Main Screen

102°F R

☰ Press Menu/Select.

TEMP SET

☰↓

MODE SET R

☰↓

TIME   **8:57**

☰↓   If Time of Day is not set "SET TIME" will appear in this menu.

FLIP SET

☰

LOCK

☰↓

HOLD SET

☰↓

FLTR 1

☰↓

FLTR 2

☰

LITE   **TIMR**   Light Cycle if enabled

☰↓

PREF

☰↓

UTIL

☰

Main Screen

102°F R
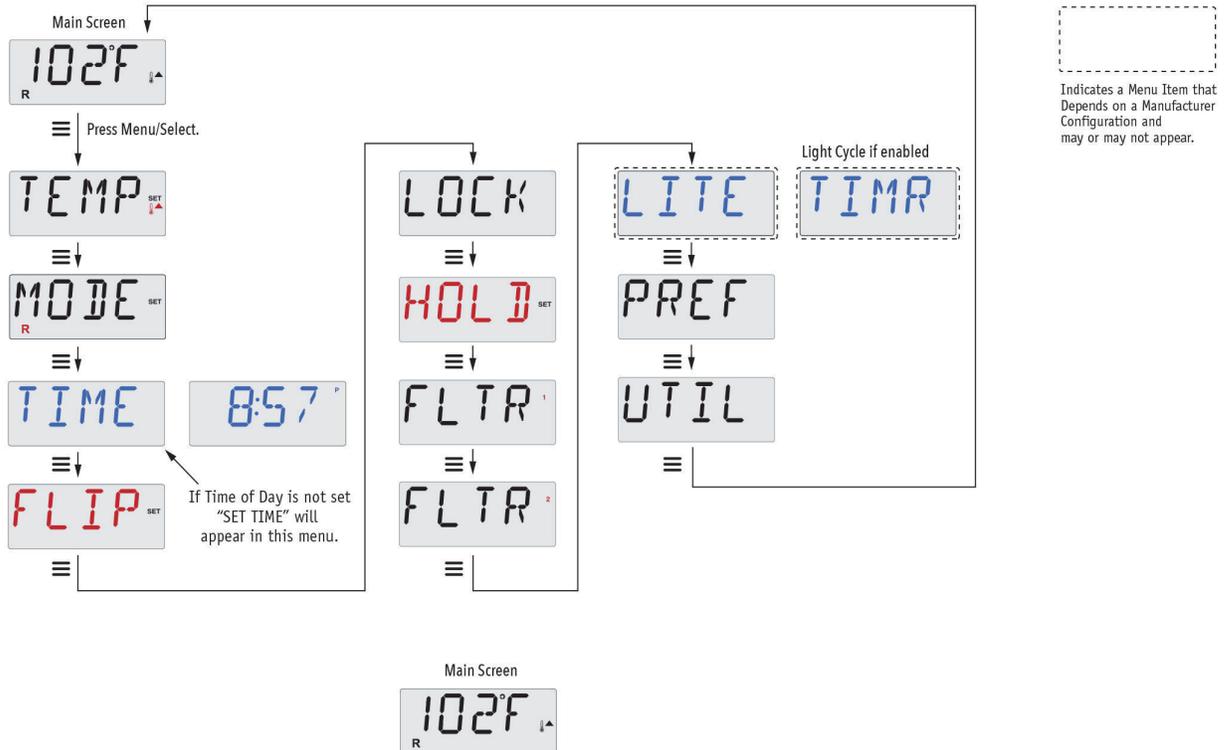
Waiting a few seconds in the Main Menu will allow the display to revert to the Main Screen.
Most changes are not saved unless Menu/Select ☰ is pressed.
Refer to key above.

Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending.

Fill it up!

Preparation and Filling

Fill the spa to its correct operating level. Be sure to open all valves and jets in the plumbing system before filling to allow as much air as possible to escape from the plumbing and the control system during the filling process.

After turning the power on at the main power panel, the top-side panel display will go through specific sequences. These sequences are normal and display a variety of information regarding the configuration of the hot tub control.

Priming Mode - MO19*

This mode will last for 4-5 minutes or you can manually exit the priming mode after the pump(s) have primed.

```
RUN      PMPS     PURG     AIR      -- -- -- --
 R        R        R        R        R
```

Regardless of whether the priming mode ends automatically or you manually exit the priming mode, the system will automatically starts normal heating and filtering at the end of the priming mode. During the priming mode, the heater is disabled to allow the priming process to be completed without the possibility of energizing the heater under low-flow or no-flow conditions. Nothing comes on automatically, but the pump(s) can be energized by pushing the "Jets" or "Aux" buttons.

If the spa has a Circ Pump, it can be activated by pressing the "Light" button during Priming Mode.

Priming the Pumps

As soon as the above display appears on the panel, push the "Jets" button once to start Pump 1 in low-speed and then again to switch to high-speed. Also, push the "Jets 2" or "Aux" button, if you have a 2nd pump, to turn it on. The pumps will now be running in high-speed to facilitate priming. If the pumps have not primed after 2 minutes, and water is not flowing from the jets in the spa, do not allow the pumps to continue to run. Turn off the pumps and repeat the process. Note: Turning the power off and back on again will initiate a new pump priming session. Sometimes momentarily turning the pump off and on will help it to prime. Do not do this more than 5 times. If the pump(s) will not prime, shut off the power to the spa and call for service.

Important: A pump should not be allowed to run without priming for more than 2 minutes. Under NO circumstances should a pump be allowed to run without priming beyond the end of the 4-5 minute priming mode. Doing so may cause damage to the pump and cause the system to energize the heater and go into an overheat condition.

Exiting Priming Mode

You can manually exit Priming Mode by pressing the "Warm" or "Cool" button. Note that if you do not manually exit the priming mode as described above, the priming mode will be automatically terminated after 4-5 minutes. Be sure that the pump(s) have been primed by this time.

Once the system has exited Priming Mode, the top-side panel will momentarily display the set temperature but the display will not show the water temperature yet, as shown below.

This is because the system requires approximately 1 minute of water flowing through the heater to determine the water temperature and display it.

```
-- -- --°F      -- -- --°C
 R               R
```

*MO19 is a Message Code. See Page 18.

Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending.

25

Spa Behavior

Pumps

Press the "Jets" button once to turn pump 1 on or off, and to shift between low and high speeds if equipped.
If left running, the pump will turn off after a time-out period.

On non-circ systems, the low-speed of pump 1 runs when the blower or any other pump is on. If the spa is in Ready Mode (See page 6), Pump 1 low may also activate once in a while for at least 1 minute to detect the spa temperature (polling) and then to heat to the set temperature if needed. When the low-speed turns on automatically, it cannot be deactivated from the panel, however the high speed may be started.

Circulation Pump Modes

If the system is equipped with a circ pump, it will be configured to work in one of three different ways:

1, The circ pump operates continuously (24 hours) with the exception of turning off for 30 minutes at a time when the water temperature reaches 3°F (1.5°C) above the set temperature (most likely to happen in very hot climates).

2, The circ pump stays on continuously, regardless of water temperature.

3, A programmable circ pump will come on when the system is checking temperature (polling), during filter cycles, during freeze conditions, or when another pump or blower is on.

The specific Circulation Mode that is used has been determined by the Manufacturer and cannot be changed in the field.

Filtration and Ozone

On non-circ systems, Pump 1 low and the ozone generator will run during filtration. On circ systems, the ozone will run with the circ pump.

The system is factory-programmed with one filter cycle that will run in the evening (assuming the time-of-day is properly set) when energy rates are often lower. The filter time and duration are programmable. (See page 10)
A second filter cycle can be enabled as needed.

At the start of each filter cycle, all water devices (other than the primary pump) will run briefly to purge the plumbing to maintain good water quality. The term "water devices" includes the Blower.

Freeze Protection

If the temperature sensors within the heater detect a low enough temperature, then the pump(s) and the blower automatically activate to provide freeze protection. The pump(s) and blower will run either continuously or periodically depending on conditions.

In colder climates, an optional freeze sensor may be added to protect against freeze conditions that may not be sensed by the standard sensors. Auxiliary freeze sensor protection acts similarly except with the temperature thresholds determined by the switch. See your dealer for details.

Clean-up Cycle (optional)

When a pump or blower is turned on by a button press, a clean-up cycle begins 30 minutes after the pump or blower is turned off or times out. The pump and the ozone generator will run for 30 minutes or more, depending on the system. On some systems, you can change this setting. (See the Preferences section on page 12)

Temperature and Temp Range

Adjusting the Set Temperature

When using a panel with Up and Down buttons (Temperature buttons), pressing Up or Down will cause the temperature to flash. Pressing a temperature button again will adjust the set temperature in the direction indicated on the button. When the LCD stops flashing, the spa will heat to the new set temperature when required.

If the panel has a single temperature button, pressing the button will cause the temperature to flash. Pressing the button again will cause the temperature to change in one direction (e.g. UP). After allowing the display to stop flashing, pressing the Temperature Button will cause the temperature to flash and the next press will change the temperature in the opposite direction (e.g. DOWN).

Press-and-Hold

If a Temperature button is pressed and held when the temperature is flashing, the temperature will continue to change until the button is released. If only one temperature button is available and the limit of the Temperature Range is reached when the button is being held, the progression will reverse direction.

Dual Temperature Ranges

This system incorporates two temperature range settings with independent set temperatures. The High Range designated in the display by a thermometer and an "up" arrow, and the Low Range designated in the display by a thermometer and "down" arrow.

These ranges can be used for various reasons, with a common use being a "ready to use" setting vs. a "vacation" setting. The Ranges are chosen using the menu structure below. Each range maintains its own set temperature as programmed by the user. This way, when a range is chosen, the spa will heat to the set temperature associated with that range.

For example:

High Range might be set between 80°F and 104°F.

Low Range might be set between 50°F and 99°F.

More specific Temp Ranges may be determined by the Manufactur

Freeze Protection is active in either range.

See Ready and Rest on Page 6
for additional heating control information.

Key

- ▮ Indicates Flashing or Changing Segment
- ▮ Indicates Alternating or Progressive Message - every 1/2 second
- ᒐ A temperature button, used for "Action"
- ≡ Menu/Select button

- ••••• Waiting time that keeps the last change to a menu item.
- ★★★★★ Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

Main Screen — Set Temp will Show & Flash — Press a Temp Button repeatedly to change the temperature. — Main Screen

Pressing and holding a Temp Button will also change the temperature.

High-Range vs. Low-Range Temp Choice

Toggle the Range arrows in the LCD.

To Set — Main Screen

★★★★★ Waiting a few seconds reverts to original settings

To next item in Main Menu

Main Screen — Set Temp will Show & Flash — Press a Temp Button repeatedly to change the temperature. — Main Screen

Pressing and holding a Temp Button will also change the temperature.

27
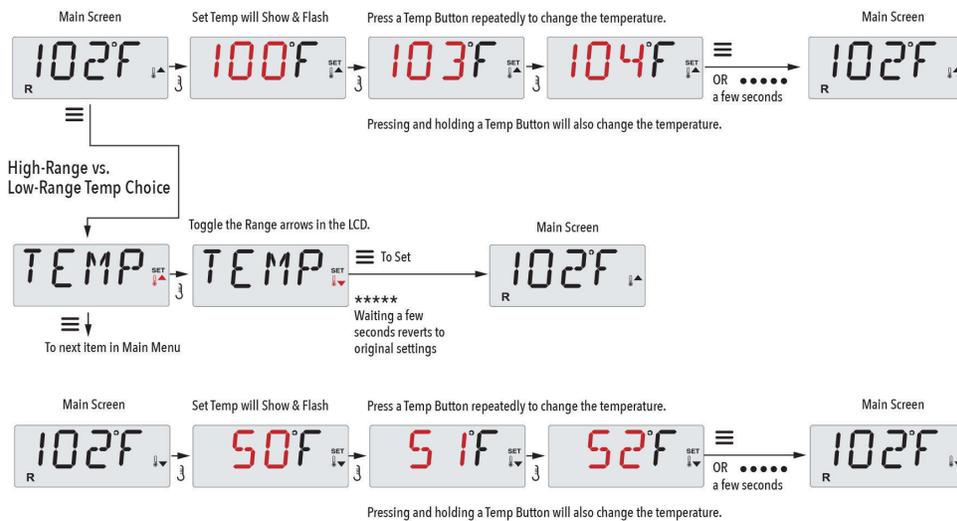
Mode – Ready and Rest

In order for the spa to heat, a pump needs to circulate water through the heater. The pump that performs this function is known as the "primary pump."

The primary pump can be either a 2-Speed Pump 1 or a circulation pump.

If the primary pump is a 2-Speed Pump 1, Ready Mode (indicated by **R**) will circulate water periodically, using Pump 1 Low, in order to maintain a constant water temperature, heat as needed, and refresh the temperature display. This is known as "polling."

Rest Mode (indicated by ⍾) will only allow heating during programmed filter cycles. Since polling does not occur, the temperature display may not show a current temperature until the primary pump has been running for a minute or two.

Circulation Mode (See Page 4, under Pumps, for other circulation modes)

If the spa is configured for 24HR circulation, the primary pump generally runs continuously. Since the primary pump is always running, the spa will maintain set temperature and heat as needed in Ready Mode, without polling.

In Rest Mode, the spa will only heat to set temperature during programmed filter times, even though the water is being filtered constantly when in Circulation Mode.

Key

- Indicates Flashing or Changing Segment
- Indicates Alternating or Progressive Message - every 1/2 second
- ♪ A temperature button, used for "Action"
- ☰ Menu/Select button
- ●●●●● Waiting time that keeps the last change to a menu item.
- ★★★★★ Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

Main Screen

102°F R

☰ Press Menu/Select repeatedly until MODE appears in the LCD.

MODE R → MODE ⍾ ☰ To Set ★★★★★ Waiting a few seconds reverts to original settings

Main Screen

102°F R⍾

☰ To next item in Main Menu If not toggled

Toggle between Ready (indicated by **R**) and Rest (indicated by ⍾).
Pressing Menu/Select when the display is toggled will go to Main Screen.

Ready Mode will allow the spa to Poll and determine a need for heat. The panel will maintain a "current" temperature display.

Rest Mode will not Poll and will only heat during filter cycles. The panel will not display a current temperature at all times.

Main Screen

102°F R⍾ — 1 Hour ●●●●● → RUN R⍾ → PUMP R⍾ → FOR R⍾ → TEMP R⍾ → -- -- -- -- R⍾

The Main Screen will display RUN PUMP FOR TEMP if the primary pump has not run for over 1 hour.
The Main Screen will display normally during Filter Cycles or when the spa is in use.

If the primary pump has been off for an hour or more, when any function button, EXCEPT Light, is pressed on the panel, the pump used in conjunction with the heater will run so that temperature can be sensed and displayed.

Ready-in-Rest Mode

R⍾ appears in the display if the spa is in Rest Mode and "Jets" is pressed. It is assumed that the spa is being used and will heat to set temperature. The primary pump will run until set temperature is reached, or 1 hour has passed. After 1 hour, the System will revert to Rest Mode. This mode can also be reset by entering the Mode Menu and changing the Mode.
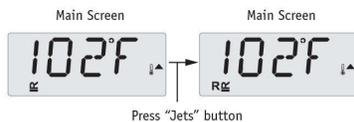
Main Screen   **Main Screen**

102°F R⍾   →   102°F R⍾

Press "Jets" button

Show and Set Time-of-Day

Be sure to set the Time-of-Day

Setting the time-of-day can be important for determining filtration times and other background features.

When in the TIME menu, SET TIME will flash on the display if no time-of-day is set in the memory.

24-hour time display can be set under the PREF menu. (See Page 12)

Key

🟥 Indicates Flashing or Changing Segment

🟦 Indicates Alternating or Progressive Message - every 1/2 second

ᔔ A temperature button, used for "Action"

☰ Menu/Select button

••••• Waiting time that keeps the last change to a menu item.

★★★★★ Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

Main Screen

`102°F`
R

☰ Press Menu/Select repeatedly until TIME appears in the LCD.

`TIME`

☰↓ To next item in Main Menu

ᔔ

`8:57` ••••• → Main Screen `102°F` R
A few seconds

`8:57` SET ᔔ → `9:57` SET ☰ → `9:57` SET ᔔ → `9:58` SET → ☰ To Set
★★★★★ Waiting a few seconds reverts to original settings → Main Screen `102°F` R

`SET`   `TIME`   `8:57`

If Time of Day is not actually programmed due to a power cycle, SET TIME will appear in the menu instead of just TIME.

Note:

This note refers to systems that do not keep track of Time-of-Day when powered down.

If power is interrupted to such a system, Time-of-Day is not stored. The system will still operate and all other user settings will be stored. If filter cycles are required to run at a particular time of day, resetting the clock will return the filter times to the actual programmed periods.

When such a system starts up, it defaults to 12:00 Noon, so another way to get filter times back to normal is to start up the spa at noon on any given day. SET TIME will still flash in the TIME Menu until the time is actually set, but since the spa started at noon, the filter cycles will run as programmed.

Flip (Invert Display)
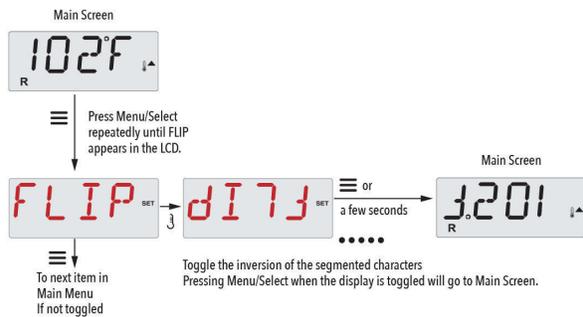
Main Screen

`102°F`
R

☰ Press Menu/Select repeatedly until FLIP appears in the LCD.

`FLIP` SET ᔔ → `dI7J` SET → ☰ or a few seconds → Main Screen `J.201` R
•••••

☰↓ To next item in Main Menu If not toggled

Toggle the inversion of the segmented characters
Pressing Menu/Select when the display is toggled will go to Main Screen.

29

Restricting Operation

The control can be restricted to prevent unwanted use or temperature adjustments.

Locking the panel prevents the controller from being used, but all automatic functions are still active.

Locking the Temperature allows Jets and other features to be used, but the Set Temperature and other programmed settings cannot be adjusted.

Temperature Lock allows access to a reduced selection of menu items.
These include Set Temperature, FLIP, LOCK, UTIL, INFO and FALT LOG.

Main Screen

102°F
R

≡ Press Menu/Select
repeatedly until LOCK
appears in the LCD.

Key

▮ Indicates Flashing or Changing Segment
▮ Indicates Alternating or Progressive Message - every 1/2 second
∫ A temperature button, used for "Action"
≡ Menu/Select button

••••• Waiting time that keeps the last change to a menu item.

★★★★★ Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

Locks Temp. and Settings.   Locks all function buttons.

LOCK SET   →   **TEMP** SET   →   **PANL** SET   ≡
∫   ≡   ∫

≡
To next item in
Main Menu

∫   ∫

••••• A few seconds

OFF SET   ⟷   **ON** SET   ≡ To Set

Main Screen

102°F
R

∫   ≡

★★★★★
Waiting a few
seconds reverts
to origianl settings

Panel Locked
Main Screen

102°F   Any   **LOCK**   A Few   **102°F**
R   Button   R   Seconds   R
           Press   •••••

LOCK will remain on the display
for 3 seconds and then revert to the normal display.

Temperature Locked
Main Screen   Main Screen

102°F → **100°F** → **LOCK**   A Few   **102°F**
R   ∫   R   ∫   R   Seconds   R
                                    •••••

When the Temperature is locked, the panel will display the Set Temperature
by pressing a Temperature Button, as usual.
LOCK will appear if an attempt to reset the temperature is made with a subsequent button press.
Adjustable settings in the menus are also locked.
Other function buttons will operate normally.

Unlocking

This Unlock sequence may be used from any screen that may be displayed on a restricted panel.

∫ While pressing and holding the Temperature Button (or UP button, if available),

≡ ≡ Slowly press and release the Menu/Select button two times.

Main Screen

UNLK   A Few   **102°F**
          Seconds   R
           •••••
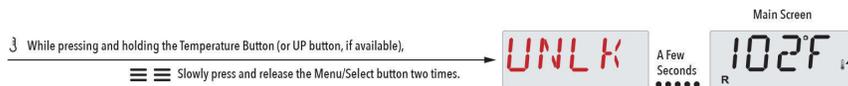
NOTE: If the panel has both an UP and a Down button, the ONLY button that will work in the Unlock Sequence
is the UP button.

The temperature will not Unlock if the Unlock sequence is done while the panel
is displaying "LOCK".

Hold (Standby)

Hold Mode –MO37*

Hold Mode is used to disable the pumps during service functions like cleaning or replacing the filter. Hold Mode will last for 1 hour unless the mode is exited manually.

Drain Mode

Some spas have a special feature that allows a pump to be employed when draining the water.
When available, this feature is a component of Hold Mode.
Drain Mode will time out with Hold Mode.

Key

- Indicates Flashing or Changing Segment
- Indicates Alternating or Progressive Message - every 1/2 second
- ♪ A temperature button, used for "Action"
- ☰ Menu/Select button
- ••••• Waiting time that keeps the last change to a menu item.
- ★★★★★ Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

Indicates a Menu Item that Depends on a Manufacturer Configuration and may or may not appear.

Main Screen

102°F R

☰ Press Menu/Select repeatedly until HOLD appears in the LCD.

HOLD SET   A few seconds •••••

Main Screen

102°F R

☰ ↓ ♪
To next item in Main Menu

HOLD **ING** **FOR** **0:57**

Some spas will allow PUMP ING OUT (Drain Mode) with "Jets" button

☰ or ♪

Press "Jets" Button for Pump Out/Drain, only if Drain Mode is enabled.

"Jets" will toggle pump on and off.

PUMP **ING** **OUT** **FOR** **0:57**

DONE   ☰ or a few seconds •••••

Main Screen

102°F R

M037 is a Message Code. See Page 18.

Adjusting Filtration

Main Filtration

Filter cycles are set using a start time and a duration. Start time is indicated by an "A" or "P" in the bottom right corner of the display. Duration has no "A" or "P" indication. Each setting can be adjusted in 15-minute increments. The panel calculates the end time and displays it automatically.

Key

- ■ Indicates Flashing or Changing Segment
- ■ Indicates Alternating or Progressive Message - every 1/2 second
- ♪ A temperature button, used for "Action"
- ☰ Menu/Select button

• • • • • Waiting time that keeps the last change to a menu item.

★ ★ ★ ★ ★ Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

Main Screen

Press Menu/Select repeatedly until FLTR 1 appears in the LCD.

FLTR 1

BEGN F1 — Shows/flashes start time — 8:00 — Sets start hour — 9:00 — Shows/flashes minutes — 9:00 — Sets 15-minute increments — 9:15 — Waiting a few seconds reverts to original setting ★★★★★

to show RUN HRS — RUN HRS — Sets Filter 1 length in hours — 3:00 — Shows/flashes minutes — 3:00 — Sets 15-minute increments — 3:30 2X — Wait to Revert ★★★★★

to show F1 ENDS xx:xx — F 1 ENDS — 12:45 — ♪ To Set — ★★★★★ Waiting a few seconds will lose any new Filter 1 Start Time and Run Hours and revert to the previous Filter 1 settings. — Main Screen 102°F

FLTR 2

To Set — OFF F2 SET — ON F2 SET — Waiting a few seconds reverts to original setting ★★★★★ — Main Screen 102°F

To next item in Main Menu

BEGN F2 — Shows/flashes start time — 8:00 — Sets start hour — 9:00 — Shows/flashes minutes — 9:00 — Sets 15-minute increments — 9:15 — Waiting a few seconds reverts to original setting ★★★★★

to show RUN HRS — RUN F2 HRS — Sets Filter 1 length in hours — 3:00 — Shows/flashes minutes — 3:00 — Sets 15-minute increments — 3:30 2X — Wait to Revert ★★★★★

to show F2 ENDS xx:xx — F 2 ENDS — 12:45 — ♪ To Set — ★★★★★ Waiting a few seconds will lose any new Filter 2 On/OFF, Start Time and Run Hours and revert to any previous Filter 2 settings. — Main Screen 102°F

Filter Cycle 2 - Optional Filtration

Filter Cycle 2 is OFF by default.

It is possible to overlap Filter Cycle 1 and Filter Cycle 2, which will shorten overall filtration by the overlap amount.

Purge Cycles

In order to maintain sanitary conditions, secondary Pumps and/or a Blower will purge water from their respective plumbing by running briefly at the beginning of each filter cycle.

If Filter Cycle 1 is set for 24 hours, enabling Filter Cycle 2 will initiate a purge when Filter Cycle 2 is programmed to begin.

Light Timer Programming

Light Timer Option

If LITE TIMR does not appear in the Main Menu, the Light Timer feature is not enabled by the manufacturer.
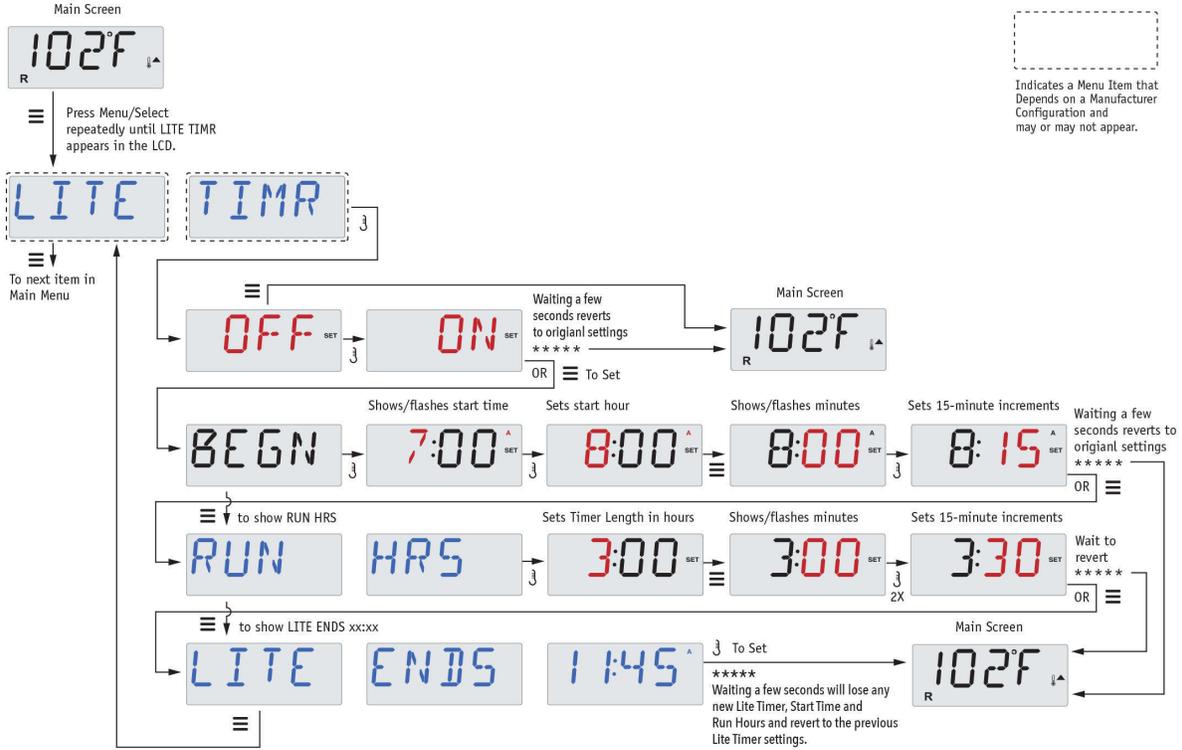
When available, the Light Timer is OFF by default.

Key

- ▮ Indicates Flashing or Changing Segment
- ▮ Indicates Alternating or Progressive Message - every 1/2 second
- ♪ A temperature button, used for "Action"
- ≡ Menu/Select button
- ••••• Waiting time that keeps the last change to a menu item.
- ★★★★★ Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

Main Screen

102°F R

≡ Press Menu/Select repeatedly until LITE TIMR appears in the LCD.

LITE **TIMR** ♪

≡ To next item in Main Menu

≡ **OFF** SET → ♪ **ON** SET → Waiting a few seconds reverts to origianl settings ★★★★★

OR | ≡ To Set

Main Screen
102°F R

BEGN ♪ → Shows/flashes start time **7:00** SET ♪ → Sets start hour **8:00** SET ≡ → Shows/flashes minutes **8:00** SET ♪ → Sets 15-minute increments **8:15** SET → Waiting a few seconds reverts to origianl settings ★★★★★

OR | ≡

≡ to show RUN HRS

RUN **HRS** ♪ → Sets Timer Length in hours **3:00** SET ≡ → Shows/flashes minutes **3:00** SET ♪ → Sets 15-minute increments **3:30** SET ♪ 2X → Wait to revert ★★★★★

OR | ≡

≡ to show LITE ENDS xx:xx

LITE **ENDS** **11:45** ♪ To Set ★★★★★ Waiting a few seconds will lose any new Lite Timer, Start Time and Run Hours and revert to the previous Lite Timer settings.

Main Screen
102°F R

≡

Indicates a Menu Item that Depends on a Manufacturer Configuration and may or may not appear.

Preferences

F / C (Temp Display)

Change the temperature between Fahrenheit and Celsius.

12 / 24 (Time Display)

Change the clock between 12 hr and 24 hr display.

RE-MIN-DERS (Reminders)

Turn the display of reminder messages (like "Clean Filter") On or Off.

Note: Reminders continue to run in the background even when not displayed. So turning the display of Reminders On or Off does not reset any Reminder counts.

CLN-UP (Cleanup)

Cleanup Cycle Duration is not always enabled, so it may not appear. When it is available, set the length of time Pump 1 will run after each use. 0-4 hours are available.
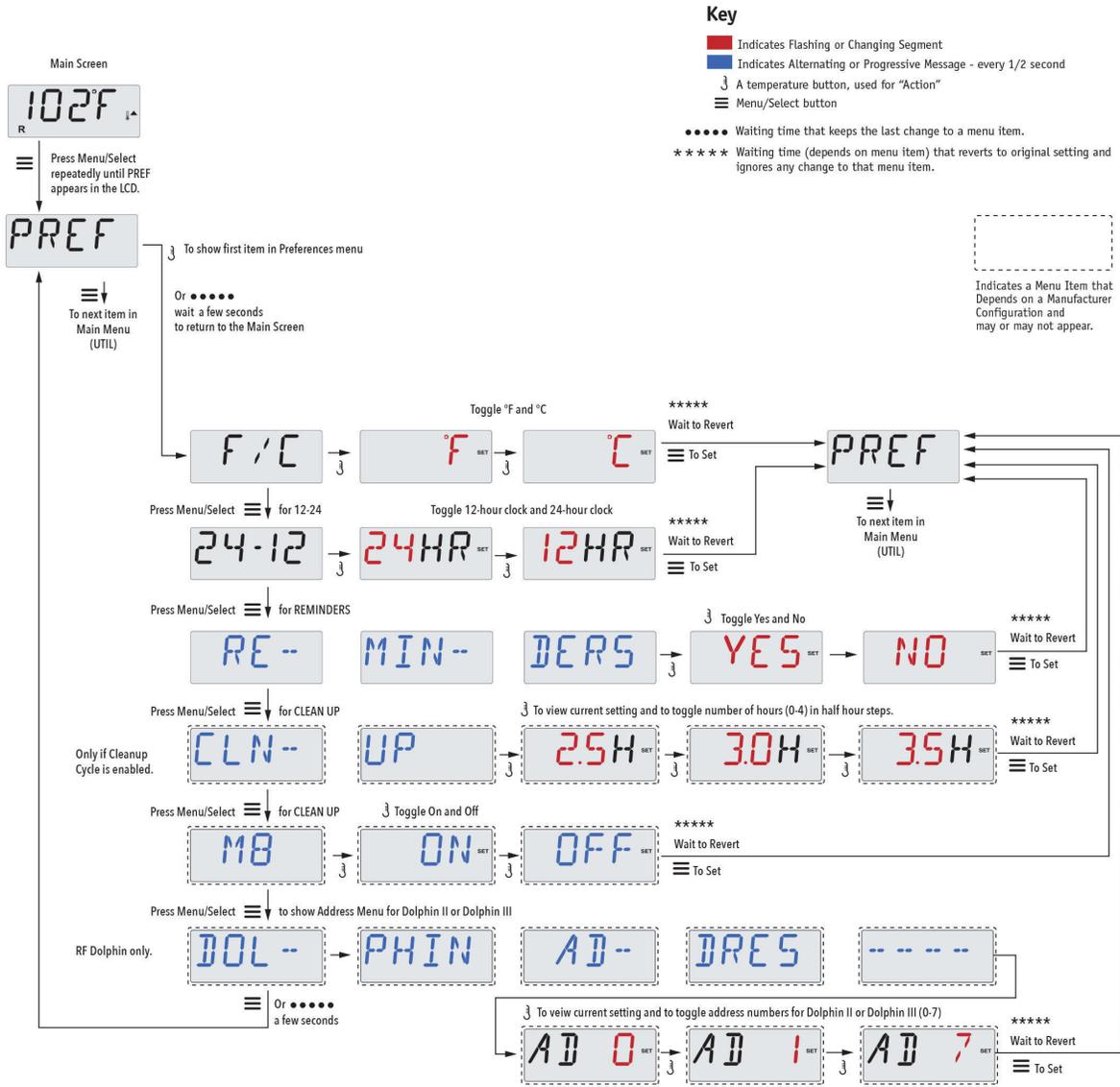
M8

(This message may not appear on all systems.) On systems that have M8, it is enabled by default. It can be disabled (or re-enabled) here. M8 reduces polling intervals when the water temperature in the spa is steady.

DOL-PHIN-AD-DRES (Dolphin II and Dolphin III) Applies to RF Dolphin only.
(This message may not appear depending on the configuration)

When set to 0, no addressing is used. Use this setting for a Dolphin Remote which is factory set for no address by default. When set between 1 and 7, the number is the address. (See the Dolphin manual for details.)

Preferences

Main Screen

102°F
R

≡ Press Menu/Select repeatedly until PREF appears in the LCD.

PREF

♪ To show first item in Preferences menu

≡↓ To next item in Main Menu (UTIL)

Or ●●●●● wait a few seconds to return to the Main Screen

Key

■ Indicates Flashing or Changing Segment
■ Indicates Alternating or Progressive Message - every 1/2 second
♪ A temperature button, used for "Action"
≡ Menu/Select button

●●●●● Waiting time that keeps the last change to a menu item.
★★★★★ Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

Indicates a Menu Item that Depends on a Manufacturer Configuration and may or may not appear.

Toggle °F and °C

F/C → **°F** SET ♪ **°C** SET
♪

★★★★★ Wait to Revert
≡ To Set

PREF

≡↓ To next item in Main Menu (UTIL)

Press Menu/Select ≡ for 12-24   Toggle 12-hour clock and 24-hour clock

24-12 → **24HR** SET → **12HR** SET
♪   ♪

★★★★★ Wait to Revert
≡ To Set

Press Menu/Select ≡↓ for REMINDERS

RE-- **MIN--** **DERS** → ♪ Toggle Yes and No **YES** SET → **NO** SET
♪

★★★★★ Wait to Revert
≡ To Set

Press Menu/Select ≡ for CLEAN UP   ♪ To view current setting and to toggle number of hours (0-4) in half hour steps.

Only if Cleanup Cycle is enabled.

CLN-- **UP** → **2.5H** SET → **3.0H** SET → **3.5H** SET
♪   ♪   ♪

★★★★★ Wait to Revert
≡ To Set

Press Menu/Select ≡ for CLEAN UP   ♪ Toggle On and Off

M8 → **ON** SET → **OFF** SET
♪   ♪

★★★★★ Wait to Revert
≡ To Set

Press Menu/Select ≡ to show Address Menu for Dolphin II or Dolphin III

RF Dolphin only.

DOL-- → **PHIN** **AD--** **DRES** **-- -- --**

≡ Or ●●●●● a few seconds

♪ To view current setting and to toggle address numbers for Dolphin II or Dolphin III (0-7)

AD 0 SET → **AD 1** SET → **AD 7** SET
♪   ♪

★★★★★ Wait to Revert
≡ To Set

Utilities and Information

INFO (System Information sub-menu)

The System Information Menu displays various settings and identification of the particular system.

SSID (Software ID)

Displays the software ID number for the System.

MODL (System Model)

Displays the Model Number of the System.

SETP (Current Setup)

Displays the currently selected Configuration Setup Number.

Heater Voltage (Feature not used on CE rated systems.)

Displays the operating voltage configured for the heater.

Heater Wattage as Configured in Software (CE Systems Only.)

Displays a heater kilowatt rating as programmed into the control system software (1-3 or 3-6).

H _ (Heater Type)

Displays a heater type ID number.

SW _ (Dip Switch Settings)

Displays a number that represents the DIP switch positions of S1 on the main circuit board.

PANL (Panel Version)

Displays a number of the software in the topside control panel.

Additional Utilities

Utilities

In addition to INFO, The Utilities Menu contains the following:

GFCI (GFCI Test)
(Feature not available on CE rated systems.)

GFCI Test is not always enabled, so it may not appear. This screen allows the GFCI to be tested manually from the panel and can be used to reset the automatic test feature. If the GFCI Test Feature is reset, the device will trip within 7 days. (See Page 17)

A / B (A/B Sensor Temperatures)

When this is set to On, the temperature display will alternate to display temperature from Sensor A and Sensor B in the heater.

FALT LOG (Fault Log)

The Fault Log is a record of the last 24 faults that can be reviewed by a service tech.

DEMO (Demo Mode)

Demo Mode is not always enabled, so it may not appear. This is designed to operate several devices in a sequence in order to demonstrate the various features of a particular hot tub.

Utilities

102°F R

≡ Press Menu/Select repeatedly until UTIL (Utilities) appears in the LCD.

UTIL → **INFO** → **SSID** → Start display of string. There is a 2 second delay on each number. **M 100** **_200** **V 0.2 1**

≡↓ To FIRST item in Main Menu (TEMP Range)

≡

MODL → Start display of string. There is a 2 second delay on each number. **ABCD** **EFGH**

These strings will display once and return to the beginning. Press Temperature again to display the string again.

••••• Waiting 10 seconds will allow the screen to return to normal operation.

SETP → **S 02**

SIG → Start display of string. There is a slight delay on each number. **1234** **0525**

120V → 120 or 240 VAC input power sensed by a UL system at startup. OR **3-6** 3-6 or 1-3 Heater Wattage as programmed. Displayed by a CE system at startup.

H 0 Heater Type

SW 16 → **0310**
DIP Switch Settings

- DIP Switch 1 – Test Mode Off (0) or On (1)
- DIP Switch 2+3+4 = the number of HS pumps with heat
- Store Settings (0) or Memory Reset (1)
- N/A or Special Amperage Rule 1 or 2

PANL → **V 0.2 1**

≡

GFCI → Displays GFCI Test Menu **See Page 17**
Only if GFCI is enabled

Indicates a Menu Item that Depends on a Manufacturer Configuration and may or may not appear.

A/B° → **OFF** SET **ON** SET
≡ To Set
When set to ON, Panel will display alternate readings from Senor A and Sensor B on Main Screen
★★★★★ Waiting a few seconds reverts to original setting

FALT **LOG** → Displays Fault Log **See Page 18**

DEMO SET → **DEMO** **FOR** **0:57**
Only if DEMO Mode is enabled

≡ Or ★★★★★ a few seconds

≡↓ Back to normal operation

Utilities – GFCI Test Feature

Not Available on CE Rated Systems.

A GFCI is an important safety device and is required equipment on a hot tub installation.

Your spa may be equipped with a GFCI Protection feature. (UL rated systems only.) If your spa has this feature enabled by the manufacturer, the GFCI Trip Test must occur to allow proper spa function.

Within 1 to 7 days after startup, the spa will trip the GFCI to test it. (The number of days is factory programmed.) The GFCI must be reset once it has tripped. After passing the GFCI Trip Test, any subsequent GFCI trips will indicate a ground fault or other unsafe condition and the power to the spa must be shut off until a service person can correct the problem.

Key

- ▬ Indicates Flashing or Changing Segment
- ▬ Indicates Alternating or Progressive Message - every 1/2 second
- ↻ A temperature button, used for "Action"
- ☰ Menu/Select button

• • • • • Waiting time that keeps the last change to a menu item.

★ ★ ★ ★ ★ Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

Main Screen

102F

R

☰ Press Menu/Select repeatedly until UTIL (Utilities) appears in the LCD.

UTIL → INFO

☰ To FIRST item in Main Menu (TEMP Range)

Only if GFCI is enabled → GFCI

One of these screens will appear.

ARMD

PASS

TRIP may also appear briefly under certain circumstances.

When the GFCI trips, the spa will shut down. After the breaker is reset, PASS will appear in this menu and the spa will operate normally.

Indicates a Menu Item that Depends on a Manufacturer Configuration and may or may not appear.

The GFCI will be tripped at a random interval.

If the GFCI does NOT trip, GFCI FAIL (see page 22) will appear and Spa will not operate.

TRIP → TRIP SET → TRIP

RSET

Only appears if a GFCI test has been passed.

★ ★ ★ ★ ★ Or wait to revert

★ ★ ★ ★ ★ Or wait to revert

ARM SET

★ ★ ★ ★ ★ Or wait to revert

To next item in Info Menu (A/B°)

★ ★ ★ ★ ★ Waiting a few seconds inside the GFCI Menu will allow the screen to return to normal operation.

Forcing the GFCI Trip Test

The installer can cause the GFCI Trip Test to occur sooner by initiating it using the above menu.

The GFCI should trip within a few seconds and the spa should shut down. If it does not, shut down the power and manually verify that a GFCI breaker is installed and that the circuit and spa are wired correctly. Verify the function of the GFCI with its own test button. Restore power to the spa and repeat the GFCI Trip Test.

Once the GFCI is tripped by the test, reset the GFCI and the spa will operate normally from that point. You can verify a successful test by navigating to the above menu. PASS should appear after a temp button is pressed from the GFCI screen.

The end-user must be trained to expect this one-time test to occur and how to properly reset the GFCI.

Warning:

If freezing conditions exist, a GFCI should be reset immediately or spa damage could result. The end user should always be trained to test and reset the GFCI on a regular basis.

Utilities – Fault Log

A Little History can tell a lot

The Fault Log stores up to 24 events in memory and they can be reviewed under the Fault Log Menu.

Each event captures a Fault Message Code, how many days have passed since the fault, Time of the fault, Set Temperature during the fault, and Sensor A and B temperatures during the fault.

102°F
R

Press Press Menu/Select repeatedly until UTIL (Utilities) appears in the LCD.

UTIL
To FIRST item in Main Menu (TEMP Range)

INFO

Press Press Menu/Select repeatedly until FALT LOG appears in the LCD.

Key

- Indicates Flashing or Changing Segment
- Indicates Alternating or Progressive Message - every 1/2 second
- ♪ A temperature button, used for "Action"
- ≡ Menu/Select button
- • • • • • Waiting time that keeps the last change to a menu item.
- ★ ★ ★ ★ ★ Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

FALT   **LOG**

DEMO SET Only if DEMO Mode is enabled

The Fault Log is also available from the Test Menu (in Test Mode).

FT24
R

FT23
R

24 Fault messages is the maximum. Fewer messages may be displayed.

FT02
R   M:

FT01
R   M:

M: Message Code
MXXX
R

D: Days Ago
DZZZ
R

Time
12:32
R

Set Temperature
103°F

Sensor A Temp
102°A

Sensor B Temp
105°B

Indicates a Menu Item that Depends on a Manufacturer Configuration and may or may not appear.

★★★★★
Waiting a few seconds inside the Fault Log Menu will allow the screen to return to normal operation.

See following pages for various Message Codes and definitions.

General Messages

RUN   PMPS   PURG   AIR   -- -- -- --

Priming Mode – MO19

Each time the spa is powered up, it will enter Priming Mode. The purpose of Priming Mode is to allow the user to run each pump and manually verify that the pumps are primed (air is purged) and water is flowing. This typically requires observing the output of each pump separately, and is generally not possible in normal operation. Priming Mode lasts 4 minutes, but you can exit it earlier by pressing any Temp button. The heater is not allowed to run during Priming Mode.

NOTE: If your spa has a Circ Pump, it will turn on with "Light" in Priming Mode. The Circ Pump will run by itself when Priming Mode is exited.

-- -- --°F   -- -- --°C
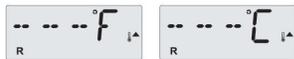
Water Temperature is Unknown

After the pump has been running for 1 minute, the temperature will be displayed.

42°F   TOO   COLD

Too Cold - Freeze Protection

A potential freeze condition has been detected, or the Aux Freeze Switch has closed, and all pumps and blower are activated, either one at a time, or all at once, depending on how your system was built. All pumps and blower are ON for at least 4 minutes after the potential freeze condition has ended, or when the aux freeze switch opens.

In some cases, pumps may turn on and off and the heater may operate during Freeze Protection.

This is an operational message, not an error indication.

WATR   TOO   HOT   -- -- -- --

Water is too Hot (OHS) – MO29

One of the water temp sensors has detected spa water temp 110°F (43.3°C) and spa functions are disabled. System will auto reset when the spa water temp is below 108°F (42.2°C). Check for extended pump operation or
high ambient temp.

J29

J29 Warning – MO44

J29 is typically used as a Heater Disable input. As such, it should not typically be shorted at power-up. This message appears if J29 is shorted at power-up.

M0XX numbers are Message Codes. See Page 18.

* This message can be reset from the topside panel with any button press.

Heater-Related Messages

`HTR  FLOW  LOSS  -- -- -- --`

Heater Flow is Reduced (HFL) – MO16

There may not be enough water flow through the heater to carry the heat away from the heating element. Heater start up will begin again after about 1 min. See "Flow Related Checks" below.

`HTR  FLOW  FAIL  -- -- -- --`

Heater Flow is Reduced (LF)* – MO17

There is not enough water flow through the heater to carry the heat away from the heating element and the heater has been disabled. See "Flow Related Checks" below. After the problem has been resolved, you must press any button to reset and begin heater start up.

`HTR  MAY  BE  DRY  -- -- -- --  WAIT  -- -- -- --`

Heater may be Dry (dr)* – MO28

Possible dry heater, or not enough water in the heater to start it. The spa is shut down for 15 min. Press any button to reset the heater start-up. See "Flow Related Checks" below.

`HTR  DRY  -- -- -- --`
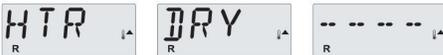
Heater is Dry* – MO27

There is not enough water in the heater to start it. The spa is shut down. After the problem has been resolved, you must press any button to reset and restart heater start up. See "Flow Related Checks" below.

`HTR  TOO  HOT  -- -- -- --`

Heater is too Hot (OHH)* – MO30

One of the water temp sensors has detected 118°f (47.8°C) in the heater and the spa is shut down. You must press any button to reset when water is below 108°f (42.2°C). See "Flow Related Checks" below.

`PRES  BTTN  TO  RSET  -- -- -- --`

A Reset Message may Appear with other Messages.

Some errors may require power to be removed and restored.

Flow-Related Checks

Check for low water level, suction flow restrictions, closed valves, trapped air, too many closed jets and pump prime.

On some systems even when spa is shut down, some equipment may occasionally turn on to
continue monitoring temperature or if freeze protection is needed.

* This message can be reset from the topside panel with any button press.

Sensor-Related Messages

`102F` `SNSR` `BAL--` `ANCE`

Sensor Balance is Poor – MO15

The temperature sensors MAY be out of sync by or 3°F. Call for Service.

`SNSR` `SYNC` `-- -- --` `CALL` `FOR` `SRVC` `-- -- --`
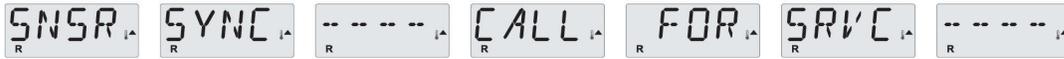
Sensor Balance is Poor* – MO26

The temperature sensors ARE out of sync. The Sensor Balance is Poor fault has been established for at least 1 hour.
Call for Service.

`SNSR` `A` `-- -- --` `CALL` `FOR` `SRVC` `-- -- --`

`B`

Sensor Failure – Sensor A: MO31, Sensor B: MO32

A temperature sensor or sensor circuit has failed. Call for Service.

Miscellaneous Messages

`NO` `COMM`

No Communications

The control panel is not receiving communication from the System. Call for Service.

`BETA` `VER--` `SION` `-- -- --`

Pre-Production Software

The Control System is operating with test software. Call for Service.

`102T`

°F or °C is replaced by °T

The Control System is in Test Mode. Call for Service.

* This message can be reset from the topside panel with any button press.

System-Related Messages

`MEM  FAIL` `-- -- --`

Memory Failure - Checksum Error* – MO22

At Power-Up, the system has failed the Program Checksum Test. This indicates a problem with the firmware (operation program) and requires a service call.

`MEM  RSET` `-- -- --`

Memory Warning - Persistent Memory Reset* – MO21

Appears after any system setup change. Contact your dealer or service organization if this message appears on more than one power-up, or if it appears after the system has been running normally for a period of time.

`CLOK FAIL` `-- - --`

Memory Failure - Clock Error* – MO20 - Not Applicable on the BP1500

Contact your dealer or service organization.

`CNFG FAIL` `-- - --` `CALL  FOR  SRVC` `-- -- --`

Configuration Error – Spa will not Start Up

Contact your dealer or service organization.

`GFCI FAIL` `-- -- --`

GFCI Failure - System Could Not Test/Trip the GFCI – MO36

NORTH AMERICA ONLY. May indicate an unsafe installation. Contact your dealer or service organization.

* This message can be reset from the topside panel with any button press.

System-Related Messages

`STUK` `PUMP` `-- -- --`

A Pump Appears to be Stuck ON – MO34

Water may be overheated. POWER DOWN THE SPA. DO NOT ENTER THE WATER. Contact your dealer or service organization.

`HOT` `FALT` `-- -- --` `CALL` `FOR` `SRVC` `-- -- --`
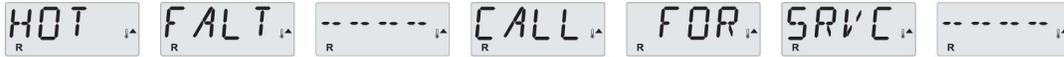
A Pump Appears to have been Stuck ON when spa was last powered - MO35

POWER DOWN THE SPA. DO NOT ENTER THE WATER.
Contact your dealer or service organization.

`WATR` `LEVL`

The water level is too low

Some systems have a water level detect, and this message appears if it detects that the water level is too low.

`-- -- -- -- --`

* When you see your spa's panel display a screen with dash marks, (-- -- --)
this indicates your spa is in rest mode. This is not a malfunction and nothing
is wrong. If you press the menu button, the spa's configurations will respond.

* This message can be reset from the topside panel with any button press.

Reminder Messages

General maintenance helps.

The display of Reminder Messages can be suppressed by using the PREF Menu. See Page 12.

Reminder Messages can be chosen individually by the Manufacturer. They may be disabled entirely, or there may be a limited number of reminders on a specific model.

The frequency of each reminder (e.g. 7 days) can be specified by the Manufacturer.

Press a Temperature button to reset a displayed reminder message.

CHEK   PH   Alternates with temperature or normal display.

Appears on a regular schedule, e.g. every 7 days.

Check pH with a test kit and adjust pH with the appropriate chemicals.

CHEK   CHEM   Alternates with temperature or normal display.

Appears on a regular schedule, e.g. every 7 days.

Check sanitizer level and other water chemistry with a test kit and adjust with the appropriate chemicals.

CLN   FLTR   Alternates with temperature or normal display.

Appears on a regular schedule, e.g. every 30 days.

Clean the filter media as instructed by the manufacturer. See HOLD on page 9.

TEST   GFCI   Alternates with temperature or normal display.

Appears on a regular schedule, e.g. every 30 days.

The Ground Fault Circuit Interrupter (GFCI) or Residual Current Device (RCD) is an important safety device and must be tested on a regular basis to verify its reliability.

Every user should be trained to safely test the GFCI or RCD associated with the hot tub installation.

A GFCI or RCD will have a TEST and RESET button on it that allows a user to verify proper function.

Warning:

If freezing conditions exist, a GFCI or RCD should be reset immediately or spa damage could result.
The end user should always trained to test and reset the GFCI or RCD on a regular basis.

Reminder Messages Continued

`CHNG` `WATR`   Alternates with temperature or normal display.

Appears on a regular schedule, e.g. every 90 days.

Change the water in the spa on regular basis to maintain proper chemical balance and sanitary conditions.

`CLN` `COVR`   Alternates with temperature or normal display.

Appears on a regular schedule, e.g. every 180 days.

Vinyl covers should be cleaned and conditioned for maximum life.

`TRT` `WOOD`   Alternates with temperature or normal display.

Appears on a regular schedule, e.g. every 180 days.

Wood skirting and furniture should be cleaned and conditioned per the manufacturers instructions for maximum life.

`CHNG` `FLTR`   Alternates with temperature or normal display.

Appears on a regular schedule, e.g. every 365 days.

Filters should be replaced occasionally to maintain proper spa function and sanitary conditions.

`CHNG` `CART`   Alternates with temperature or normal display.

As needed.

Install new mineral cartridge.

`CHEK` `OZ`   Alternates with temperature or normal display.

Appears on a regular schedule, e.g. every 365 days.

Check your ozone and/or UV generator per your spa manufacture's instructions.

`SRVC` `CHEK`   Alternates with temperature or normal display.

Appears on a regular schedule, e.g. every 365 days.

Have a service technician do a check-up on your spa per your spa manufacturer's instructions.

47

TP-700 available on Patio Plus 759 L and B Models only.
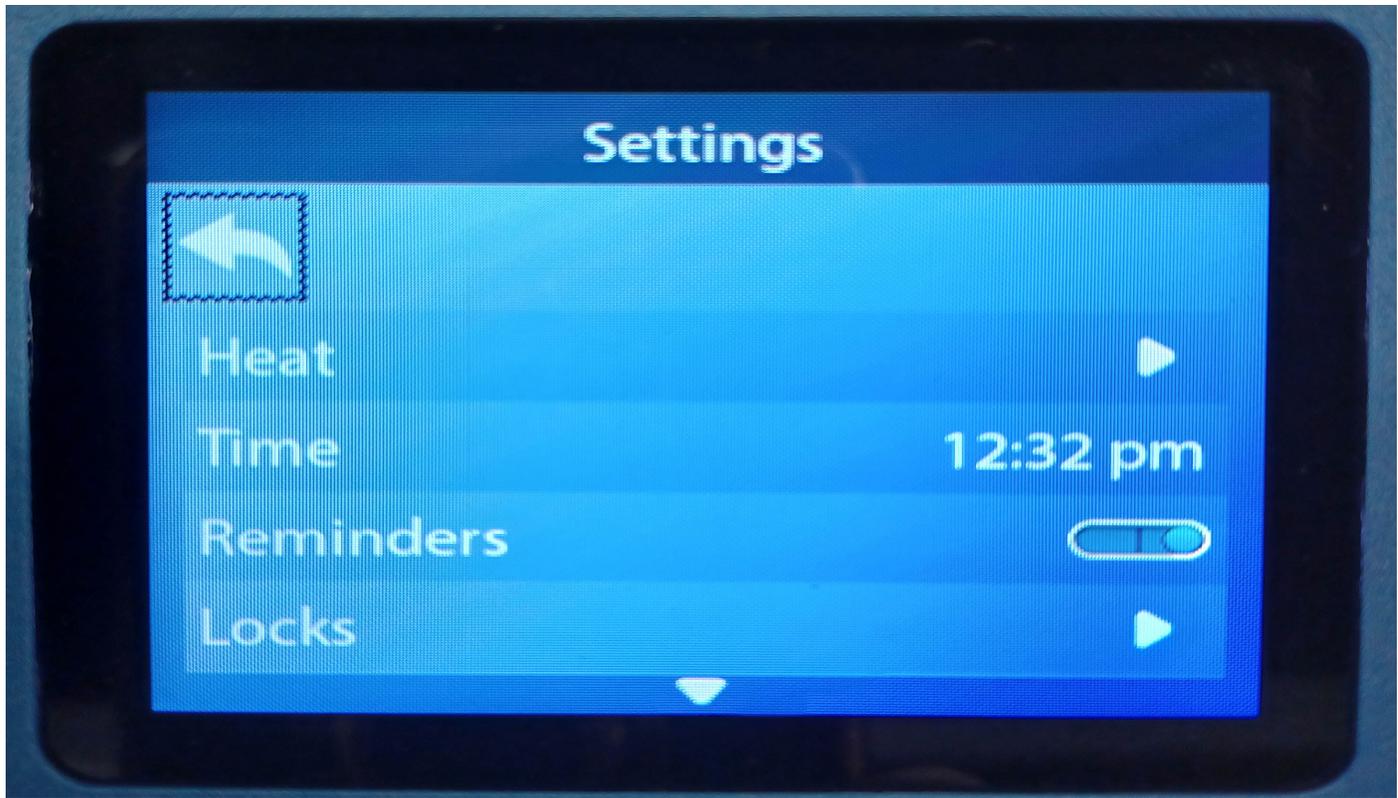
THE MAIN SCREEN

Main Screen
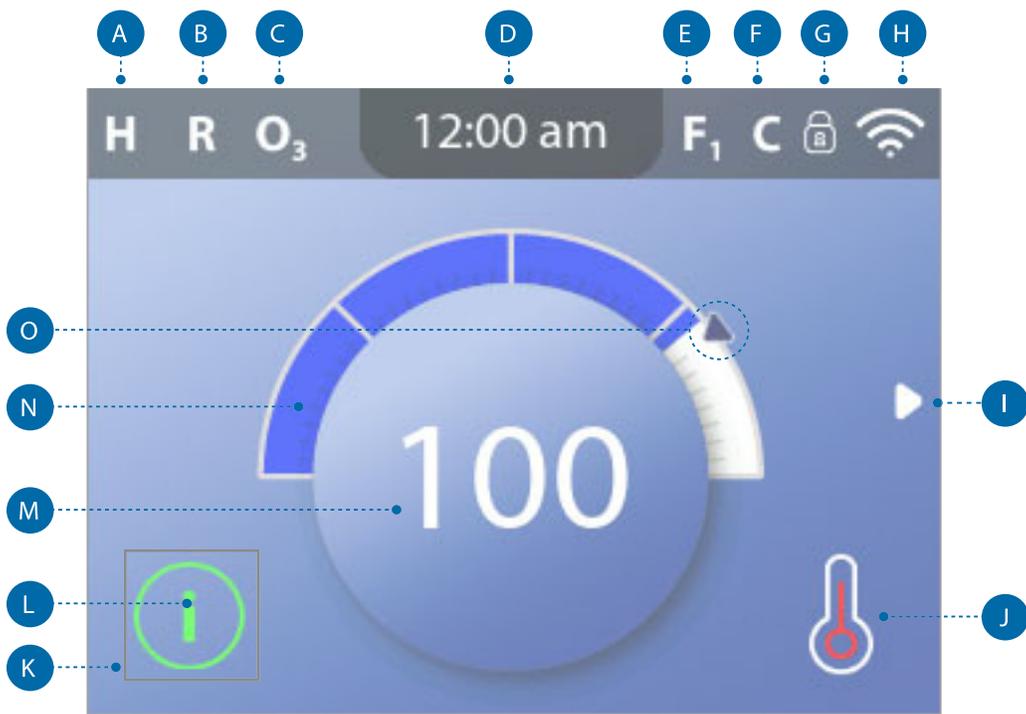
Main Screen

MAIN SCREEN ICONS

A - Temperature Range

      High: **H**

      Low: **L**

B - Heat Mode

      Ready: **R**

      Rest: **⊭**

      Ready-in-Rest: **RR**

C - Ozone Running: **O₃**

D - Time-of-Day

E - Filter Cycles

      Filter Cycle 1: **F₁**

      Filter Cycle 2: **F₂** (Optional Feature)

      Filter Cycles 1 & 2: **F₊**

F - Cleanup Cycle (Optional Feature)

G - Panel Locked and/or Settings Locked

H - WiFi (Local or Cloud Connection)

I - Navigation Arrow

J - Heat Status

K - Selection Box

L - Message (May Appear)

      ⓘ Information

      Ⓡ Reminder

      ⚠ Error - Normal Error or Warning

      ⚠ Error - S pa will not function until fixed

M - Water Temperature

Fahrenheit temperatures are displayed without decimal points. For example, 100 ° F is displayed as 100.

Celsius temperatures are displayed with decimal points. For example, 37.5 ° C is displayed as 37.5.

N - Water Temperature Bar

O - Set Temperature Arrow

Important information about the current state of your spa is displayed on the Main screen.

USER INTERFACE

Spa Device Buttons   Control Panel   Navigation Buttons

Spa Device Buttons

These buttons control various spa devices, such as Jets, Lights and/or Blowers.

Navigation Buttons

Navigate the entire menu structure with the 5 navigation buttons on the control panel.

The names shown to the right refer to the navigation buttons in this user guide. The names will be written in uppercase letters.

Operating or changing a selected item on the panel screen is generally done with the SELECT button (center button).

Selection Box

The Selection box is a fundamental navigation tool. It indicates a selected item. Move the selection box by pressing the UP, DOWN, LEFT, RIGHT Navigation buttons. When an item is selected, press the SELECT navigation button to act upon the selected item. The next page shows various examples of selected items (C, I, L).
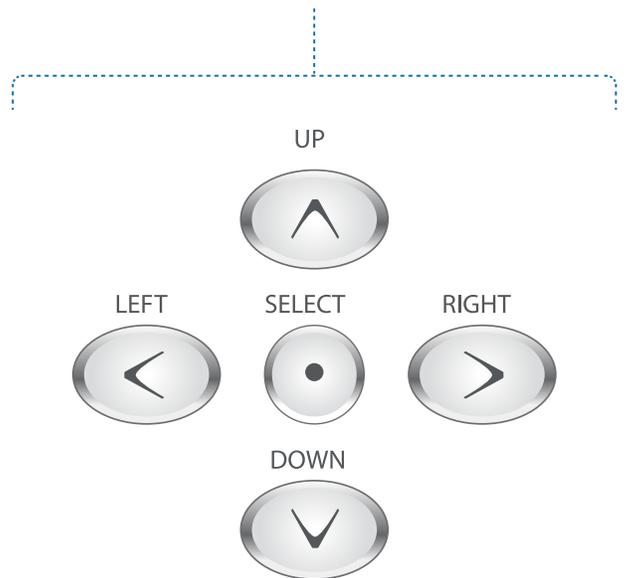
Main Screen

Menu Navigation

The right Navigation arrow (A) on the Main screen indicates a menu. Press the RIGHT navigation button to enter that menu.

A selection box (C) indicates that a menu item is selected. When a menu item is selected, its name appears at the top of the screen (B). In this example the Settings menu is selected. Press the SELECT navigation button to enter the Settings window (E).
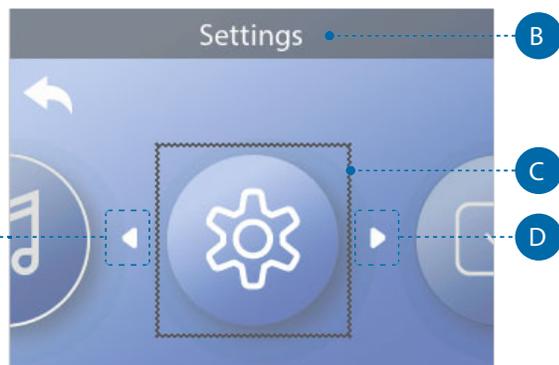
Navigation Arrows

Navigation arrows (D, F, H, M) indicate more menu items. Each navigation arrow corresponds to a navigation button (view page 8). For example, the right Navigation arrow (D) corresponds to the RIGHT navigation button. The left Navigation arrow (M) corresponds to the LEFT navigation button, etc.
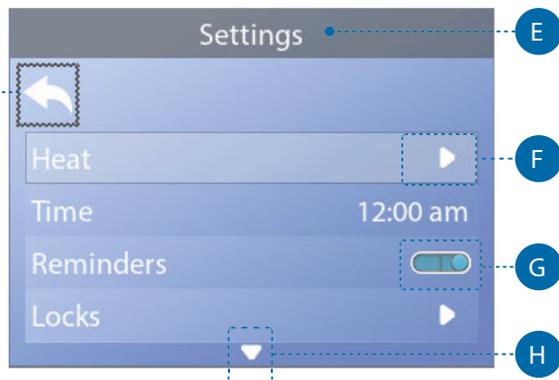
Back Button

Use the Back button (L) to navigate back in the menus. Use the navigation buttons to select the Back button. The Selection box (L) indicates that the Back button is selected. Press the SELECT navigation button.

On/Off Switches

In this example the Reminders setting has an On/Off switch (G). When the Reminders setting line is selected, press the SELECT navigation button to turn the switch On/Off. In this example the switch is On (G).
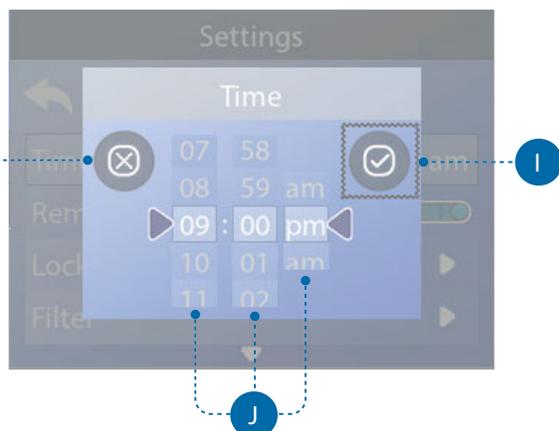
Select, Save, Cancel

Select one of these columns (J) with the RIGHT and LEFT navigation buttons. Change the selected setting with the UP and DOWN navigation buttons. After you change the settings, choose the Save button (I) and press the SELECT navigation button. After you press SELECT, the change is complete. If you decide to cancel your new settings, select the Cancel button (K) and press the SELECT navigation button.

52

Connecting to a Device or Network

1. Direct connection

    Range: About 20 feet
    Range limit: Limited to the range
                     of the wi-fi module

    HOW TO CONNECT TO IT:
    Install the app on your phone or device -- see the following section "Installing the app".

2. Through home network with no internet access

    Allows one local connection at a time

    Range: About 50 feet
    Range limit: Limited to the range of your
                     home router's signal

    HOW TO CONNECT TO IT:
    1. Install the app on your phone or device.
    2. Exit the app and go to wi-fi settings on your phone or device.
    3. Select and enable your local router.
    4. Start the app. After you connect, select Settings on the home screen.
    5. On the Settings screen, select Advanced, then on the Advanced screen, select Wi-fi Settings.
    6. On the Wi-fi screen, select WPA. Then select the name of your home router from the drop-down menu.
    7. Enter the SSID and Key for your router, the tap Save and select OK twice.
    8. Close the app and re-start it to connect to your home network.

3. Through a network with internet access, using
Cloud connection or other hotspot connection

    Internet

    Allows unlimited simultaneous connections

    Range: Worldwide
    Range limit: Limited to 3G / 4G / hotspot
                     availability

    3G or 4G
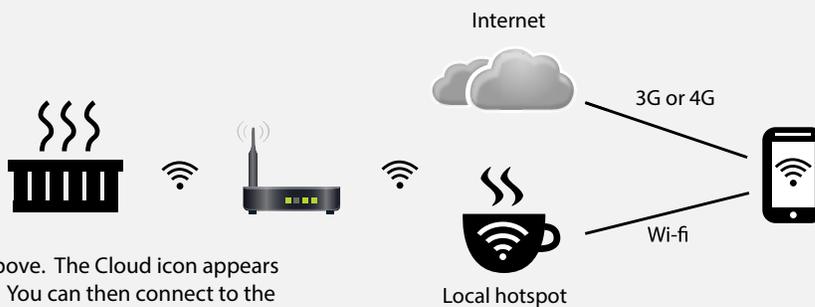
    HOW TO CONNECT TO IT:
    Follow connection instructions from section (2) above. The Cloud icon appears
    automatically when network connection is made. You can then connect to the
    spa's wi-fi module.

    Wi-fi

    Local hotspot

Your Spa	Wi-fi signal	Phone or other device	Your home network router	Internet cloud connection	Local wi-fi connection
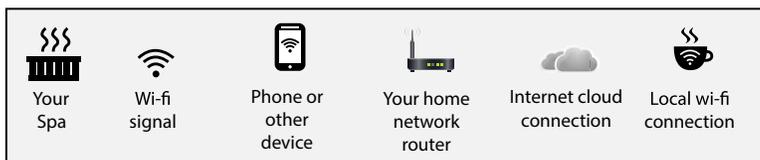
3.3 Jets

Almost all of the jets in your spa are adjustable. Rotating the face of an adjustable
jet to the left (counterclockwise) will decrease the amount of water flow through the
jet. Rotating the face of an adjustable jet to the right (clockwise) will increase the
amount of water flow through the jet. (See example shown here.)
Neck jets adjust in the opposite directions (counterclockwise to increase, clockwise
to decrease).

Adjustable Therapy System

Pump On / Off Button:

Press this button once to turn on the ATS pump. The pump will turn on full speed with letter "H" displayed in the seven segment LED, the Pump LED light on the control panel will appear and the back light will turn on if it was off previously. Press this button a second time to turn off the ATS pump, the Pump LED light, and clear the seven segment display. The ATS pump must be on before you can use any other features of this system.

Pulse Mode Button:

Press this button once to turn on the pulse mode. The last pulse mode number will be displayed and the ATS pump will run in the pulse mode that it displays. There are total of 9 pulse modes and user can choose the Up or Down button to select the desired pulse mode. Press this button a second time to turn off pulse mode and return to normal pump on with letter "H" displayed. See the image for 9 pulse mode descriptions.

Up / Down Buttons:

These buttons only activate when pulse mode is on. They allow you to cycle through 9 pulse modes. At the end of pulse mode 9, if the Up button is pushed the system will go to "DEMO" mode. In DEMO mode, the system will cycle through all 9 pulse modes with 30 seconds for each mode and flashing letter "d1" through "d9" while cycling through each pulse mode. At the end of demo pulse mode 9, the system will exit the demo mode and return to normal Pump On with letter "H" displayed.

Time Out:

The Pump On will run for 15 minutes, then automatically shut off. If the Pulse Mode button is pressed during this time, the timer will reset and allow Pulse Mode to run for 15 minutes, then automatically shut off. For another 15 minutes session, press the Pump On and the Pulse Mode button. Back light will timeout 30 minutes after Pump Off.

Pump Protection:

If the pump is getting too hot during pulse mode (or after stop), the Pulse Mode will stop and ATS system will automatically go to a cool down cycle. During cool down cycle, the pump will turn on full speed with flashing letter "C" displayed in the panel. The ATS system will run 5 minutes and then turn off. Pulse Mode is disabled during cool down cycle.

Pump Purge:

To prevent water stagnantion for a long time in the ATS system, the ATS system will purge water once a day. Every 24 hours from the last system run, the ATS system will turn on full speed for 20 seconds with flashing letter "P" displayed in the panel.

Optional Feature

1 Low rolling bursts

2 Medium continuous bursts

3 Accelerated continuous bursts

4 Swift rolling bursts

5 3 gentle bursts followed by 1 vigorous burst

6 Quick, powerful continuous bursts

7 Gentle, powerful alternating bursts

8 Medium low rolling bursts

9 Extended low rolling bursts

ATS Sensor:

ATS sensor is used to monitor temperature to prevent ATS system from freezing or getting too hot. If temperature is too cold, the ATS system will turn on full speed with flashing letter "F" displayed in the panel. If it is too hot, the system will turn on full speed with flashing letter "C" displayed in the panel. In these cases, it will run until pump temperature goes back to normal and the system will shut down automatically.

If ATS sensor is not connected or not mounted to the system correctly, a flashing letter "E" will display in the panel when system is not running. With sensor error (flashing "E"), ATS system is still be able to operate normally but after the first 15 minutes of pulse mode, a flashing "L" will display in the panel. After the second 15 minutes of pulse mode, the system will force a cool down cycle for 30 minutes before user can use it again. There will be no freeze protection for sensor error and in some pulse modes the system will run very hot so user should fix the problem as soon as they can to enhance the pump life. ATS system has freeze protection that is activated at 45°F and will run until 50°F, then it will shut off.

3.5 LED Lighting

Press the LIGHT button on the topside control panel to turn the spa light on. If your spa has perimeter LED lights, they will also light on. If your spa has perimeter LED lights, they will also light up at the same time as the spa light.

The LEDs operate in three modes:

1. **Cycle:** When you continually press the LIGHT button, the LEDs will cycle through the three main LED colors (Red, Green, and Blue) or combinations of the three that produce the following colors: light green, purple, light blue, yellow, etc.
Each time you press the button, you immediately advance ti the next color in sequence or eventually a different light pattern.

2. **Flashing:** Once you have cycled through all of the colors, another press of the LIGHT button will produce a flashing pattern.

3. **Fading cycle:** The next phase of operation when you push the LIGHT button is a slow and/or fast fade random transition from one color to the next.
- If a spa is equipped with more than 100 points of light the slow fading cycle will flicker during a color change.
- Every air valve is equipped with 2 LED points.
- Perimeter LEDs take 9 points of light.
- The waterfall takes 4 points of light.

Spas with exterior corner LED lighting generally work in the same mode as described above. The variations in color and patterns provide you with multiple options to suit almost any lighting preference.

3.6 Diverter Knobs

Diverter knobs are 1" and 2" knobs located around the top of your spa. They allow you to divert water through jets from one side of the spa to the other, or in most cases from floor jets to all jets. This is accomplished by rotating the diverter knob to the left (counter-clockwise), decreasing the amount of water flow through a sections of jets. To increase the amount of water flow through the other section of jets, rotate the handle to the right (clockwise).

Optional Feature

3.7 Turbo Diverter Whirlpool Jet

Optional Feature

THE TURBO DIVERTER WHIRLPOOL JET IS TURNED COUNTER-CLOCKWISE TO GENERATE 4 MODES:
1) WATER COMES DIRECTLY OUT OF THE DIVERTER.
2) ALL RIGHT SIDE JETS (BUT NOT DIVERTER ITSELF).
3) ALL JETS ON BOTH SIDES.
4) ALL LEFT SIDE JETS (BUT NOT DIVERTER ITSELF).

LEFT

TURBO DIVERTER WHIRL-POOL JET

RIGHT
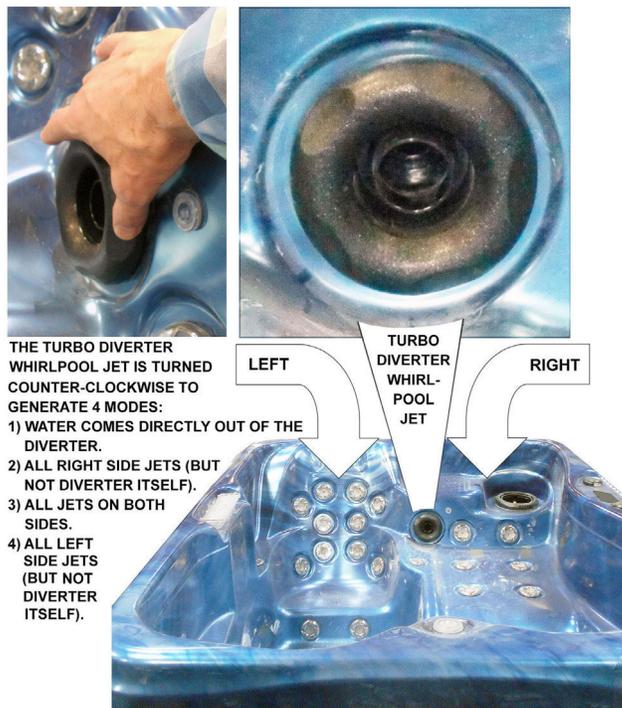
3.8 Air Venturis

Air venturis are the 1" knobs located around the top of your spa. Each one will let you add a mixture of air with the jet pressure. This is accomplished by rotating the air venturi knob to the left (counter-clockwise) to increase the amount of airflow through the jets. To decrease the amount of airflow through the jets, rotate the handle to the right (clockwise).

3.9 Waterfalls   **Optional Feature**

Some spa series include optional waterfalls. When the booster pump is on, rotate the dial on top (for the cascade waterfall).
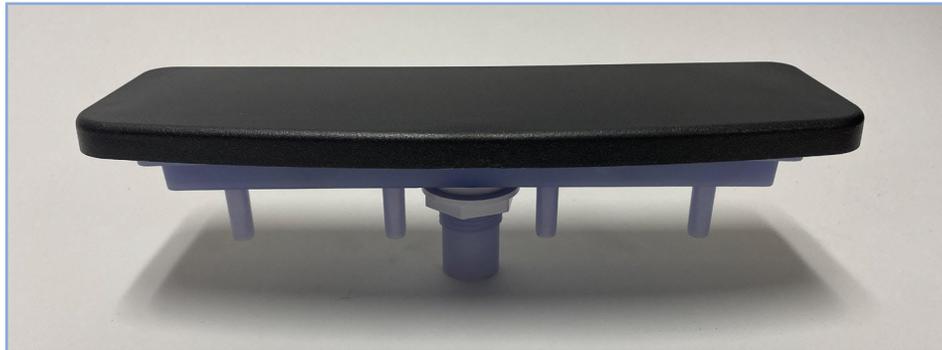
3.10 Hydro Streamer Waterfall   **Optional Feature**

Your spa may include two to eight streamer waterfalls. When the booster pump is on, turn the 1" diverter knob to adjust the rate of flow to the waterfall jets.

The waterfall jet faces are not adjustable. Do not turn the jet faces because you may accidentally remove them.

Always shut off water to the hydro streamer jets before you place the cover on the spa. Water from the hydro streamer jets sprays in an arc that is higher than the top surface of the spa. When water from the hydro streamer sprays the bottom of the cover, it will collect and run to the edge of the spa and drip over the top.

4. Water Clarity

This section is intended for new spa owners with no experience with water chemistry. Everyone's knowledge with maintaining water quality is different, but there are some general concepts you need to know.

Water maintenance is not difficult, however, it does require regular attention. The most important thing to understand about taking care of your spa water is that preventative action is much easier than correcting water quality issues.

Before you begin, we recommend you become familiar with some water quality terms and their definitions (see the section below).

Whether you're filling your spa for the first time (see page 12) or refilling it after draining it for regular maintenance (see page 43), start and maintain your spa water by following the plan we describe in this section.

1. Chemical Balance

See page 31 to learn how to balance your spa water.

You will need to test and adjust the chemical balance of your spa water. Although this is not difficult, it needs to be done regularly.

You need to test the level of calcium hardness, total alkalinity, and pH.

Spa owners with a bromine generator also need to check total dissolved solids and phosphates.

2. Sanitation and Shock

See page 32 to learn how to use sanitizer and shock.

Sanitizers kill bacteria and viruses and keep the water clean. A low sanitizer level will allow microbes to grow quickly in the spa water. We recommend using either chlorine or bromine as your sanitizer.

You also need to add shock to the water to stimulate the chemical sanitizer. How much you use and how often depend on frequency and intensity of use.

3. Filtration

See page 31 to learn how to balance your spa water.

Cleaning your filter regularly is the easiest and most effective single thing you can do to keep your water clear.

A clogged or dirty filter will cause the heater and pump to work harder than they need to, possibly causing them to fail.

The spa's heating system will only function with the proper amount of water flow through the system.

4. Regularity

See page 32 to learn how to use sanitizer and shock.

Clear water requires regular maintenance. Establish a routine based on a regular schedule for your spa water maintenance.

Maintaining your water quality helps the enjoyment of your spa and extends your spa's life by preventing damage from neglect and chemical abuse.

4.1 Water Quality Terms and Definitions

The following chemical terms are used in this section. Understanding their meaning will help you to better understand clear water maintenance. Words in bold type are defined in this table.

Bromine / Bromamines	<u>Bromine</u> is an efficient sanitizer chemical for spas. When used as a **sanitizer**, bromine forms compounds called bromamines. Bromine can be added to the spa or automatically generated. See page 32 for discussion on **sanitizers**. <u>Bromamines</u> are compounds formed when bromine combines with nitrogen from body oils, perspiration, etc. Unlike chloramines, bromamines have no pungent odor and are effective sanitizers.
Chlorine / Chloramines	<u>Chlorine</u> is an efficient sanitizing chemical for spas. We recommend using sodium dichlor-type granulated chlorine because it is totally soluble and nearly **pH** neutral. When used as a **sanitizer**, chlorine forms compounds called chloramines. See page 32 for discussion on **sanitizers**. <u>Chloramines</u> are compounds formed when chlorine combines with nitrogen from body oils, perspiration, etc. Chloramines can cause eye irritation as well as having a strong odor. Unlike **bromamines**, chloramines are weaker, slower **sanitizers**. To remove chloramines, see the description of **shock** below.
Calcium Hardness	Abbreviated as CH. Calcium hardness is a measure of the total amount of dissolved calcium in the water. Calcium helps control the **corrosive** nature of the spa's water and is why soft water is not recommended. The low CH level can cause **corrosion** to the equipment and can cause staining of the spa shell. See page 31 for testing for and balancing calcium hardness.
Corrosion	The gradual wearing away of metal spa parts, usually caused by chemical action. Generally, corrosion is caused by low **pH** or by water with levels of **TA**, **CH**, **pH** or sanitizer which are outside the recommended ranges.
Dichlor	Also called sodium dichlor. It is a type of chlorine and is frequently used when **shocking the water**. An effective **chlorine**-based powdered **oxidizer** and **sanitizer**. Dichlor works by oxidizing waste product in the water such as **bromamines** and **chloramines** and causing them to burn off.
Monopersulphate or MPS	Frequently used when **shocking the water**. An effective non-chlorine-based powdered **oxidizer** that works well with both **chlorine** and **bromine**. It works by oxidizing waste product in the water such as **bromamines** and **chloramines** and causing them to burn off.
Oxidizer	**Shocking the water** with an oxidizing chemical prevents the buildup of contaminants, maximizes **sanitizer** efficiency, minimizes combined **chlorine** and improves water clarity.
Ozone	Ozone is a powerful oxidizing agent which is produced in nature and artificially. Ozone forms no by-products of **chloramines** (ozone actually oxidizes chloramines) and will not alter the water's **pH**.
pH	The pH level is the measure of the balance between acidity and alkalinity. Low pH causes the water to be too acid, which will cause **corrosion**, whereas high pH causes the water to be too alkaline, which will cause **scaling**. See page 32 for testing for and balancing pH.
ppm	The abbreviation of "parts per million", the standard measurement of chemical concentration in water. Identical to mg/l (milligrams per liter).
Sanitizer	Sanitizer is a chemical added to the water to kill bacteria and viruses and keep the water clean. The two sanitizers we recommend are **chlorine** and **bromine**. See page 31 for discussion of sanitation.

|	
Scale	Rough calcium-bearing deposits that can coat spa surfaces, heaters, plumbing lines and clog filters. Generally, scaling is caused by mineral content combined with high **pH**. Additionally, scale forms more readily at higher water temperatures.
Shock	Also called shocking the water, shock treatment, or superchlorination. Shocking the water is adding significant doses of **dichlor** or **MPS** to **oxidize** non-filterable organic waste and to remove **chloramines** and **bromamines**. Shock treatment breaks down organic waste contaminants which cause odor and cloudy water. See page 32 for discussion of shocking the water.
Total Alkalinity	Abbreviated as TA. Total alkalinity is the measure of the total levels of carbonates, bicarbonates, hydroxides, and other alkaline substances in the water. TA is important for **pH** control. If the TA is too low, the **pH** will fluctuate out of control, and if it is too high, the **pH** becomes difficult to stabilize. See page 31 for testing for and balancing total alkalinity.
Trichlor	Used as a pool **sanitizer**. NEVER use trichlor in a spa. Trichlor is extremely acidic and will lower the **pH**, causing corrosion to equipment. Using trichlor will void your warranty.

4.2 Water Testing Methods

There are two testing methods to choose from:

Test strips are a convenient testing method commonly used by spa owners.
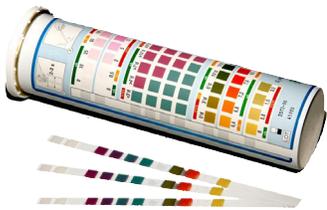
The reagent test kit is a method which provides a high level of accuracy but is more expensive and more difficult to use.

4.3 Adding Chemicals to the Spa Water

IMPORTANT: All spa water chemicals, including MPS (shock), chlorine, granulated pH increaser or decreaser, granulated total alkalinity increaser, calcium hardness increaser, liquid stain and scale inhibitor, and liquid de-foamer must always be added directly into or in front of the filter compartment while a jet pump is running, and it must run for a minimum of ten minutes.
1. Fold back the cover.
2. Press the Jets or Jets 1 button.
3. Carefully measure the recommended amount of chemical and slowly pour it into the filter area. Use care not to splash chemicals on your hands, in your eyes, on the spa surface, or on the siding.
4. Close the spa cover.

Warning: High sanitizer levels can cause discomfort to the user's eyes, lungs and skin. Always allow the sanitizer level to fall to the recommended range before using the spa.
IMPORTANT NOTE REGARDING SHOCK TREATMENT: After administering shock to your spa, leave the cover open for a minimum of 20 minutes to allow the oxidizer gas to vent. A high concentration of trapped oxidizer gas which may exist as a result of the shock treatment (not daily sanitation) may eventually cause discoloration or vinyl degradation to the bottom of the cover. This type of damage is considered chemical abuse and is not covered under the terms of the limited warranty.

Maintaining spa water chemistry can be tricky, especially since there are many methods of keeping your water clear and clean. Follow the maintenance schedule on page 35 to determine how often you should test your water.

NOTE: We do not recommend any brand of chemical. See page 35 for a table of common chemicals used in spas and their generic equivalents.

See a spa dealer for guidance and recommendations on spa chemicals and supplies. Various chemicals often sold under brand names, but a spa dealer can advise you on generic chemicals that are often much less costly than proprietary brands.

Balancing the Total Alkalinity (TA)

Total Alkalinity is a measure of the total levels of carbonates, bicarbonates, hydroxides, and other alkaline substances in the water. TA is referred to as the water's "pH buffer". In other words, it's a measure of the ability of the water to resist changes in pH level.

If the TA is too low, the pH level will fluctuate widely from high to low. Fluctuations in pH can cause corrosion or scaling of the spa components. Low TA can be corrected by adding sodium carbonate (pH/Alkalinity Up).

TA too high	180	
pH will be too high and may be difficult to stabilize pH	160	*Add an alkalinity decreaser*
	140	
	120	
TA balance	100	*Ideal TA balance*
	80	
TA too low	60	
pH will fluctuate wildly	40	*Add an alkalinity increaser*
	20	

If the Total Alkalinity is too high, the pH level will tend to be high and may be difficult to bring down. It can be lowered by using sodium bi-sulfate(pH/Alkalinity Down).

Once the TA is balanced, it normally remains stable, although the addition of more water with a high or low alkalinity will raise or lower the TA reading of the water.

When the Total Alkalinity is within the recommended range, proceed to the next step.
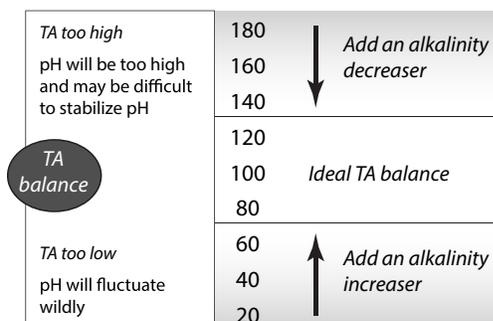
Balancing the Calcium Hardness (CH)

Calcium Hardness is a measure of the total amount of dissolved calcium in the water. Calcium helps control the corrosive nature of the spa's water. That's why calcium-low water (commonly known as "soft" water) is not recommended. It is very corrosive to the equipment, and can cause staining of the spa shell.

CH too high	275	
Causes scale to deposit on spa and equipment	250	*Dilute the spa with soft water*
	225	
	200	
CH balance	175	*Ideal CH balance*
	150	
CH too low	125	
Causes equipment corrosion	100	*Add a calcium hardness increaser*
	75	

If the CH is too high (commonly known as "hard water"), formation of scale on the spa's shell surface and equipment can result. You can use a generic calcium remover to remove hardness from water. CH can also be decreased by dilution – a mixture of 75% hard and 25% soft water will usually yield a reading within the correct range. If soft water is not available or practical for you, a stain and scale inhibitor should be added to the spa water, according to label instructions.

If the CH is too low add CH Increaser.

Once the CH is balanced, it normally remains stable, although the addition of more water with a high or low calcium content will raise or lower the CH reading of the water.

When the CH is within the recommended range, proceed to the next step.
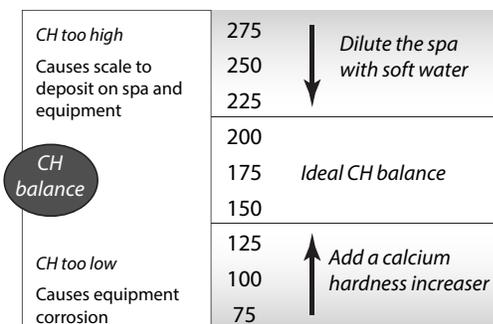
The pH level is the measure of acidity and alkalinity. Values above 7.8 are alkaline; those below 7.2 are acidic. Maintaining the proper pH level is extremely important for optimizing the effectiveness of the sanitizer, maintaining water that is comfortable for the user, and preventing equipment deterioration.

If the spa water's pH level is too low, the following may result:
- The sanitizer will dissipate rapidly.
- The water may become irritating to spa users.
- The spa's equipment may corrode.

If the pH is too low, it can be increased by adding sodium hydrogen carbonate (pH/Alkalinity Up) to the spa water.

If the pH level is too high, the following may result:
- The sanitizer is less effective.
- Scale will form on the spa shell surface and the equipment.
- The water may become cloudy.
- The filter cartridge pores may become obstructed.

pH too high	8.2	Add a pH decreaser
Too alkaline, causes scaling	8.0	
	7.8	
	7.6	
pH balance	7.4	Ideal pH balance
	7.2	
pH too low	7.0	Add a pH increaser
Too acidic, causes corrosion	6.8	
	6.6	

If the pH is too high, it can be decreased by adding sodium bi-sulfate (pH/Alkalinity Down) to the spa water.

NOTE: After adding sodium hydrogen carbonate or sodium bi-sulfate, wait two hours before testing the water for pH. Measurements taken too soon may not be accurate.

It is important to check the pH on a regular (weekly) basis. The pH will be affected by the bather load, the addition of new water, the addition of various chemicals, and the type of sanitizer used.

When the pH is within the recommended range, proceed to sanitation.

4.5 Sanitation and Shock

Sanitizers kill bacteria and other organic waste by breaking them down to non-harmful levels which are filtered out. Before you fill your spa, you need to decide which chemical sanitizer you wish to use. Consult your Cal Spas dealer for the right decision with regards to your lifestyle and spa usage.

We recommend either **bromine** or **chlorine** as your sanitizer. Both work well when maintained regularly

NOTE: DO NOT use Trichlor. Trichlor is very acidic and the hot temperature of the spa causes it to dissolve too quickly. It will cause damage to your spa and will void your warranty.

Whichever plan you decide on, follow it completely and don't take shortcuts. It will provide you with clean, safe, clear spa water with a minimum of effort. Spa owners with an ozonator still need to use a chemical sanitizer. See page 38 for a description of how the ozonator works.

Whenever you test your chemical levels, your test strip will likely have a test for chlorine or bromine. Make sure your sanitizer falls within the range shown on the next page.

| | Ideal Range (ppm) | |
Testing For:	Minimum	Maximum
Chlorine Level		
Without ozonator	3.0	5.0
With ozonator	2.0	4.0
Bromine Level		
Without ozonator	6.7	11.0
With ozonator	5.7	10.0

Starting and Maintaining Sanitizer levels

Sanitizing your spa with chlorine or bromine is very similar. Each sanitizer has its advantages and disadvantages.

Bromine: Whereas chlorine can sometimes cause offensive odors and skin irritation, bromine is less likely to do so. Additionally, unlike chlorine, when bromine combines with bather waste and other contaminants in the water, it remains a very effective sanitizer. Bromine is also far less pH-dependent than chlorine. **Always remember that bromine by itself is not a sanitizer, and it needs to be activated by shock in order to be effective.**

Chlorine: The most commonly recognized sanitizer is chlorine. However, the effectiveness of chlorine depends heavily on the pH level of the spa water. In order to get the most effective and economical benefit of chlorine, you must maintain a consistent pH level of between 7.2 to 7.6. A disadvantage of using chlorine is that when chlorine combines with bather waste and other contaminants in the water, not only does it lose its sanitizing ability, it can cause odors and irritate eyes and skin.

After you choose a sanitizer, you will need to establish a baseline and maintain it regularly.

Starting with fresh water:

1. Establish a baseline by adding either granulated chlorine or bromine.
   - Use half an ounce of chlorine for every 500 gallons of water.
   - Use half an ounce of bromine for every 100 gallons of water.
2. Run the jets for 10 minutes.
3. Test the water. Make sure the pH, TA, and CH levels all fall within the ranges shown on the previous page. Make adjustments where they are needed.
4. At this point, if you use bromine, it is not yet activated and it will not sanitize the water. You need to shock-oxidize the spa water. Depending on the size of your spa, add one to two ounces of shock. You can use any kind of shock you want.
5. Test the water again. When the water is balanced, your spa is ready to use.

Note: If you choose to use bromine, we do not recommend using a floater. You have more control over the bromine level by adding bromine as needed. For more discussion on this, see page 36, "Common Water Chemistry Questions".

Shocking the Water

In addition to using a chemical sanitizer, you will periodically need to shock the water. Shocking the water helps remove burned-out chemicals, bacteria, and other organic material from your spa's water and improves your sanitizer's effectiveness.

Do not use chlorinating shock, which will damage your spa's jets and pump seals. Only use an oxidizer shock. It can be used with either chlorine or bromine sanitizers.

Add two ounces of oxidizer shock per 500 gallons once a week, after heavy bather loads, or if water has a strong odor.
Spa must be running with all of the jets on high for 30 minutes with the cover open. If necessary, repeat oxidizer shock in 30 minute intervals.

4.6 Filtration

The filter is the part of your spa that removes the debris from the water and needs to be cleaned on a regular basis to maximize your spa's filtering performance and heating efficiency.

It is extremely important that you never run the spa without a filter. There is a possibility that debris may be sucked into the plumbing through the filter well.

Changing the NEO Filtration System

FILTER CYCLES: set up filter cycle start time, duration and date for filtering the spa. For FILTER CYCLE 1 and 2, if duration is set to zero the system will do a purge cycle at the start time setting. With FILTER CYCLE highlight press MENU to enter FILTER CYCLE 1, 2, 3, or 4 setting. Select a FILTER CYCLE and press MENU again to enter TIME/DURATION setting screen. In this screen, press MENU to move between HOURS, MINUTES and DAYS setting; UP/DOWN to change the values and RETURN to exit and confirm the setting.

Cleaning the Filter

In addition to spraying off the filter weekly to remove surface debris, your filter should be deep cleaned periodically to dissolve scale and particles that get lodged deep within the filter fibers and impede the filtration process. Even if the filter looks clean, scale and particles can clog the fibers and prevent water from flowing through the filter resulting in the most common spa problem—no heat, caused by a dirty filter.

We recommend you clean your filter at least once a month, possibly every two weeks depending on how frequently you use your spa, and replace it once a year or as necessary. See page 44 for instructions on removing and cleaning the filter.

4.7 Balancing the Water Chemistry Levels

Prior to each use	Test the spa water. Adjust chemical levels as necessary. Shock the water by adding ½ teaspoon of sodium dichlor per 250 gallons or 1 teaspoon of MPS per 250 gallons.
After each use	Add an ounce of oxidizer after heavy bather loads (see page 34 on shocking the water).
Once a week	Check the filter well and inside the filter pipe for leaves and foreign matter. Test the spa water. Adjust chemical levels as necessary. Shock the water by adding ½ teaspoon of sodium per 250 gallons or 3 teaspoons of MPS per 250 gallons. If your water source is high in calcium, add stain and scale preventer.
Every two to four weeks	Deep clean your spa's filter (see page 44). How often you clean your filter depends on how much you use your spa. There is no harm in frequently cleaning your filter and will only help your spa's efficiency.
Every two to four months	Change the spa water. How often you change the water depends on how much you use the spa. When you change the water, you will need to: • Clean and polish the acrylic surface (see page 47) • Clean and treat the spa cover and pillows (see page 47) • Deep clean the filter (see page 44) • Refill your spa (see page 7)
Each time you refill the spa	Follow the section "Filling and Powering Up Your Portable Spa" on page 12.

4.8 Generic Names for Chemicals

Water Chemistry		
Common name	**Usual chemical name**	**Common brand names**
pH Up	sodium hydroxide	pH Increaser, pH Up, pH Plus, pH Booster
pH Down	sodium bisulfate sodium bicarbonate (baking soda) sodium carbonate	pH Decreaser, pH Down, pH Minus, pH Subtracter, Dry Acid
Alkalinity increaser	sodium carbonate sodium bicarbonate (baking soda)	Alkalinity Increaser, Alkaline Up
Alkalinity decreaser	sodium bisulfate	Alkalinity Decreaser, Alkaline Down
Calcium increaser	calcium chloride	Calcium Increaser, Calcium Up, Calcium Plus, Hardness Increaser
Calcium decreaser	N/A To decrease calcium hardness, drain several gallons of water from the spa and refill using a mixture of 75% hard water and 25% soft water, or use a stain and scale inhibitor.	

Sanitizers

Common name	Usual chemical name	Common brand names
Chlorine	sodium dichlor	Both chlorine and bromine are available under numerous brand names
Bromine	sodium bromide	

Shock

Common name	Usual chemical name	Common brand names
MPS	monopersulphate	MPS Shock, Oxy-Spa, SeaKlear
Dichlor	sodium dichlor	Dichlor Shock

Note: Dichlor (chlorine) is both a sanitizer and a shock. Monopersulphate (MPS), when used as a shock, can be purchased alone as non-chlorinated shock or combined with dichlor, which makes it significantly more effective than MPS alone.

Other chemical additives

Common name	Usual chemical name	Common brand names
Stain and scale inhibitor	These are usually proprietary chemical formulations and cannot be purchased as a single generic chemical.	Metal Stain Gone, Scale Inhibitor, Stain and Scale Preventer, Stain and Scale Defense
Foam inhibitor		Foam Gone, Foam Down, Defoamer
Clarifier		Water Brite, Spa Bright, Water Clarifier, Clear Water, Natural Clarifier, Brite & Clear

Do NOT use these in your spa:
* Sodium hypoclorite (household bleach)
* Trichlor

4.9 Common Water Chemistry Questions

Question: Why is the use a floater not recommended to sanitize my spa water?

Answer: We do not recommend the use of a floater for three reasons:

* The floater is unable to control the rate at which the sanitizer is dissolved into the water. When a floater is first placed in a spa, the sanitizer level can be extremely high. High sanitizer levels can chemically burn or discolor the spa's shell or the underside of the cover. Then, after a period of time, the sanitizer level dispensed by the floater will fall to near zero. A low sanitizer level will allow viruses, bacteria or algae to grow.

* Floaters tend to stay in one area of the spa most of the time, causing this area to be exposed to extreme sanitizer levels.

* The floater may allow pieces of the highly concentrated sanitizer to fall out and settle on the floor or seat of the spa shell. These pieces of sanitizer will chemically burn (blister) the spa shell. Although your spa shell is specifically designed to resist the effects of spa chemicals, no spa surface can withstand this type of highly concentrated chemical. Remember, chemical abuse is specifically not covered under the terms of the warranty.

Question: When I open my spa, I smell chlorine. How do I get rid of this smell?

Answer: There are two types of chlorine in your spa. The first is the Free Available Chlorine, which is the chlorine available to sanitize your spa. This free Available Chlorine does not have an odor. The second is Chloramine, which is residue from chlorine already expended. Chloramines have a strong chlorine odor. The smell from Chloramines can be eliminated by shocking the water. If you smell chlorine in the water, your spa is reminding you to add a shock treatment.

Question: Why can't I fill my spa with soft water?

Answer: Soft water is essentially the same as regular water, except that most or all of the calcium has been replaced by sodium. Soft water may be corrosive to the heater and other components. Replacement of spa components damaged by soft water is extremely expensive.

Question: I am trying to reduce the number of chemicals to which my family is exposed. Do I really need to use so many chemicals and in such large amounts?

Answer: While over-exposure to any chemical can be unhealthy, many low levels of chemicals are effective and beneficial. In the case of spa water, the chemicals we recommend are needed to protect the user from water-borne pathogens (disease-causing microbes) and to prevent corrosion of spa components.

Question: Why isn't water chemistry damage covered by the warranty?

Answer: The chemical levels and water quality of the water in the spa are under your direct control. With proper basic care, the spa will provide many years of hot water relaxation. If you are unsure about any chemical or its usage in the spa, contact your spa dealer.

4.10 Do's and Dont's

- DO add all chemicals slowly into or in front of the filter compartment with the jet pump operating for ten minutes.
- DO use special care if using baking soda to clean either the interior or exterior plastic surfaces.
- DO use only a granular form of bromine sanitizer.
- DON'T use swimming pool (muriatic) acid to lower pH.
- DON'T splash pH increaser additives on the siding.
- DON'T use compressed sanitizers.
  The use of bromine sticks or tablets in floaters, which may become trapped in a lounge or cooling seat (or sink to the spa floor), have been shown to cause discoloration of or surface distress to a spa's shell.
- DON'T use a floater type sanitation system as a low or no maintenance solution to your spa maintenance program.
  Floating dispensers can become trapped in one area and cause an over-sanitation (or chemical burn) of that particular area.
  If the dispenser setting is too high, the high concentration can discolor the spa shell and damage the underside of the cover.
  Automatic floating dispensers have a tendency to either over-brominate or under-brominate as the rate of erosion varies greatly. Damage to the spa and cover can occur very quickly.
- DON'T use a sanitizer which is not designed for spas.
- DON'T use household bleach (liquid sodium hypochlorite).
- DON'T broadcast or sprinkle the chemicals onto the water surface. This method may cause chemically-induced spa surface blistering (chemical abuse).

4.11 Bather Load

"Bather Load" is the term used to describe the number of people using a spa, combined with the length of usage, and the frequency of usage. All these factors have a great effect on the spa water. The higher the bather load, the more chemicals need to be added and a longer filtration time will be needed.

Recommendations are designed for spas with average bather load (3 to 4 people, 15 minutes of usage, three times a week at 100 degrees). If your bather load exceeds these guidelines, and you experience water quality problems, increase the amount of filtration first, (go to the next higher filtration number) then if water quality is still not adequate, consult the advice of your Cal Spas dealer for additional chemical or system recommendations. Be sure to give them your bather load information.

4.12 Ozonator

The ozone generator releases ozone into the spa water. You will still need to test for chlorine or bromine and occasionally replenish it to return the sanitizer level to the baseline.

For spas without a circulation pump, pump 1 will run at low speed and the ozonator will run during filtration.

The spa's control system is factory-programmed with one filter cycle that will run in the evening when energy rates are often lower. The time and duration of the filter cycle can be set according to your needs. In addition, a second filter cycle can be enabled. Filtration time may need to be increased with heavy bather load.

See instructions for setting filtration cycles on 19.

Always make sure water diverter valves are turned all the way to the left or right and never left in the center position during filtration cycles. When the diverter valve is in the center position, there is not enough suction from the pump in order to inject ozone into the spa. The ozonator will generate ozone, but it will not be injected into the water.

4.13 Troubleshooting Water Clarity Problems

Problem	Probable Causes	Possible Solutions
Cloudy Water	• Dirty Filter • Excessive oils/ Organic matter • Improper sanitation • Suspended particles/organic matter • Overused or old water	• Clean filter • Shock spa with sanitizer • Add sanitizer • Adjust pH and/or alkalinity to recommended range • Run jet pump and clean filter • Drain and refill spa
Water Odor	• Excessive organics in water • Improper sanitation • Low pH	• Shock spa with sanitizer • Add sanitizer • Adjust pH to recommended range
Musty Odor	• Bacteria or algae growth	• Shock spa with sanitizer • Adjust pH to recommended range

Problem	Probable Causes	Possible Solutions
Organic Buildup/ Scum Ring Around Spa	• Buildup of oils and dirt	• Wipe off scum with clean rag - if severe, drain the spa, use a spa surface and tile cleaner to remove the s cum and refill the spa
Algae Growth	• High pH • Low sanitizer level	• Shock spa with sanitizer if problem is visible or persistent, drain, clean and refill the spa
Eye Irritation	• Low pH • Low sanitizer level	• Adjust pH • Shock spa with sanitizer and maintain sanitizer level
Skin Irritation/ Rash	• Unsanitary water • Free chlorine level above 5ppm	• Shock spa with sanitizer and maintain sanitizer level • Allow free chlorine level to drop below 5 ppm before spa use
Stains	• Total alkalinity and/or pH is too low • High iron or copper in source water	• Adjust total alkalinity and/or pH • Use a stain and scale inhibitor
Scale	• High calcium content in water - total alkalinity and pH too high	• Adjust total alkalinity and pH - If scale requires removal, drain the spa, scrub off the scale, refill the spa and balance water • Use a stain and scale inhibitor

5. Cleaning and Maintenance

5.1 Removing and Re-seating the Pillows

You can remove the pillows for cleaning and maintenance quickly and easily. This method works for all types of pillows.

Grab the lower edge of the pillow with both hands firmly and pull up. As you do this, the pillow inserts will pop out of the holes.

Re-seat the pillows by aligning the pillow inserts with the holes and striking the pillow hard enough to insert the pegs back into the holes.

Hold lower edge

Pull up firmly

Align inserts with holes

Strike pillow to snap in insert
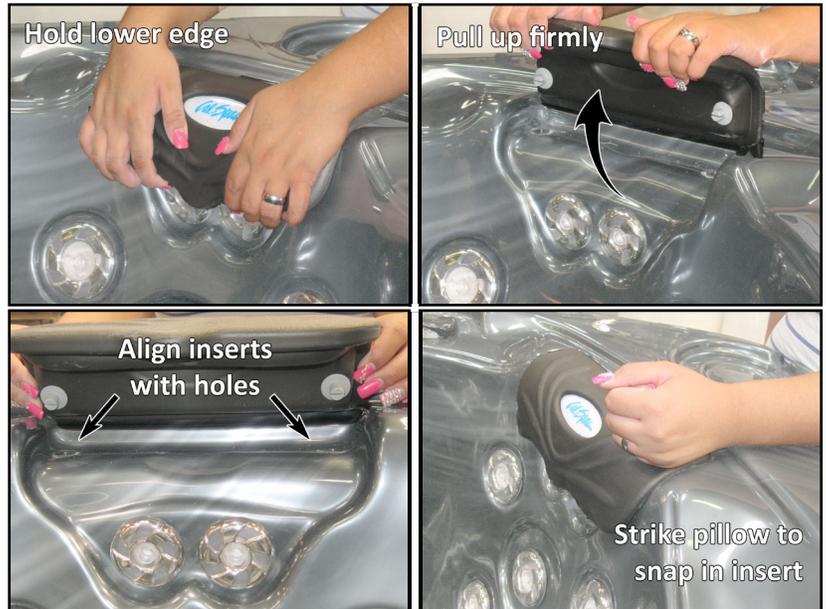
5.2 Jet Removal and Replacement

Jets can be easily removed for cleaning.

Screw-in jet removal

Grasp the outer rim of the jet and turn it counter-clockwise. The jet will unscrew from the fitting until it is free.
To replace the jet, place it in the fitting and turn it clockwise until it is snug in place and it can be rotated freely about half a turn. Do not over-tighten the jet.

Snap-in SQR jet removal

Grasp the outer rim of the jet and turn it counter-clockwise until it completely stops. You may feel it slightly loosen pop out a bit from the fixture. Pull the jet out from the jet fixture. The jet will be very snug and may require some force to remove it. DO NOT PRY OUT JETS.
To replace any jet, place it in the fitting and turn it clockwise until it snaps in and can be rotated freely about half a turn. Do not over-tighten the jet.

5.3 Cleaning the Hydro-streamers

To ensure proper flow through the hydro-streamers, follow this maintenance process should any jet(s) have diminished flow.

Step 1.

Turn the jet counter-clockwise to remove the chrome jet head.

Step 2.

Pull the chrome cap off.

Step 3.

Pull off the plastic jet opening and its gasket.

Step 4.

Pull out the inner plastic filter

Step 5.
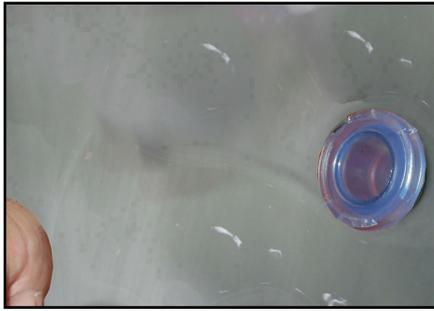
The plastic filter shown completely removed from its housing.

Step 6.

Tap the filter and/or blow out the debris to ensure all holes are clear.

Step 7.

Slide the plastic filter back in the jet.

Step 8.

Re-insert the gasket into clear plastic spout.

Step 9.

Place the gasket into the plastic spout and then insert the spout into the jet body.

Step 10.

Insert the plastic spout into the jet body.

Step 11.

Place the gasket into the plastic spout and then insert the spout into the jet body.

5.4 Draining Your Portable Spa

Your spa should be drained every four to six months for cleaning and maintenance and refilled with fresh tap water. See 56 for instructions on cleaning the shell, cover, and pillows. See page 12 for instructions on refilling your spa. Before you begin turn off power to the spa at the breaker and remove all filters.

Step 1. Locate your drain.

For spas with drain inside the spa

Using a Phillips screwdriver, remove the screws to the access panel and open it. Locate hose ending with the ¾ inch hose-bib fixture as shown below.

For spas with cabinet-mounted drain/ Optional Feature

Pull the knob out of the cabinet. The cabinet drain is screwed into the drain pull knob.

Step 2. Remove the cap.

Make sure the valve is in the closed position, then unscrew and remove the cap. Unscrew the cap.

For spas with drain inside the spa

Closed
Open

For spas with cabinet-mounted drain

Make sure valve is closed before unscrewing the cap.

(Optional Feature)

Step 3. Connect valve to a garden hose.

Attach a garden hose to the hose-bib fixture. Place the other end of the garden hose where you would like the water to drain.

For all spas

Attach hose and open valve.
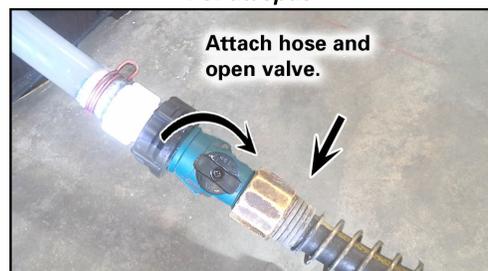
Step 4. Drain the spa.

Turn the valve on the hose-bib fixture to open the drain. When the spa has drained completely, turn the valve on the hose-bib fixture, remove garden hose and replace the cap.

5.5 Winterizing (Cold Climate Draining)

Depending on your region in your country, the temperature could drop below 32°F (0°C). If you are in one of those regions, we recommend that you always have your spa full if water and running at normal spa temperatures (80°F to 100°F, 26.7°C to 37.8°C). this will help reduce the risk of freezing water in your spa and in your spa's equipment.

WARNING: If you find the need to drain your spa, be aware of the potential of freezing in your spas equipment and plumbing. Even if the directions below are followed perfectly, there is no guarantee that your spa will not suffer freeze damage. Freeze damage is not covered by your warranty.

1. Open all filter covers.
2. Remove the filter baskets and filters.
3. Drain your spa completely as described in the instructions on page 43.
4. Vacuum water from the spa's main drain fitting with a wet/dry vacuum.
5. Open the bleeder valves on the pumps.
6. For spas with the UV lamp chamber mounted flat on the equipment floor: Loosen the quartz tube nut to let the water drain from the UV lamp chamber.
7. Disconnect the unions from both sides of the pump.

8. Blow any remaining water out of the jets and equipment area with the wet/dry vacuum.
9. When it has completely finished draining, replace the quartz tube in the UV lamp chamber and re-tighten the nut. Close the bleeder valves and re-connect the unions on the pumps. Replace the filter baskets and filters.
10. Cover your spa with a good spa cover and an all-weather tarp to ensure that neither rain nor snow enters the spa.

5.6 Cleaning and Replacing the Filter

Filtration is one of the most important steps you can take to ensure clean, clear water. It is far less expensive to fix water clarity problems by properly filtering your spa than by using excessive amounts of chemicals, excessive filtration times, or by water replacement.
See the section "Filter Cleaning on page 34 for more information.

5.7 Vacation Care

You can leave your spa unattended for up to two weeks if you follow these instructions.

ALWAYS lock your cover using the cover locks if you plan to be away from home and the spa is filled with water.

1. Select the Low Range temp choice used for vacation mode.
2. Following the water quality instructions starting on page 32, adjust the pH.
3. Shock the water (add either chlorine or bromine sanitizer).
4. When you return, check and adjust the pH and shock the water.

If you will not be using your spa for longer than 14 days and a spa maintenance service is not available, we strongly recommend you drain or winterize your spa.

5.8 Spa Cover and Locking System Installation

Important! Keep the spa covered when not in use!

- Covered spas will use less electricity in maintaining your set temperature .
- Covering your spa will protect you spa's finish from the sun's ultraviolet rays.
- You are required to keep the spa covered to maintain warranty coverage.
- Covering your spa helps prevent children from drowning in your spa.

In addition, while the spa cover is rigid, it is not designed to support any weight. Therefore, as a safety precaution and to preserve the life of your cover, you must not sit, stand, or lie on it, nor should you place objects of any kind on top of it.

Step 1. Place cover on spa. Make sure it is correctly positioned.

Step 2. Position the tie-down hardware (attached to the straps of your cover) on the side of the spa so they are easily reached by the cover tie-down straps.

Step 3. With the straps pulled taut (but not overly tight), lightly drill the location for screw placement. Gently drill 3 holes - one for each screw slot in the lock. (If you do not have a low torque drill, use the lowest torque setting on the drill you have.) DO NOT drill all the way in but instead just make a guide for starters.

Step 4. Use a screwdriver to finish screwing in the 3 screws. (Repeat this process for the other 3 corners.

Step 5. Keep the cover fastened down at all times when not in use, Locking hardware may be locked with a key (which is provided).

Step 6. The provided key will allow you to lock down spa access.

WARNING
AVOID
DROWNING
RISK

FAILURE TO FOLLOW INSTRUCTIONS MAY RESULT IN INJURY OR DROWNING
NON-SECURED OR IMPROPERLY SECURED COVERS ARE A HAZARD.
REMOVE COVER COMPLETELY BEFORE ENTRY OF BATHERS.
ENTRAPMENT POSSIBLE.
KEEP COVER ON SPA AND LOCKED WHEN NOT IN USE

5.9 Cleaning Your Spa

Spa Cover and Pillows

Due to constant punishment your spa cover and pillows receive, you should protect them by applying a vinyl and leather cleaner as part of your monthly maintenance plan. Use a product that is specifically designed to protect spa covers and pillows from chemical and ultraviolet light damage without leaving an oily residue behind that is normally associated with common automotive vinyl protectants.

Warning: DO NOT use automotive vinyl protectants on spa covers or pillows. These products are generally oil-based and will cause severe water clarity issues that are difficult to correct.

Spa Shell

Each time you drain your spa, before you refill it you should clean your spa shell with an all purpose cleaner and apply a coat of surface protectant.

Use a low detergent, non-abrasive cleaner specifically formulated to clean the spa without damaging its acrylic finish.

Use a non-oil based surface protectant that is specifically formulated to protect the spa's finish from the chemicals and minerals associated with normal spa use.

# 5.10 Using the Freedom Sound System

The Freedom Sound System™ entertainment option contains a Bluetooth-enabled speaker system that is available for certain Cal Spa models. Any Bluetooth-enabled device can be used to play audio through your spa.

Before you can use the sound system, you need to pair the Bluetooth module with your device. The Bluetooth module is installed within the spa cabinet. Everything can be performed with your Bluetooth device. The example shown below is from an iPhone device. Your device may appear differently. Before you begin, make sure Bluetooth is enabled on your device.

1. Select Bluetooth from your device's option list.
2. Select SWA8-6BT… from the list of available devices to pair.
3. Your iPhone device will ask for a code: the code is 0000.
4. Allow your device to pair with the spa's Bluetooth module.
5. When the devices have been connected, the device SWA8-6BT… will be highlighted.

Only one Bluetooth device can be paired with the Freedom Sound System™ at any time.

(For Android users, the systems will pair automatically - no code is needed.

Once your device is paired and connected, all sounds from your device will be played through the sound system, including system sounds and telephone.
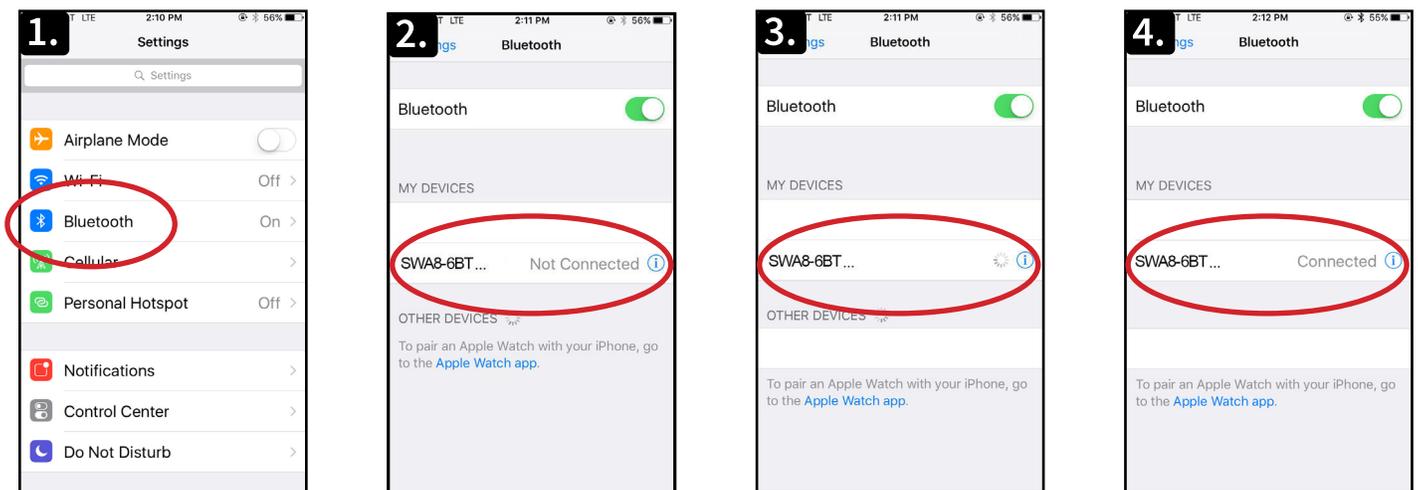
Appendix

Replacement Parts

Screw-in Jet Inserts
ELE 2" Euro No Eyeball PLUCS2295021S Used by: Patio, Patio+, Inground Spas 2"　　3"
ED 2" Euro Directional PLUCS2295051S Used by: Patio, Patio+, Inground Spas 2"　　3"
MED 3" XL Cluster Storm Directional PLUCS2295031S Used by: Patio, Patio+, Inground Spas 3"　　3½"
mfd 3" Micro Flow Directional PLUCS2295061S Used by: Patio, Patio+, Inground Spas 3"　　3¾"

Screw-in Jet Inserts
MFD 3.5" Maxi Flow Directional PLUCS2295091S Used by: Patio, Patio+, Inground Spas 3½"　　4¾"
PSD 5" Power Storm PLUCS2295131S Used by: Patio, Patio+, Inground Spas 5"　　5½"
ET 2" Cluster Storm Twin PLUCS2295161S Used by: Patio, Patio+, Inground Spas
MMP 3" Mini Multi-Massage PLUCS2295171S Used by: Patio, Patio+, Inground Spas

Screw-in Jet Inserts	Screw-in Jet Inserts
PSTR 5" Power Storm Twin Roto PLUCS2295181S Used by: Patio, Patio+, Inground Spas	**T 5" Tornado Adjustable** PLUCS2295201S Used by: Patio, Patio+, Inground Spas
MMP 5" Power Storm Riffed PLUCS2295141S **Used by:** Patio, Patio+, Inground Spas	**2" Neck Jet Directional** PLU29923-014-000 **Used by:** Patio, Patio+, Inground Spas
PST 5" Power Storm Wagon Wheel PLUCS2295191S Used by: Patio, Patio+, Inground Spas	

Water Diverter Valves

Diverter Valve 2" Titanium Black (CS600303T1-TT)
PLU21300465

Diverter Valve 1" Titanium Black (CS600426T1-TT)
PLU21300453

Air Control Valve

Air Control with Titanium Black CS660350T1-TT
PLU21300504

Drains

Drain Super Hi Flo Suction 2½" Black (640-3581LGV)
PLU21400146

Low Profile Drain ¾" Black (640-0511)
PLU21400401

Pillows

Cascade Pillow No Insert Black
ACC01401031

0   11"

Infinity Pillow Ribbed Black
ACC01401051

0   7.5"

Infinity Pillow Plain Black
ACC01401061

0   7½"

Y Pillow recess
ACC01401101

6.5"

10.75"

Filters

50 sq ft
FIL50-5D13H15FCT-3

Teleweir Skimmer

50 square foot teleweir skimmer:

Filter attaching cap assembly
FIL11700013

Filter skimmer inner pipe
FIL11700012

Waterfalls

ALXWATERFALL CASCADE SUB ASSY (Rectanagle) GRAY No logo
Part #: PLU21801050

Graphite Gray Cap, SilverHandle, 3/4" DW-17 ST HPD
Part #: PLU25056-101-000

LED Lights

1-LED light string
Part #: LIT16100330

2-LED light string
Part #: LIT16100331

4-LED light string
Part #: LIT16100332

Cover Lock and Keys

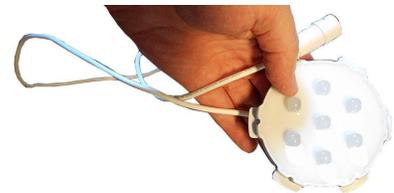**Part #:** ACC01800026, ACC01800020

LED Lights

1 to 3 ext. cord
LIT16100335

1 to 1 port ext. cord
LIT16100338

Interior light with logic (7 LED)
LIT16100333

Interior light without logic (7 LED)
LIT16100336

Main light housing, LED lens, fitting nut
LIT16100336

Replacement of Cabinet Panels

The complete selection of replacement cabinets for all models is very extensive and too lengthy for this owner's manual. To order replacement panels for your spa, visit **www.quickspaparts.com**

Covers

All spa covers are designed with a tapered height, angling downward from the center to the sides to drive off rain and prevent water from pooling. The covers listed below are filled with either 1 lb., 15. lbs., or 2.0 lbs. foam.

Basic
4" - 2.5"
1.5 lbs. foam

Deluxe
5" - 3"
2.0 lbs. foam

	Taper Dark Brown Basic	Taper Black Basic	Taper Gray Basic	Taper Dark Brown Standard	Taper Black Standard	Taper Gray Standard
64" x 84" Fits spa model: PPZ-537L	COV6484BDB-3	COV6484BBK-3	COV6484BG-3	COV6484SDB-3	COV6484SBK-3	COV6484SG-3

	Black Deluxe	Taper Black Deluxe	Taper Dark Brown Deluxe	Taper Gray Deluxe
84" x 84" (7 foot spas)	N/A	COV8484SBK-3 (Standard)	COV8484SDB-3 (Standard)	COV8484SG-3 (Standard)

Basic Troubleshooting

The troubleshooting guidance provided here is intended to cover the most common problems a spa owner may encounter. For more in-depth troubleshooting, go to www.calspas.com/troubleshooting.

Symptom	Possible Solutions
Problems starting up	
Pump won't prime	See priming instructions on page 15.
Breaker keeps shutting off	Reset the GFCI breaker. If this continues, contact your dealer or a qualified spa technician.
Power and system problems	
System won't start up or breaker keeps shutting off	Power may be shut off. Turn on GFCI circuit breaker. If this continues, contact your dealer or a qualified spa technician.
Control panel doesn't respond	Turn on or reset the GFCI circuit breaker. If this does not solve the problem, contact your dealer or a qualified spa technician.
	If you hear the pump running but the control panel doesn't respond, contact your dealer
Spa does not turn off	Spa may be trying to heat up. Check if spa is in Ready or Rest mode (see page 20)
	In cold climates, if spa is not equipped with full foam or any kind of insulation, it will try to maintain the set temperature. Set the spa to low temperature range and set the temperature to 80°F.
	Spa may be in filter cycle. If it is, this is normal and no adjustment is necessary.
Message on the control panel	There may be a problem. See Diagnostic Messages on page 20.
Heat problems	
Spa water does not get hot	Spa may be in low temperature range. Set the spa to high temperature range.
	The filter may be dirty or may need to be replaced. Clean or replace the filter.
	The water level may be too low. Fill the spa with water level at 4 to 6 inches from the top.
	The temperature is not turned up high enough. Raise temperature on topside control.
	Cover the spa. The cover will keep heat in the spa and help keep heat from escaping. Make sure cover is on at all times when spa is not in use.
	The heater element may be old, deteriorated, coated with scale, or defective. Contact your dealer for more assistance.
	The gate valves may be partially or completely closed. NEVER OPERATE YOUR SPA WITH THE GATE VALVES CLOSED!

Symptom	Possible Solutions
Spa overheats - temperature greater than 110°F / 43°C	Overheating can occur during summer months and may not necessarily indicate a malfunction. When it occurs, a message code may also appear on the control panel.
	Temperature may be set too high. Turn the set temperature down to a lower temperature.
	Filtration time may be too long. Turn the filtration cycles down during the warm months.
	The spa may not be properly ventilated. Make sure the front of the spa is not blocked to allow air flow.
	High speed pumps may have been running too long. Limit pump running time to no more than 15 to 30 minutes.

Water pressure problems

Symptom	Possible Solutions
Low water pressure	Jet valves may be partially or fully closed. Open the jet valves.
	Filter cartridge may be dirty. Clean or replace the filter.
	Pump may have airlock. Remove airlock by priming spa (page 15)
	The suction fittings may be blocked. Remove any debris that may be blocking them.
	The filter skimmer may be blocked. Remove the blockage.
	Gate valves may be closed. Open gate valves. Note: Never operate your spa with the gate valves closed!
	Spa may be running in filtration mode. Press JETS or JETS 1 button to turn on high speed pump.
No water pressure (no water stream from any jets)	Power may be switched off. Turn the power back on.
	The pump may be defective. After you have tried all other troubleshooting, contact your dealer for assistance.
Jets surge on and off	Water level may be too low. Add water to normal level.

Pump problems

Symptom	Possible Solutions
Pump runs constantly – will not shut off	There may be a problem with circuit board. Contact your dealer.
Noisy pump	The water level may be too low. Fill the spa with water level at 4 to 6 inches from the top.
	Filter cartridge may be dirty. Clean or replace the filter.
	Pump may have airlock. Remove airlock by priming spa (page 15)
	The suction fittings may be blocked. Remove any debris that may be blocking the suction fittings.
	Gate valves may be closed. Open gate valves. Note: Never operate your spa with the gate valves closed!
	Air may be leaking into the suction line. Contact your dealer for assistance.
	Debris may be inside the pump. Contact your dealer for assistance.
	Noise may be a sign of damage. Contact your dealer for service.

Symptom	Possible Solutions
Pump turns off during operation	Automatic timer may have completed its cycle. Press JETS or JETS 1 button to start the cycle again.
	Pump may have overheated due to the vents on the equipment door being blocked. Make sure the front of the spa is not blocked to allow air flow.
	The pump motor may be defective. Contact your dealer for assistance.
Pump has a burning smell while running	A burning smell may be a sign of damage. Contact your dealer for service.
Pump does not run	Pump may have over heated. Let it cool for an hour and try operating the spa for a shorter time.
	Power to the spa may be shut off. Turn on or reset the GFCI circuit breaker. If this does not solve the problem, contact your dealer or a qualified spa technician.

"Thermal Creep"

Cal Spas are designed with energy-efficient components and systems that are meant to sustain heat generated by the equipment, which is then cycled back into the spa water. In hot weather or in situations where the spa is set to extended run times, Thermal Creep may occur. Thermal Creep is a condition where the measured water temperature can be higher than the set temperature. To manage Thermal Creep you may:

Vent your cover. This means placing a folded cloth about ¾" (2cm) thick under all four corners of the cover before you lock the cover down.

Open your cover. Opening the cover at night will also quickly cool the water down if desired.

Open all air controls. Set your filtration cycles to run during the cooler times of the day or night.

Reduce the length of your filter cycles.

Visit your local dealer for additional guidance.

Since Thermal Creep only occurs in well-insulated hot tubs, it is not indicative of something that is wrong with your spa or its equipment.

Converting the NEO 1500 Electrical Configuration /Optional Feature

This bulletin provides instructions to technicians converting a spa's electrical configuration. It shows what is required to convert from 110V to 220V. It is intended for after-market electrical conversion.

There are two separate steps: hardware configuration and software configuration.

1.   Hardware configuration

Remove the jumper between SH3 and SH4.

Remove this jumper.

2.   Software configuration
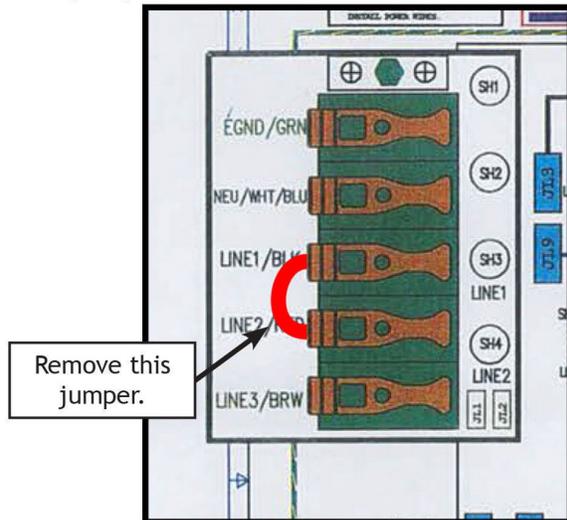
Software configuration is done entirely with the control panel.
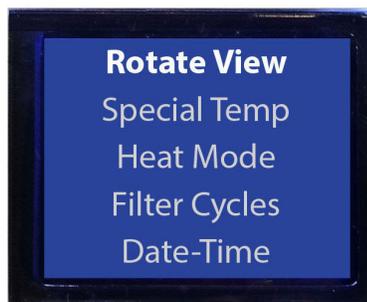

A.   ENTER SERVICE MODE AND CONFIGURATION

1. Beginning with the Main Menu on the control panel, press MENU.

You will see this screen:

2. Press WARM or COOL until you find SERVICE MODE. Highlight this selection.

2: 19 pm
74°F

Rotate View
Special Temp
Heat Mode
Filter Cycles
Date-Time

Panel Lock
Temp Lock
Service Mode
Demo Mode
Serenity Mode

3. Press the buttons MENU, WARM, COOL rapidly. You will see this screen:

Equipment Test
System Default
System Logged
Spa Light
Configuration

4. Press WARM or COOL to scroll through the Service Menu. Highlight HEATING SETUP and press MENU.

Temp Display
Aux Button Map
Heating Setup
Option Timer

You will see the Equipment Amps screen.

Equipment Amps

Pump: 12 amps

Heater: 5.5 KW

Rating: 48 amps

Continue to the next section below.

B. CONFIGURE HEATER AMPS

Use the following configurations for the Equipment Amps screen:

	1 pump	2 pump	3 pumps
Equipment Amps			
Pump:	12A	12A	12A
Heater:	5.5 KW	5.5 KW	5.5 KW
Rating:	40A	40A	48A

1. Press MENU to toggle between each setting.

2. Press WARM or COOL to change options for each setting. Use the configuration shown in the table above.

3. Press RETURN to go to the previous menu (SERVICE MODE).

Equipment Amps

Pump: 12 amps

Heater: 5.5 KW

Rating: 48 amps

Equipment Amps

Pump: 12 amps

Heater: 5.5 KW

Rating: 48 amps

Equipment Test
System Default
System Logged
Spa Light
Configuration

C. SELECT SPA COMPONENT CONFIGURATION

Use the following configurations for the Configuration Screen:

|	1 pump	2 pumps	3 pumps
Configuration	Page 1 Pre-Config 6	Page 1 Pre-Config 9	Page 2 Pre-Config 8

1. Press WARM or COOL to highlight CONFIGURATION.

Equipment Test
System Default
System Logged
Spa Light
Configuration

2. Press MENU to show the Configuration Screen.

Configuration

Page 1
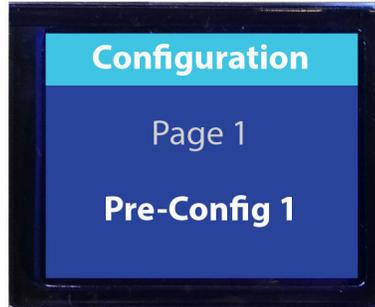
Pre-Config 1

To change the page, highlight Page, press MENU, and press WARM to select the correct page.

3. Press WARM or COOL to highlight Pre-Config. Press MENU.

Configuration

Page 1

Pre-Config 1

4. Press WARM or COOL to select the correct Pre-Config.

Configuration

Page 1

Pre-Config 6

5. Press RETURN three times to return to the main menu.

2: 19 pm

74°F

BASIC CONTROLLER DIAGRAM

P/N: NEO 1500

Rev. A

88
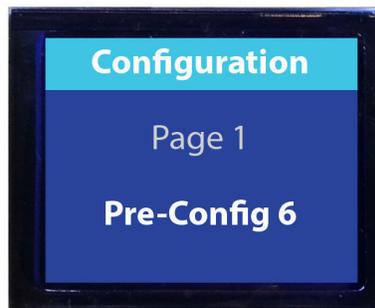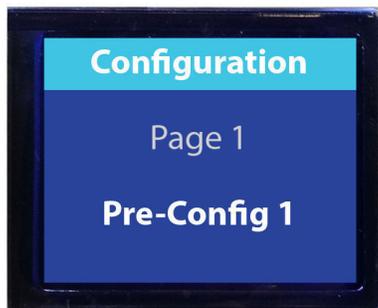
LIMITED WARRANTY

This Limited Warranty is extended to the original purchaser of a Cal Spa brand portable spa manufactured after January 1, 2022 and installed for residential use in the United States of America and Canada. This warranty begins on the date of delivery of the spa, but in no event later than one year from the date of manufacture.

Shell Structural Warranted against water loss due to defects in the spa shell.	5 years
Shell Finish Warranted against blistering, cracking, or delaminating of the interior surface of the spa shell.	5 years
Equipment and Controls Electrical equipment components – specifically limited to the pumps, standard titanium heater, and control system – are warranted against malfunctions due to defects in workmanship or materials.	2 years
Plumbing Warranted against leaks due to defects in workmanship or materials.	2 years
Cabinet - synthetic or fiberglass Warranted against defects in workmanship or materials. Normal wear and weathering of the finish will occur naturally over time and are not defects.	1 years

Warranties for Other Components

The fuses, headrests, cabinet finish, cal grip, labels, and filters are warranted to be free of defects in workmanship and material at the time of delivery. The factory installed water purification system is warranted against malfunction due to defects in workmanship or material for one year from the original date of delivery, except for the UV bulb and quartz tube, which are warranted for 90 days from the original date of the spa delivery. All stereo-related components (receiver, speakers, sub-woofer, stereo media locker, power supply, wireless remote control etc.) are warranted against malfunction due to defects in workmanship or material for one year from the original date of delivery. All other factory-installed components not mentioned specifically, including, but not limited to the wood frame, jets, diverter valves, LED lighting systems, filter lids, and mechanical components, are warranted against malfunction due to defects in workmanship and material for two years from the original date of delivery. The insulating spa cover delivered with the spa is warranted to be free of defects in workmanship and materials on Platinum spas for one year - 90 days for Escape spas.

Genuine Cal Spas Parts & Accessories

This Limited Warranty is void if Cal Spas (the "Manufacturer") or its designated representative determines that the spa has been subjected to damage or failure due to installation of aftermarket parts that are not genuine Cal Spas branded parts and accessories. This disclaimer includes, but is not limited to filters, UV bulbs, ozone systems, salt systems, repair parts and other accessories. Genuine Cal Spas brand parts and accessories are built to our highest standards of quality, durability and performance, and they are designed to work with your spa to ensure optimal performance and function.

Performance

This warranty begins on the date of delivery of the spa, but in no event later than one year from the date of manufacture.

To obtain service in the event of a defect covered by this Limited Warranty, notify your Cal Spa dealer or Cal Spas as soon as possible and use all reasonable means to protect the spa from further damage. Upon proof of purchase, a designated service representative will correct the defect subject to the terms and conditions contained in this Limited Warranty. There will be no charge for parts or labor to repair the defect, although providing access to affect the repair is your responsibility as the spa owner. Freight charges for replacement parts is the responsibility of the spa owner. You may be assessed reasonable repairman travel mileage charges.

In the event that the spa is removed to a repair facility for repair and reinstalled, the cost of removal and reinstallation will be your responsibility as the spa owner. If the Manufacturer determines that repair of the covered defect is not feasible, it reserves the right to provide a replacement spa of equal value to the original purchase price. In such an event, reasonable costs for removal of the original spa, shipping costs from the factory for the replacement spa and delivery and installation of the replacement will be your responsibility as the spa owner. The replacement spa will carry the balance of the original spa's warranty. Spa covers are not included. This warranty ends either by specified time frame, owner-transfer, relocation, or installation of any component other than by manufacturer.

Warranty Limitations

This Limited Warranty is void if Cal Spas or its designated representative determines that the spa has been subjected to alteration, neglect, misuse or abuse, or freight damage caused by the common carrier; any repairs have been attempted by anyone other than a designated representative; the failure is caused by accident, acts of God or other causes beyond the control of the Manufacturer; neglect, misuse and abuse include any installation, operation or maintenance of the spa other than in accordance with the instructions contained in the owner's manual provided with the spa, including but not limited to the failure to maintain proper water chemistry and chemical balance and the use of abrasive or improper cleaners or non-genuine parts and accessories. This Limited Warranty does not provide coverage for any item attached to or installed on the spa after the date of manufacture or for gaining access to any component for repair or replacement. Spa units in commercial use are excluded from any coverage whatsoever. The spa owner accepts liability for repair work performed by anyone other than the Manufacturer or a designated Cal Spa representative. This Limited Warranty is void if damage occurs to the spa shell because of excessive heat buildup due to failure to cover a spa that is empty of water while exposed to direct sunlight.

Proration of Warranty

Units determined by the Company to be non-repairable will be replaced on a prorated basis with the same or a comparable unit. The user will be charged one percent of the current retail cost for each full month of ownership from the date of purchase through the date failure is determined to be non-repairable. This charge will be waived during the first twelve months of ownership.

Limitations

The Manufacturer disclaims all warranties, expressed or implied, in fact or in law, to the extent allowed by your State's Law, including the warranty of merchantability and fitness for use, except as stated specifically herein. All warranty service must be performed by the Manufacturer or its designated representative using authorized Cal Spa parts. No agent, dealer, distributor, service company or other party is authorized to change, modify or extend the terms of this limited warranty in any manner whatsoever. The Manufacturer will not be responsible for any statements or representations made in any form that go beyond, are broader than, or are inconsistent with any authorized literature or specifications furnished by Cal Spas.

Disclaimers

The Manufacturer and its representatives shall not be liable for any injury, loss, cost or other damage, whether incidental or consequential, arising out of any defect covered by this limited warranty, including without limitation, loss of use of the spa and cost for removal of defective product even if the Manufacturer was advised of the possibility of damage. The liability of the Manufacturer under this limited warranty, if any, shall not exceed the original amount paid for the defective product. Coverage under this limited warranty shall commence as of the original date of delivery and the duration of such coverage shall not extend for any reason whatsoever beyond the stated time periods. These disclaimers shall be equally applicable to any service provided by the Manufacturer and its designated representatives.

Legal Rights

This Limited Warranty gives you specific legal rights. You may also have other rights that vary from state to state. Some states do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you.