

# OPERATION MANUAL

Due to our continuous improvement programs, all models, operation, and/or specifications are subject to change without prior notice.

**RLS201103 En.A**

**Your spa control system model:**

- VS/GS501Z
- VS/GS510SZ
- VS/GS523DZ
- GL8000
- Other: \_\_\_\_\_

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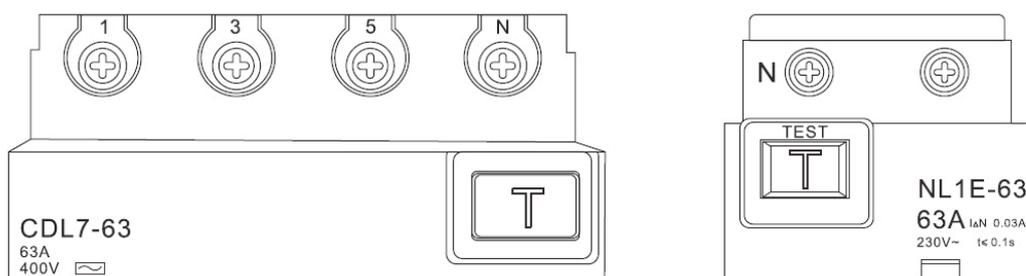
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# Electrical Installation Requirements

It is the responsibility of the spa owner to ensure that a qualified and licensed electrician performs the electrical installation. And this installation must be in accordance with the National Electrical Code; local and state electrical codes. The following information is provided for hooking up the electrical power supply to your new spa.

**⚠️ WARNING:** Do not turn on the power to your spa until you are told to do so later in this **Operation Manual**. Improper electrical connections may damage the equipment, cause injury, cause a fire, and void your spa warranty.

**IMPORTANT:** The spa must be wired with a RCD breaker. And the power supplied to the spa must be on a dedicated RCD protected circuit with no other appliances. Failure to do so will cause equipment damage and will not be covered under your warranty.



Circuit breaker selection and wiring requirements (Tab0):

Voltage /Frequency	Amp.	Phase(s)	Breaker Size (Amp./RCD)	Wire Size
220V~240V, 50/60Hz	10A	1	1x20A	3 x 4.0 mm <sup>2</sup>
220V~240V, 50/60Hz	16 A	1	1x30A	3 x 6.0 mm <sup>2</sup>
220V~240V, 50/60Hz	32A	1	1x60A	3 x 10.0 mm <sup>2</sup>
220V~240V, 50/60Hz	42A	1	1x60A	3 x 10.0 mm <sup>2</sup>
220V~240V, 50/60Hz	16A	2	2x30A	5 x 6.0 mm <sup>2</sup>
380V, 50/60Hz	16A	3	3x30A	5 x 6.0 mm <sup>2</sup>
380V, 50/60Hz	32A	3	3x60A	5 x 10.0 mm <sup>2</sup>

## REQUIREMENTS

**⚠Caution:** Your spa must be wired by a qualified and licensed electrician, and according to the instructions below. Failure to do so will terminate all warranties.

(1) The spa must be hard wired to the power supply, with no plug-in connections, extension cords, or sharing of service.

(2) The spa requires that you run 6mm<sup>2</sup> solid copper wire, depending on the size of the residual current device (RCD) that you use. Please refer to Tab0 for details. Do

not use aluminous wire. Do not use aluminous wire.

(3) The power supply must have a suitable residual current device (RCD). This could be used as the shut-off switch, which must be installed in plain view of the spa. This electrical service must be readily accessible to the spa owner, but must not be within 5 feet (1.5m) of the spa.

(4) Use only non-metallic conduit and fittings while installing power to your spa.

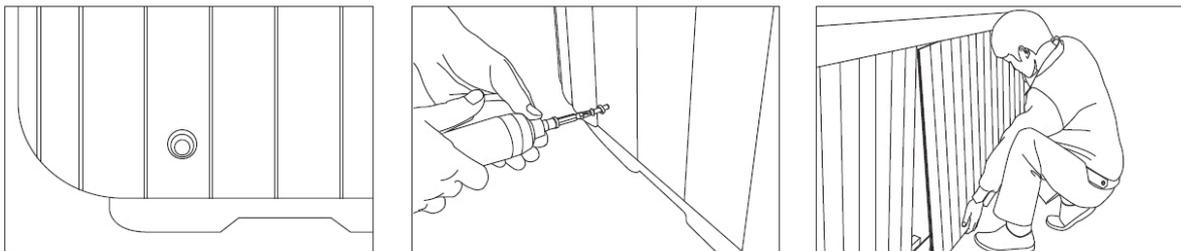
(5) After your spa has been positioned, route lines through the knockout on the left or right front corner of your spa.

(6) Connect the electrical power to your spa.

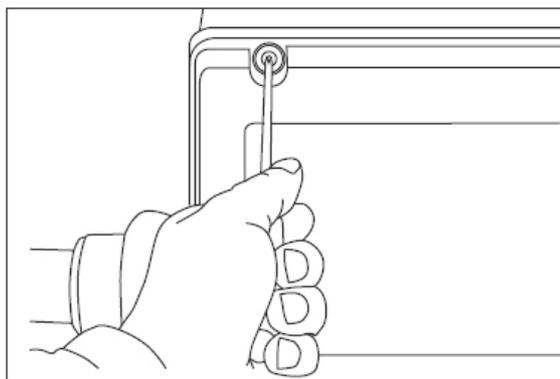
## **ELECTRICAL CONNECTIONS**

To hook up your spa, please follow the instructions below:

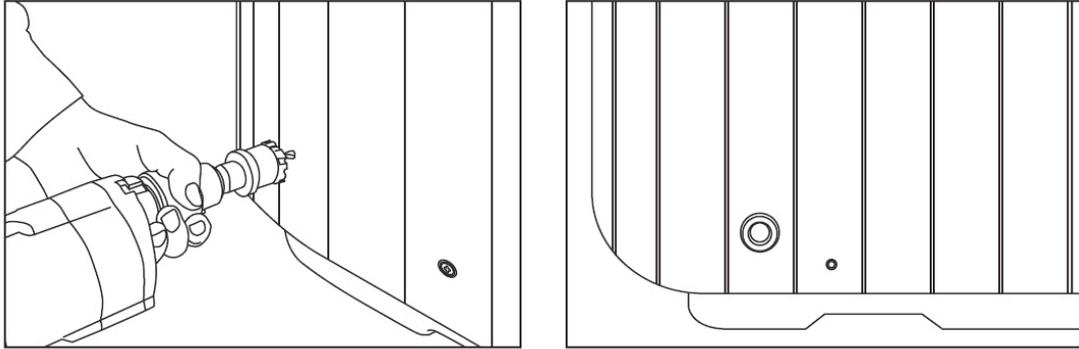
1. Remove the screws and cabinet panel on the side of the spa under the topside control panel, and then set the cabinet panel aside.



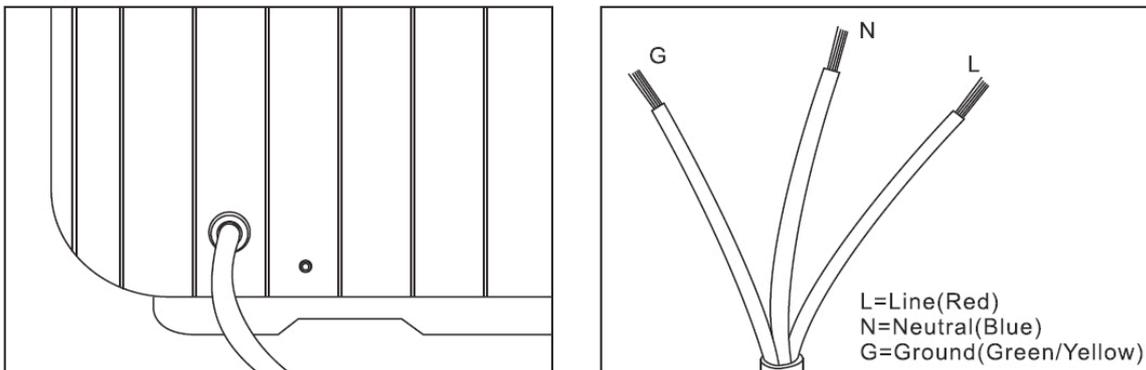
2. After removing the cabinet panel, locate the electrical control box. Loosen the screws on the front of the control box. Remove the screws and the control box cover.



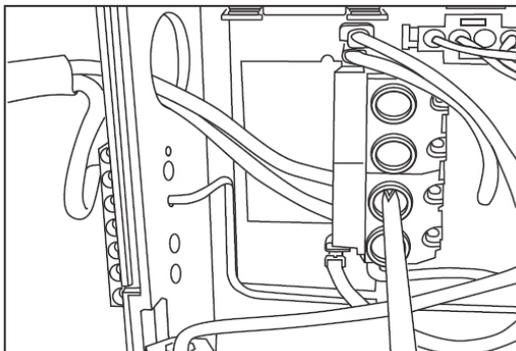
3. Run a flexible non-metallic conduit from the power source to the spa, through the hole in the left or right front corner and into the electrical control box.



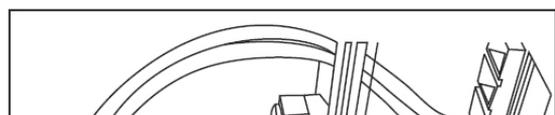
4. After pulling all lead wires through the non-metallic conduit, strip 10mm of insulation off one end of each lead wires.



5. Connect the lead wires to the proper terminals as indicated by the wiring diagram on the back of the control box cover. Make sure the wires are properly tightened.

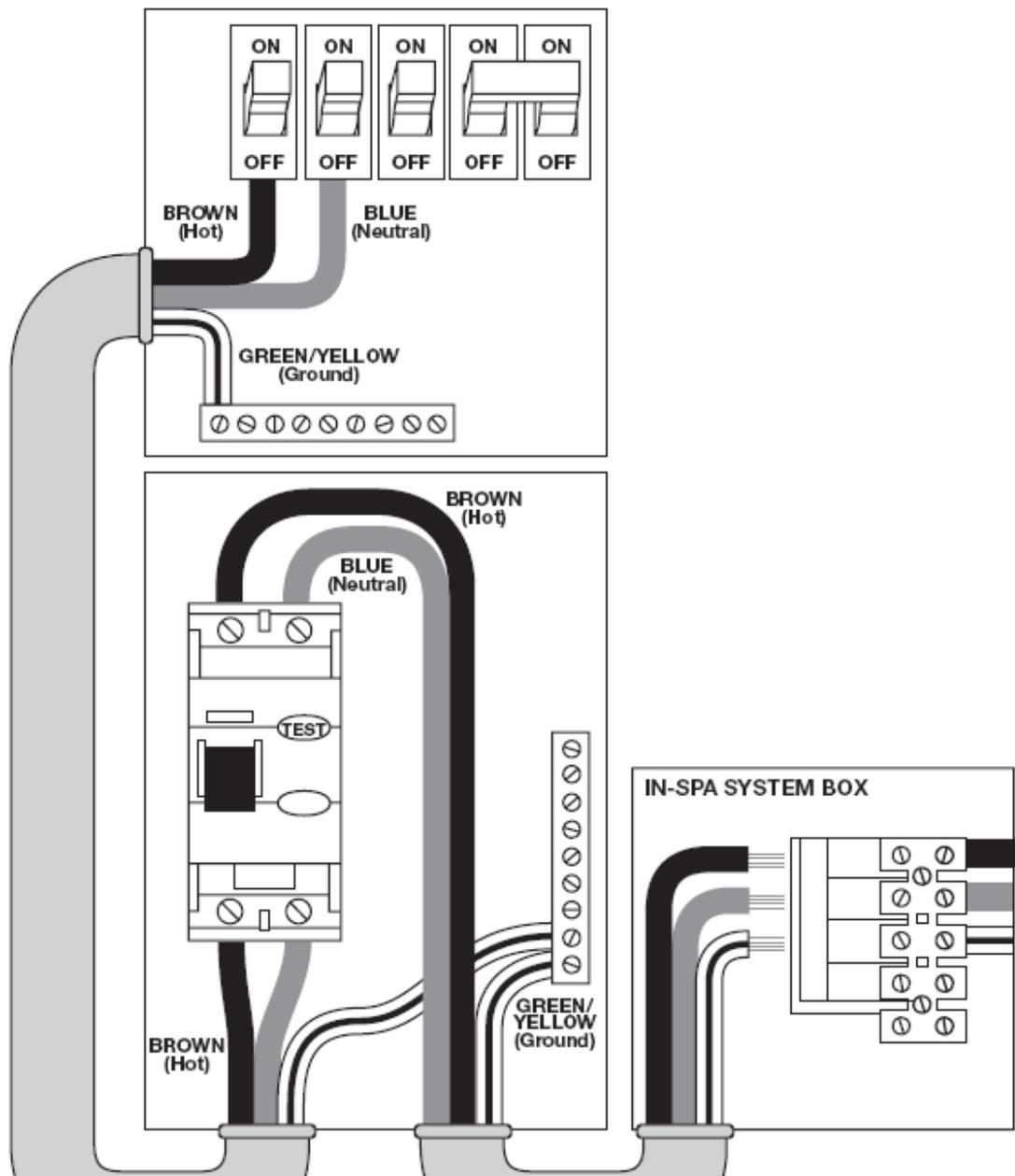


6. A grounding lug has been provided on the exterior of the control box to allow connection of a ground wire to a local grounding point to be established in



compliance with the National Electric Code (NEC) and all local codes.

7. Close the control box cover and secure with screws.
8. Electrical connection is now complete.



NOTE: This wiring diagram is meant as a guide only and not as instructions on how to wire the RCD. Different brands of RCD may be wired differently. The RCD must be wired by a qualified and licensed electrician.

# Electrical Service Configuration Options

**Default Setting:**

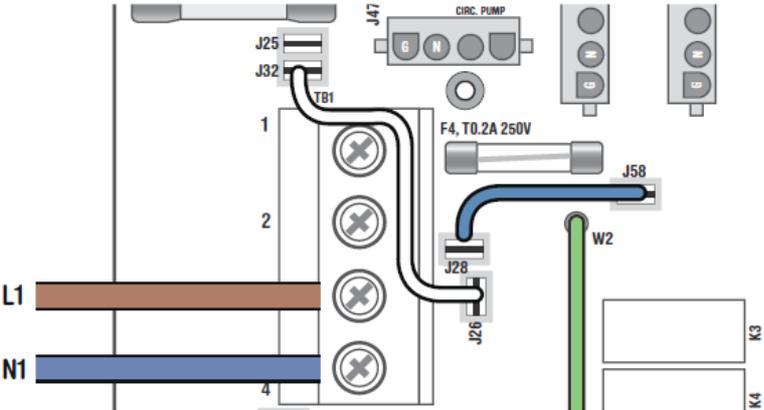
- Single Service (1 x 16 Amp)
- Single Service (1 x 32 Amp)
- Dual Service (2 x 16 Amp)
- 3-Phase Service (3 x 16 Amp)
- 3-Phase Service (3 x 32Amp)

**Single Service (1 x 16 Amp or 1 x 32 Amp)**

3 Wires (1 Line + 1 Neutral + 1 Protective Earth)

Protective Earth wire (Green/Yellow) must be connected to system ground terminal as marked.

*All equipment (pumps, blower, and heater) runs on service line L1.*



NOTE: Original wiring diagram is attached to the back of the control box cover.

**GL8000 system:**

For 1 x 16 Amp Service: DIP Switch A2, A3 and A4 must be OFF.

For 1 x 32 Amp Service: DIP Switch A2, A3 and A4 can be ON.

**Dual Service (2 x 16 Amp)**

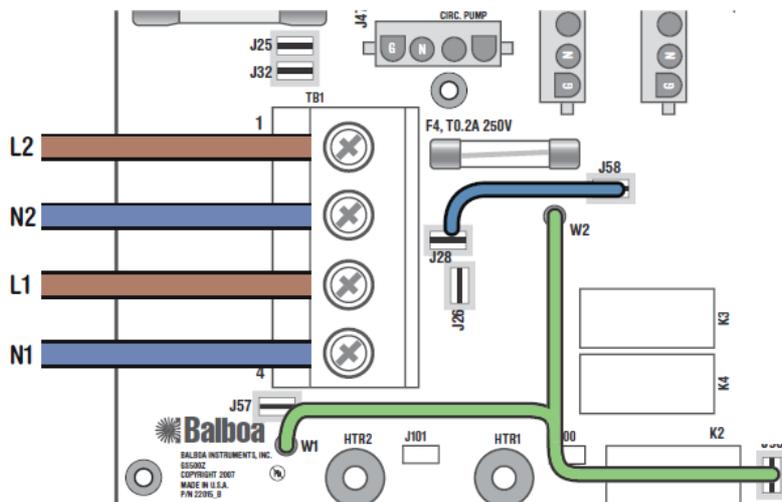
5 Wires (2 Lines + 2 Neutrals + 1 Protective Earth)

Protective Earth wire (Green/Yellow) must be connected to system ground terminal as marked.

*The heater runs on service line L1, while all other equipment, such as pumps and blowers, run on service line L2.*

Completely remove the white wire from J26 and J32, or J25.

Note: Some terminals are electrically identical. The white wire may be attached to either terminal before removal.





To an optional fuse-protected expansion board.

NOTE: Original wiring diagram is attached to the back of the control box cover.

**VS/GS5xxZ system:** DIP Switch A10 must be OFF

**GL8000 system:**

DIP Switch A2, A3 and A4 can be ON.

DIP Switch A11 must be OFF.

## Operating Instructions

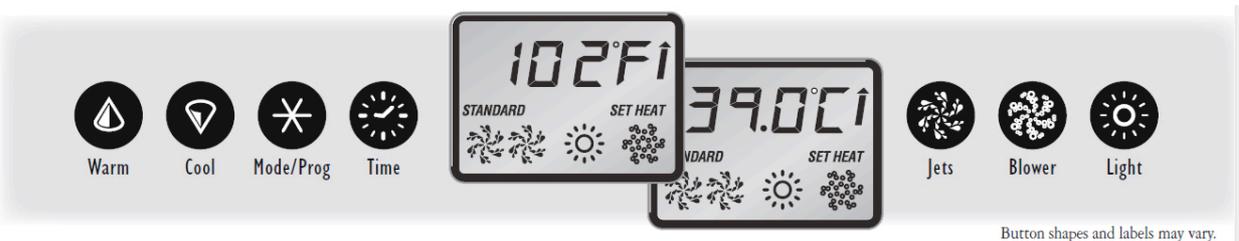
**Panel layout** (Button shapes and labels may vary)



**VL Panel for VS/GS5xxZ Series**



**VL Panel for VS/GS5xxSZ Series**



Button shapes and labels may vary.

## VL Panel for VS/GS5xxDZ Series



## ML Panel for GL Series

### Initial Start-up

When your spa is first actuated, it will go into Priming mode (after displaying some configuration information). The Priming mode will last for less than 5 minutes and then the spa will begin to heat the spa and maintain the water temperature in the Standard mode. You can exit Priming mode early by pressing "Temp" or "Warm" or "Cool" button.

### Temp Set (80°F - 104°F / 26°C - 40°C)

The start-up temperature is set at 100.4°F/38°C. The last measured water temperature is constantly displayed on the LCD.

NOTE: The water temperature displayed is current only when the pump has been running for at least 2 minutes.

**Standard Mode** maintains set temperature. "St" or "Std" or "STANDARD" will be displayed momentarily when you switch into Standard Mode.

**Economy Mode** heats the spa to the set temperature only during filter cycles. "Ec" or "Ecn" or "ECONOMY" will display when water temperature is not current, and will alternate with water temperature when the pump is running.

**(GL8000 system only):**

Press “Jets 1” while in Economy mode puts the spa in **Standard-In-Economy mode**, Which operates the same as Standard Mode, then reverts to Economy Mode automatically after 1 hour. Both the “STANDARD” and “ECONOMY” icons display in this mode. During this time, a press of the “Mode/Prog” button will revert to Economy Mode immediately.

**Sleep Mode** heats the spa to within 20°F/10°C of the set temperature only during filter cycles. "SL" or "SLP" will display when water temperature is not current, and will alternate with water temperature when the pump is running.

**Standby Mode(GL8000 system only)**

Pressing “Warm” or “Cool” then “Jets 2” will turn off spa functions temporarily. This is helpful when changing a filter. Pressing any button resets the spa. Or system will revert to previous mode after 1 hour.

**Preset Filter Cycles**

**(For VS/GS5xxZ and VS/GS5xxSZ series only)**

The first preset filter cycle begins 6 minutes after the spa is powered up. The second preset filter cycle begins 12 hours later. Filter duration is programmable for 2, 4, 6, or 8 hours or for continuous filtration (indicated by "FC" or "F1LC"). The default filter time is 4 hours for circulation systems.

For circulation systems, the circ pump and the ozone generator run 24 hours. In hot environments, the circ pump may turn off for 30 minute periods, except during filter cycles. At the beginning of each filter cycle all other equipment will run briefly to purge the plumbing.

**(For VS/GS5xxDZ series or GL8000)**

The first preset filter cycle starts at 8:00 AM and ends at 10:00 AM. The second preset filter cycle starts at 8:00 PM and ends at 10:00 PM.

**For non-circ systems**, low-speed pump 1 and the ozone generator (if installed) run

during filtration.

**For 24 hour circulation systems**, the circ pump and the ozone generator (if installed) run 24 hours. In hot environments, the circ pump may turn off for 30 minute periods, except during filter cycles.

**For non-24 hour circulation systems**, the circ pump and ozone generator (if installed) run during filtration ( and may also run automatically at other times).

At the beginning of each filter cycle all other equipment will run briefly to purge the plumbing.

### Button Function

	<b>VS/GS5xxZ</b>	<b>VS/GS5xxSZ</b>	<b>VS/GS5xxDZ or GL8000</b>
<p><b>Temp Setting:</b></p> <p>Note: After three seconds, the display will stop flashing and begin to display the current spa temperature.</p>	<p>Press "Temp" button once to display the set temperature.</p> <p>Press this button a second time before the display stops flashing. Each press of the button will continue to either raise or lower the set temperature. If the opposite direction is desired, allow the display to revert to the current water temperature and done as above.</p>	<p>Press "Warm" or "Cool" button once to display the set temperature. press a temperature button again before the display stops flashing.</p>	<p>Press "Warm" or "Cool" button once to display the set temperature. press a temperature button again before the display stops flashing.</p>
<p><b>Mode Setting</b></p>	<p>Press "Temp", then press "Light" button.</p>	<p>Press "Warm" or "Cool", then press "Mode" button.</p>	<p>Press "Warm" or "Cool", then press "Mode" button.</p>
<p><b>Filter Cycles Setting:</b></p>	<p>Press "Temp" button, then "Jets" button. Press "Temp" button to adjust. Press "Jets" button to exit the programming mode.</p>	<p>Press "Warm" or "Cool" button, then "Jets1" button. Press "Warm" or "Cool" button to adjust.</p>	<p>Press "Time", "Mode/Prog", "Mode/Prog", "Mode/Prog" within 3 seconds. <b>"SET START FILTER 1"</b> appear. Press "Up" or "Down" to</p>

		Press "Jets1" button to exit the programming mode.	reset the filter start time. Press "Mode/Prog" to see "SET STOP FILTER 1" and adjust as done above. Same process as to "SET START FILTER 2" and "SET STOP FILTER 2"
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 **Jets/Jets1/Jets2/Jets3/Jets4 (If equipped)**

Press the button once to turn the water pump on. Press the button a second time to turn the water pump off. And to shift between low and high speeds if it is a two-speed pump.

NOTE: If left running, the water pump will automatically turn off after 15 minutes.

 **Blower (If equipped)**

Press the button once to turn the blower on. Press the button a second time to turn the blower off.

NOTE: If left running, the blower will automatically turn off after 15 minutes.

 **Aux (If equipped)**

Press the button once to turn the aux device on. Such as blower or pump. Press the button a second time to turn it off.

NOTE: If left running, the aux equipment will automatically turn off after 15 minutes.

 **Light**

Press the "Light" button to turn the spa light on or off. To select a specific color, simply press the "Light" button to turn off the spa light, immediately press it again to change the spa light to the next color selection. Continue until the desired color is reached.

NOTE: If the spa light is left on, it will automatically turn off after 4 hours.



### **Time**

When time hasn't been programmed, the "TIME" icon flashes. To set the time, press "Time" then "Mode/Prog". Use the "Warm" and "Cool" buttons to adjust time.



### **Option**

Press the "Option" button once to turn the option equipment on or off.

Such as Blower.



### **Fiber**

If a fiber-optic light with wheel is installed, press the "Fiber" button once to start the light and wheel, press it again to stop the wheel, and then again to turn the light off.



### **Invert**

Press the "Invert" button to change the numbers in the display to read upside down. Press again to return the display to its normal right-side-up display.

### **Freeze Protection** (GL8000 system only)

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.

### **Locking the Panel** (GL8000 system only)

Press "Time" "Jets 1" then "Warm" within 3 seconds.

When locked, the PL "PL" light will light. All buttons are frozen except the "Time" button. To unlock the panel, press "Time" "Jets 1" then "Cool".

### **Locking the Set Temperature** (GL8000 system only)

Press "Warm" or "Cool" then "Time", "Jets 1" and "Warm" within 3 seconds to activate the lock. The TL "TL" light will light when the set temperature is locked.

### **Clean-up Cycle** (optional, GL8000 system only)

When a pump or blower is turn 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 one to four hours. (You can change this setting)

## Troubleshooting

Should you experience and problem whatsoever, please do not hesitate to contact your spa dealer. Here are some tips to help you to diagnose and rectify more common sources of trouble yourself, if you choose to do so.

Message			Meaning	Action Required
VS/GS5 xxZ	VS/GS5x xSZ/DZ	GL8000		
			No message on display. Power has been cut off to the spa.	The control panel will be disabled until power returns. Spa settings will be preserved until next power up.
--	--	--	Temperature unknown.	After the pump has been running for 2 minutes, the current water temperature will be displayed.
HH	OHH	HTR TEMP LMT	"Overheat" - The spa has shut down. One of the sensors has detected 118°F/47.8°C at the heater.	DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. Once the heater has cooled, reset by pushing any button. If

				spa does not reset, shut off the power to the spa and call your dealer or service organization.
OH	OHS	SPA TEMP LMT	"Overheat" - The spa has shut down. One of the sensors has detected that the spa water is 110°F/43.5°C.	DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. At 107°F/41.7°C, the spa should automatically reset. If spa does not reset, shut off the power to the spa and call your dealer or service organization.
SA	SnA	SENSOR A SERVICE RQD	Spa is shut down. The sensor that is plugged into the Sensor "A" jack is not working.	If the problem persists, contact your dealer or service organization. (May appear temporarily in an overheat condition.)
Sb	Snb	SENSOR B SERVICE RQD	Spa is shut down. The sensor that is plugged into the Sensor "B" jack is not working.	If the problem persists, contact your dealer or service organization. (May appear temporarily in an overheat condition.)
Sn	SnS	SENSOR SYNC	Sensors are out of balance. If alternating with spa temperature, it may just be a temporary condition. If flashing by itself, spa is shut down.	If the problem persists, contact your dealer or service organization.
HL	HFL	HTR FLOW LOW	A significant difference between temperature sensors has been detected. This could indicate a flow problem.	If the water level is normal, make sure all pumps have been primed. If problem persists, contact your dealer or service organization.
LF	LF	LOW FLOW	Persistent low flow problems. (Displays on the fifth occurrence of HL message within 24 hours.) Heater is shut down, but other spa functions continue to run	Follow action required for HL message. Heating capability of the spa will not reset automatically; you may press any button to reset.

			normally.	
dr	dr	HEATER MAY BE DRY WILL RETEST SHORTLY	Possible inadequate water, poor flow, or air bubbles in detected in the heater. Spa is shut down for 15 minutes.	If water level is normal, make sure all pumps have been primed. Press any button to reset. This message will reset within 15 minutes. If problem persists, contact your dealer or service organization.
dy	dry	HEATER DRY SERVICE RQD	Inadequate water detected in heater. (Displays on third occurrence of dr message.) Spa is shut down.	Follow action required for dr message. Spa will not automatically reset. Press any button to reset manually.
IC	ICE	FREEZE COND	"Ice" - Potential freeze condition detected.	No action required. All equipment will automatically activate regardless of spa status. The equipment stays on 4 minutes after the sensors detect that the spa temperature has risen to 45°F/7.2°C or higher. An optional freeze sensor may be added to protect against extraordinary freeze conditions. Auxiliary freeze sensor protection is advisable in colder climates. See your dealer for details.
		PRIMING MODE TAKES 4 MIN	When your spa is first actuated, it will go into priming mode.	
		HEATER DRY SERVICE RQD	Inadequate water detected in heater. (Displays on third occurrence of dr message.) Spa is shut down.	Follow action required for dr message. Spa will not automatically reset. Press any button to reset manually.
		DRAINING	The pump is on during Standby Mode to assist in draining the spa	Press Jets 1 to turn off the pump when water has drained (or power of the spa)
		CHKSUM FAIL	Firmware install problem	Contact your dealer or service organization.

		CONFIG ERROR	Configuration error. Spa cannot start up	Contact your dealer or service organization.
		GFCI FAILURE	Spa could not trip GFCI	Contact your dealer or service organization. Continued operation may be unsafe.