HYDROQUIP™

Outdoor Series
INSTALLATION & OPERATIONS MANUAL

Covers the following CS & ES Models:

ES8848A, ES8848B, ES8848C, ES8848D, ES8848E, ES8848J, ES8848H, ES8848J, ES8850A, ES8850B, ES8850C, ES8850D, ES8850E, ES8850F, ES8850G, ES8850H, ES8850J, CS8800A, CS8800B, CS8800C

THE **SMART** CHOICE™

To ensure that the system is installed properly, provide your electrician with these instructions.

8800 BP Series

TABLE OF CONTENTS

GETTING STARTED

For the best installation possible, review all the provided instruction materials, and share with your electrician/installer for advanced planning. A complete understanding of what's needed before starting work will make things go smoothly, and at the lowest possible cost.

This manual includes complete instructions for electrical and plumbing connections, the addition of pumps, gas heaters, lights, system startup, troubleshooting, and your warranty guidelines.

First identify the Equipment System (ES) or Control System (CS) from your product label. Refer to this code when using the GFCI breaker sizing matrix, and wiring diagrams in this manual

ES series controls include a factory mounting base, and main system pump. The separate quick –start sheet #85-0115-4 has detailed instructions for pack assembly, and pump cord installation guide is inside this manual

CS series controls are designed for a wall mount application. Your electrician must follow all local codes and restriction pertaining to placement of an accessible electrical service.

* Copies of this manual are available online at www.hydroquip.com

Your Hydro-Quip 8000 series control has a factory pre set program. Details for changing system behavior and/or adding new components will be found in this manual.

Warning! Make no attempt to modify, disconnect, damage or adjust the safety devices contained in this equipment system. Alteration of safety devices can cause serious component damage, and/or result in unsafe operation leading to personal injury or death

Save a copy of this manual

TERMS / GLOSSARY

AC Connection	Alternating Current connection point (typically high voltage)
Additional Panel Button	Refers to HQ PT# 34-0224. Required for 3rd pump operation
Amperage Requirement	The accumulated total amperage of all items to be placed on a single breaker
AUX PCB	Smaller daughter board connected to main PCB
Auxiliary Pump	A pump that has been added to the original equipment system (ie Aux pump #2)
Blower	Appliance providing compressed air for the purpose of massage therapy
Bonding Wire	Continuous bare copper wire connecting all metallic object and electrical components to the equipment & ground rod
BWA™APP	Downloadable Balboa Water Application for wireless system control
Copper Conductors	Electrical wires made from copper alloy materials
Dedicated Circuit	An electrical supply to a remote location, having breaker protection and no additional branch or service connections
Default Programming	The standard position or programming in which the system is tested and leaves the factory
Dip Switch	Movable programming switch located within a switch-bank (on PCB)
Dip Switch Banks	Set of switches used to change operational logic and system behavior (on PCB)
Discharge	Pump exit side (piping placed on pressure side of pump)
Dual Source Wiring	Electrical power supplied by two individual wiring sources (two breakers)
Gas Heater Control Circuit	Wiring provided inside gas heaters, that can be connected to 8000 systems for operational control. Commonly called a fireman circuit
GFCI Breaker	Ground Fault Circuit Interrupter. Specialty breaker with a detection and reaction device to interrupt power when current leaking is detected to ground
GFCI breaker #1	Main 8000 system breaker, required 4 wires with incorporated “Neutral”
GFCI breaker #2	Optional breaker for independent heater operation. Required 3-wire connection, without “Neutral”
Heater Input Leads	Provided wires for connection of heaters in the dual source configuration
Jumper Pins	Circuit board electrical posts for logic changes.

TERMS / GLOSSARY

KW	Kilowatt. Heater resistance rating used for identifying energy consumption.
Line of Sight	A clear and unobstructed path, in which an object or item can be spotted from or near the spas edge.
Logic Jumper	Movable coupling located on the jumper pins for changing operational behavior
Liquid Tight Conduit	Tubing that resists water and debris penetration, made specifically for wiring
Main Control	In reference to the 8000 series control box, with factory provided components
Main Pump or Pump #1	System provided pump used for heating and filtration
NEC	National Electrical Code. Regulations for design and materials on electrical installation.
Ozone/Ozonator	Appliance designed for spa water sanitation
PCB	Printed Circuit Board (refers to main board)
Persistent Memory	Programming that remains unchanged, until the power is turned off and back on
Priming	Initial pump operation until the air is evacuated from the pump and supply lines
Pump Amperage	The highest amperage measured, when the pump is under full load condition
Pump Pot/Basket	Reservoir mounted to the pump with removable lid and strainer basket
Single Source Wiring	Electrical power supplied by a single wiring source and breaker (one breaker)
Sub Panel	An electrical service box mounted remotely from the main house power panel
Suction	Pump front inlet side (piping between spa suctions and pump pot)
System Data Label	Label placed on control box providing serial identification, and vital data
System Disconnect	An easy and safe means of 100% electrical disconnection, without obstruction or the need for tools. See NEC and UL qualifications for approved devices.
Terminal Strip	Electrical connection point for components within the PCB Box
Total System Amps	Highest amperage measured when all components are operating simultaneously
Wi-Fi Enabled	Having the capacity to control using a wireless connection

SYSTEM INSTALLATION REQUIREMENTS

The Hydro-Quip 8000 Series Solid-State Systems were designed for indoor or outdoor installations. This equipment may be used for both inground and above ground spas/hot tubs.

The Equipment System must be installed on a firm, level surface (ie: concrete or plastic base)

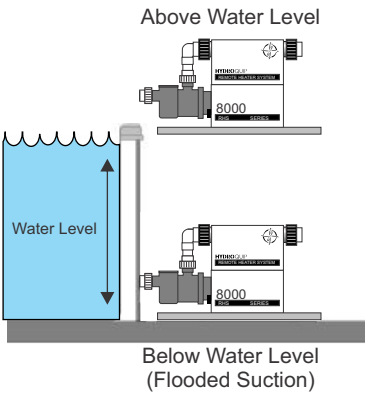
The area where the system is installed must have adequate drainage to prevent flooding of the equipment under all circumstances.

For performance reasons locate the system as close to the spa/hot tub as practical. (Consult local codes for minimum distance between equipment and spa)

Provide adequate access around and above the System for service and maintenance. Three (3') of clearance around the equipment is recommended.

The pump(s) provided with the system may or may not be self-priming. Pumps that are NOT self priming must be installed BELOW water level or they will not prime.

The Spaside control has a 50' cord length. Plan routing distance between the equipment and vessel to be less than 44ft.



PLUMBING INSTALLATION INSTRUCTIONS

To assure adequate performance, the use of 2" piping is recommended.

There may be 3 or 4 separate plumbing systems in the spa. Verify the function of each pipe.

1) Suction System Plumbing - this plumbing will connect to the spa's skimmer, main drain and suction fittings. This plumbing connects to the front end of each pump.

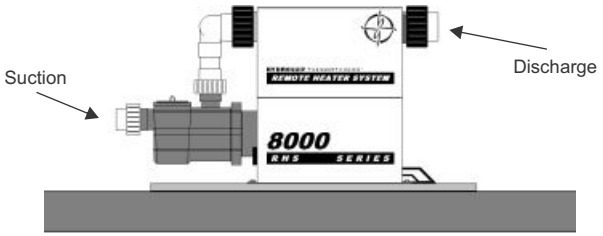
2) Discharge System Plumbing - this plumbing will go to the spa's hydrotherapy jet and massage fittings. This plumbing connects to the open end of the heater on your Equipment System.

3) Air Blower Plumbing - this plumbing will go to an air channel under the floor, or to an air distribution manifold of the spa. This plumbing connects only to an air blower.

4) Aux Pump Plumbing - When more pumps are added, this piping will not interconnect with the heater control system. Follow the spa/hot tub manufactures instruction for connection, and safety suction requirement

To allow for safe operation of the spa/hot tub, the suction fittings must be agency approved and rated Max Flow capacity.

After plumbing is complete, secure the Hydro-Quip Equipment System with the appropriate hardware.



Refer to plumbing schematic Fig.1 on page 15

INSTALLATION CONSIDERATIONS

The Hydro-Quip 8000 series incorporates the most advanced controls in the industry, and are designed for years of trouble free operation. However, for year round success, review these design recommendations for extreme weather areas.

*For best results, review this manual completely before starting your project.

Hot weather conditions

Water temperatures can be elevated from high outside “ambient” temperatures. If this occurs, remove the insulating cover and add cool water until the heat has dissipated to a safe level

Hot temperatures and/or direct sunlight to the equipment system can cause temporary operational problems.

Pumps are equipped with special overload devises to self protect when encountering extreme heat conditions. All motors are equipt with an automatic reset device, and will resume operation when they become cool. Pumps can be enclosed, but require adequate ventilation

Direct sunlight on equipment can bring temperatures beyond the allowable point for circuits to function correctly. The system will shut off into a protection mode (see troubleshooting guide.) To prevent this condition, plan an equipment cover that incorporates shade, access and ventilation

Freezing weather conditions

If you wish to utilize/operate your system during seasons that may experience freezing temperatures, please incorporate pipe insulation, draining capabilities and incorporate an equipment cover that protects from snow and freezing rain. In all cases standing water, and snow should not be allowed to accumulate in or around the equipment.

If you wish to winterize your spa/hot tub, please contact your spa/hot tub manufacturer or local area pool/spa/hot tub professional for details.

In all cases make a plan for system draining in case of a power loss. Where possible, design plumbing drains and disconnects to evacuate water before it becomes frozen and does system damage.

Note the 8000 systems incorporate a freeze sensing technology, that will automatically operate the pumps when temperatures drop below 43F. Moving the water will not allow pipes and equipment to form ice.

ELECTRICAL INSTALLATION

NOTICE! Before attempting installation of this equipment system, read all the information contained in this manual, and confirm the installing electrician understands and follows all national and local codes and safety instructions.

All connections must be made by a qualified and licensed electrician in accordance with the National Electrical Code (NEC article 680 Canadian Electric Code, and with any local codes in effect at the time of installation.

All connections must be made according to the electrical installation label on the outside of the system box (see page 33) Follow all instructions provided in this manual, and at labeled connections. If your electrician in unclear on how to correctly connect this equipment, call your system supplier. Note that damage caused by mistakes can be costly, and invalidate your warranty.

A GFCI (Ground fault circuit interrupter) breaker is a mandatory electrical device required for installation on all pool/spa applications as specified in the National Electrical Code Article 680-42.

The GFCI must be properly sized, and be connected with the appropriate sized wire per NEC Code Table 310-16. All ground wires must be connected per NEC Table 250-122 Follow the instructions provided in this manual (see pages 7-9) for proper location and connection of this safety device

This equipment requires a dedicated electrical supply circuit, with no other appliances or lights connected.

IMPORTANT – The NEC and most local codes require that an electrical "disconnect" be installed within "line of site" of the spa

Use copper conductors only, with grounding wire properly sized per the National Electric Code table 250-95.

A bonding lug has been provided on the control box, allowing connection to local ground points. To reduce the risk of electrical shock, use only a properly sized copper bonding wire from this lug to all metal ladders, water pipes and other metallic objects within 5 feet of the spa/hot tubs edge.

CAUTION: Do not connect or disconnect any components while the power is on. All connections must be done with the power off as it may cause damage to the system.

Any resulting damages are not covered under manufacturer's warranty*

CAUTION: Damage may occur to the circuit board and spaside if the spaside plug is not properly aligned to the receptacle on the circuit board or if the spaside plug is connected or disconnected while the power is on.

Any resulting damages are not covered under manufacturer's warranty*

ELECTRICAL INSTALLATION

This equipment system has been100% factory tested for quality and reliability prior to shipping. Care should be taken on all electrical connections to avoid damage to the system circuit board, and added components. Damage caused by accidents, improper wiring configurations and/or abuse voids your warranty.

Start by having your electrician select a wiring configuration that best fits your total system needs. (see the GFCI breaker sizing matrix on page 8)

Due to the availability of GFCI breaker sizes, and your electrical supply requirement, some systems require a second independent or "dual" power source, to supply the electric heater separately. Diagrams for independent heater wiring are provided in this manual.

Note; 5.5kw systems using a single source power supply will not allow electric heater operation when pumps are in high speed. See system programming to change operation if available.

System Type	Heater size	Connection type
Gas heat	none	Single source power supply
Electrical heat	5.5kw	Single source power supply
Electrical heat	5.5kw	Dual source power supply
Electrical heat	11.0kw	Dual source power supply
Gas/Electric Combo	5.5 or 11kw/Gas	Single Source power supply

All Hydro-Quip 8000 series control systems require a 4 wire electrical supply, incorporating a "Neutral" wire for operation. Electric heaters being powered independently in the "dual" circuit configuration do not require a neutral wire supply. This is clearly explained in the wiring diagrams.

For gas heaters electrical connection, consult your gas heaters supplier manual, and note in this manual contains important wiring instructions for control and operation of the gas heaters fireman circuit.

Gas and electric heater combination

When faster heat recovery is desired, or a redundant heat source is a priority, it's possible to install both a gas and electric heater on the same 8000 series system.

Default programming allows both the gas heater control circuit (page 15) and electric heater circuit to operate simultaneously. Input from both heat sources will speed up heating times, and also provide an operating alternate if one source becomes disabled. You must follow all installation instructions for both the gas heater, and electric heater plumbing and wiring requirements to successfully connect. No PCB programming change is required.

GFCI BREAKER SIZING MATRIX

240V Single source wiring (One breaker required)

System order code on label	System heater type	Pump 1 & System 17A Max	Aux. pump-2 12A max	Aux. pump-3 12A max	Total system Amps	GFCI Breaker	Page
ES8848G, H, J ES8850G, H, J CS8800C	Gas	x	_	_	17	20 amp #1	14
ES8848G, H, J ES8850G, H, J CS8800C	Gas	x	x	_	30	30 amp #1	14
ES8848G, H, J ES8850G, H, J CS8800C	Gas	x	x	x	43	50 amp #1	14
ES8848D, E ES8850D, E CS8800B	5.5kw	x	_	_	41	50 amp #1	13
ES8848D, E ES8850D, E CS8800B	5.5kw	x	x	_	54	60 amp #1	13

240V Dual source wiring with separate heater electrical supply (Two breakers required)

System order code on label	System heater type	Pump 1 & System 17A Max	Aux. pump-2 12A max	Aux. pump-3 12A max	Total system Amps	GFCI Breaker	Page
ES8848D, E ES8850D, E, F CS8800B	5.5kw	x _	x _	x _	43amp system 24amp heater	50 amp #1 30 amp #2	12
ES8848A, B, C ES8850A, B, C CS8800A	11kw	x _	_ _	_	17amp system 46amp heater	20 amp #1 60 amp #2	10
ES8848A, B, C ES8850A, B, C CS8800A	11kw	x _	x _	_ _	30amp system 46amp heater	40 amp #1 60 amp #2	10
ES8848A, B, C ES8850A, B, C CS8800A	11kw	x _	x _	x _	43amp system 46amp heater	50 amp #1 60 amp #2	10

IMPORTANT NOTE

Max Amp Per Circuits

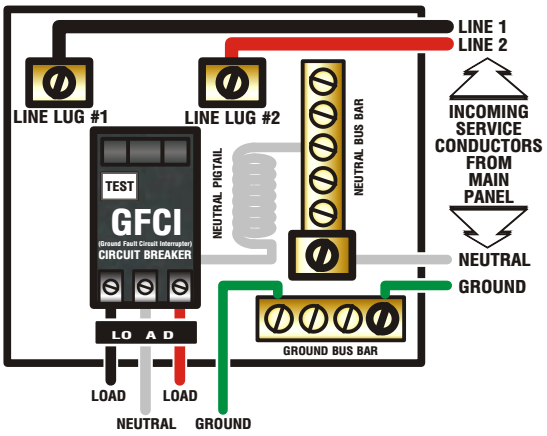
Pump 1	12A
Pump 2	12A
Pump 3	12A
Blower	4A
Ozone	0.5A
Light	1A

GFCI BREAKER WIRING DETAIL

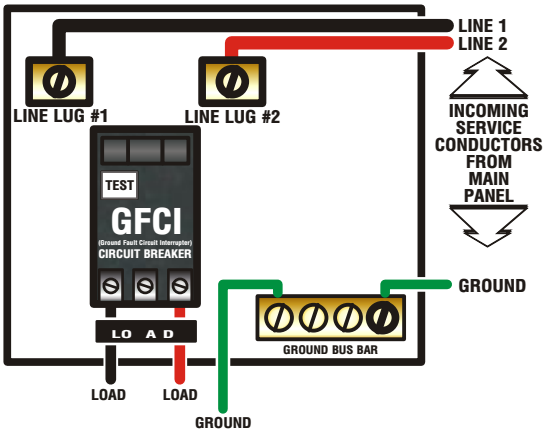
Improperly wired GFCI breakers are the leading cause of immediate GFCI tripping. It is important that your system be wired properly, reference the illustrations below for guidelines.

WARNING: Refer to the circuit breaker manufacturer's installation instructions. This illustration is meant to be a guideline, and not meant to override or substitute the instructions supplied by the breaker manufacturer

GFCI BREAKER #1
(240v 4-wire with neutral)



GFCI BREAKER #2
(240v 3-Wire)
For Independent Heater



11KW ELECTRICAL CONNECTIONS

11KW electric heat “Main” control with independent heater wiring

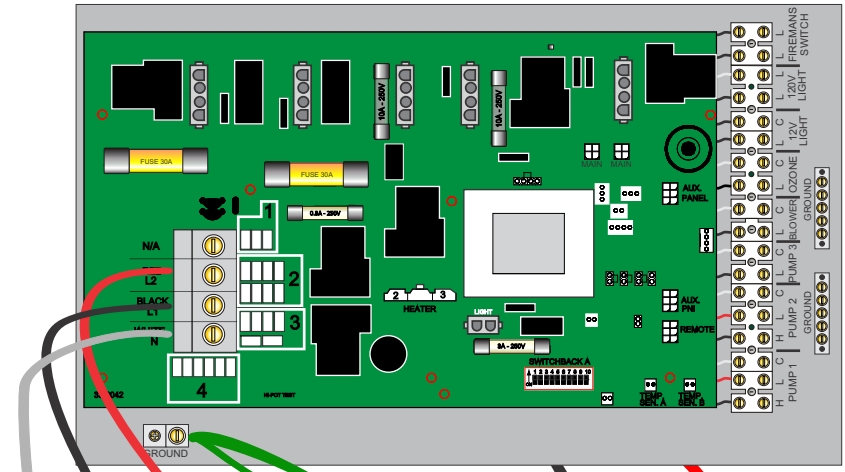
DUAL SOURCE WIRE CONNECTION

For correct GFCI breaker sizing, see electrical requirements matrix on page 8

Programming allowing heater and high speed pump operation simultaneously requires “dip switch” change on board (see figure below)

FOR SYSTEM MODEL CODES (Label located on outside of box)

ES8848A ES8848B ES8848C CS8800A
ES8850A ES8850B ES8850C



Black

Red

Heater main wires

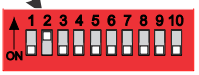
Neutral Line 1 Line 2 Ground

GFCI BREAKER #1
(240v 4-Wire only)
see page 8 for breaker sizing

Ground Line 1 Line 2

GFCI BREAKER #2
(240v 60Amp 3-Wire only)
see page 8 for breaker sizing

Fig. A



Move dip switch #2 to the ON position to allow high speed pump and heater to function simultaneously

11KW ELECTRICAL CONNECTIONS

11KW electric heat “Main” control system wiring diagram

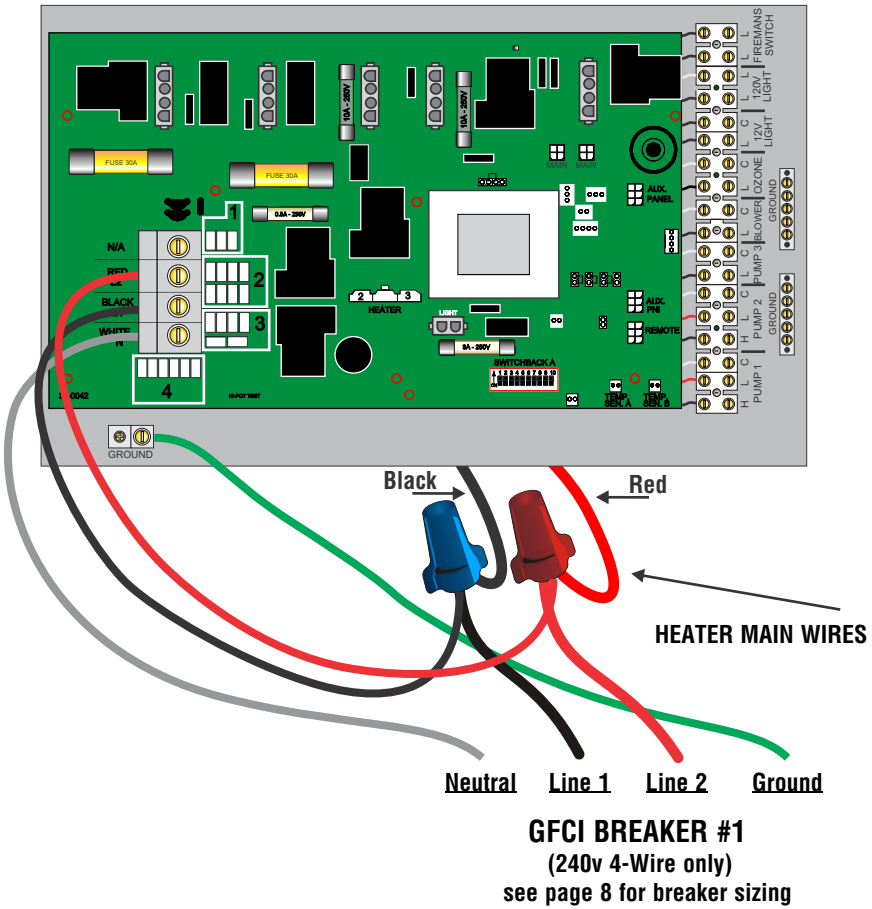
SINGLE SOURCE WIRE CONNECTION

For correct wire and GFCI breaker sizing, see electrical requirements matrix on page 8

Factory programming will prevent the heater and high speed pump from operating simultaneously.

FOR SYSTEM MODEL CODES (Label located on outside of box)

ES8848A ES8848B ES8848C CS8800A
ES8850A ES8850B ES8850C



GFCI BREAKER #1
(240v 4-Wire only)
see page 8 for breaker sizing

5.5KW ELECTRICAL CONNECTIONS

5.5KW electric heat “Main” control with independent heater wiring

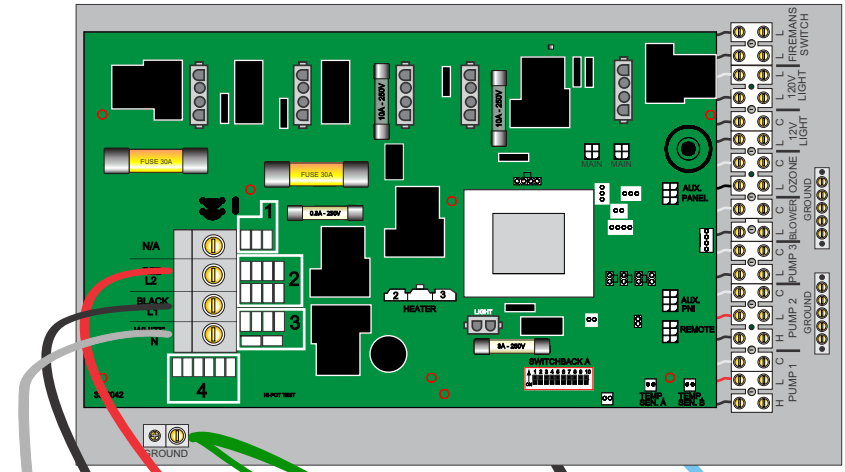
DUAL SOURCE WIRE CONNECTION

For correct GFCI breaker sizing, see electrical requirements matrix on page 8

Programming allowing heater and high speed pump operation simultaneously requires “dip switch” change on board (see figure below)

FOR SYSTEM MODEL CODES (Label located on outside of box)

ES8848D ES8848E ES8850F
ES8850D ES8850E CS8800B



Black

Blue

Neutral

Line 1

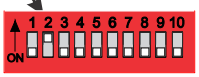
Line 2

Ground

Heater main wires

GFCI BREAKER #1
(240v 4-Wire only)
see page 8 for breaker sizing

Fig. A



Move dip switch #2 to the ON position to allow high speed pump and heater to function simultaneously

Ground

Line 1

Line 2

GFCI BREAKER #2
(240v 3-Wire only)
see page 8 for breaker sizing

5.5KW ELECTRICAL CONNECTIONS

5.5KW electric heat "Main" control system wiring diagram

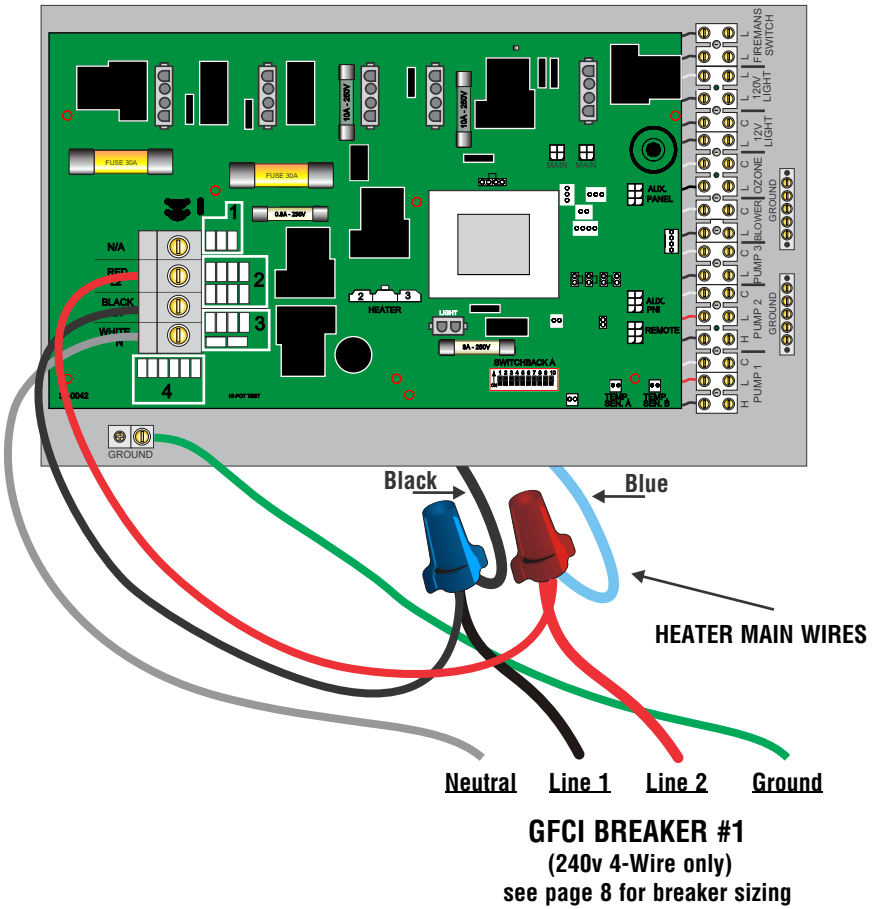
SINGLE SOURCE WIRE CONNECTION

For correct wire and GFCI breaker sizing, see electrical requirements matrix on page 8

Factory programming will prevent the heater and high speed pump from operating simultaneously

FOR SYSTEM MODEL CODES (Label located on outside of box)

ES8848D ES8848E ES8850F
ES8850D ES8850E CS8800B



GAS ELECTRICAL CONNECTIONS

Remote gas heat “Main” control system wiring diagram

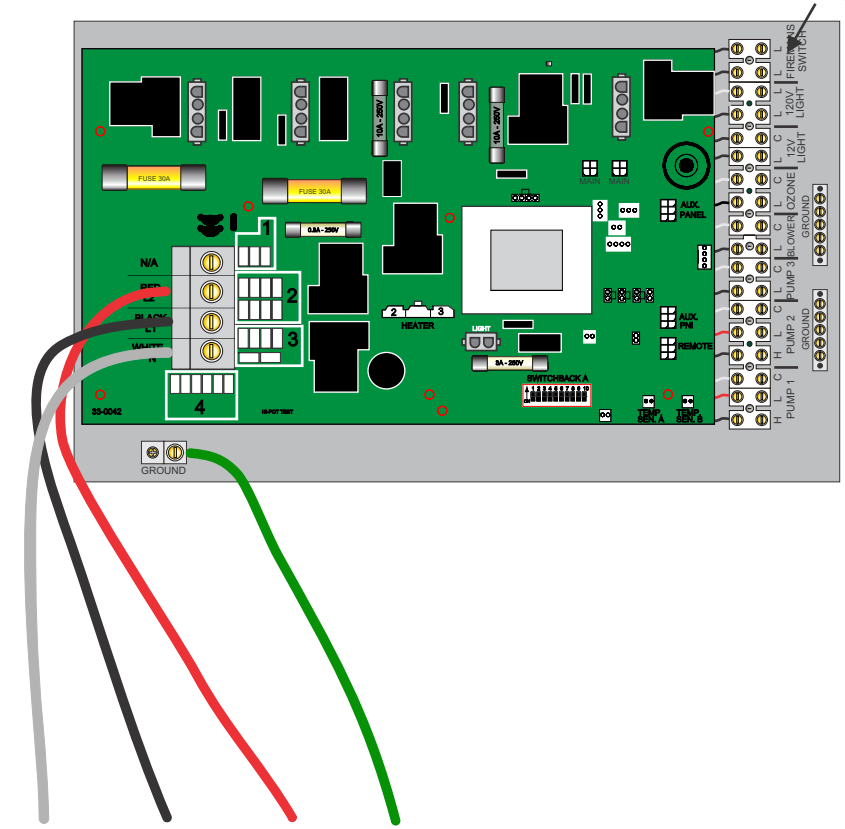
SINGLE SOURCE WIRE CONNECTION

For correct wire and GFCI breaker sizing, see electrical requirements matrix on page 8

FOR SYSTEM MODEL CODES (Label located on outside of box)

ES8848G ES8848H ES8848J CS8800C
ES8850G ES8850H ES8850J

Gas heater internal control see page 15

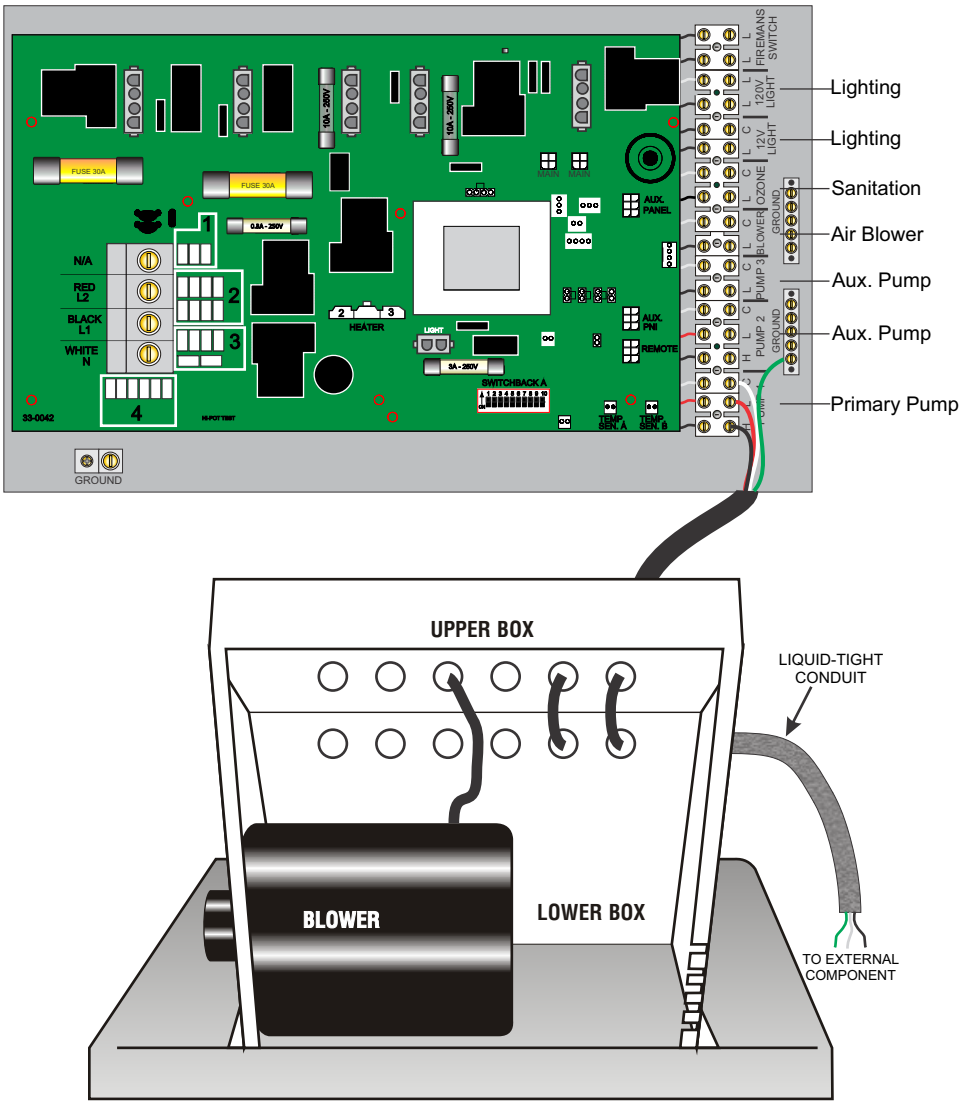


Neutral **Line 1** **Line 2** **Ground**

GFCI BREAKER #1
(240v 4-Wire only)
see page 8 for breaker sizing

COMPONENT CONNECTION

The system is set up to have components hardwired to a terminal strip inside the upper enclosure. Liquid tight conduit must be used on all externally added field connections exposed to the weather. Route and connect the conduit to the knock-outs in the back of the lower box. The wires will then enter the bottom of the upper box through another set of knock-outs. Connect the component(s) accordingly to the corresponding position on the terminal strip and tighten securely. Refer to the included wiring diagram as needed. All components not included with the system are set at the factory for 120V. Verify the voltage of the additional component(s) and adjust supply voltage if necessary by referring to System Configuration on page 10.



GAS HEATER CONNECTION

Warning: Do not install a spa that utilizes a natural gas or propane heater without proper venting. These heaters require adequate ventilation and must be installed according to the heater manufacturers instructions and to local building codes.

Warning: Gas heaters MUST be installed in the plumbing AFTER the control system as shown below. Fig.1

Note: Many gas heaters require a separate electrical service for proper operation, the Hydro-Quip "Gas Heater Control Circuit" does NOT provide voltage to any gas heater circuits. Always refer to the manual included with your gas heater for proper installation.

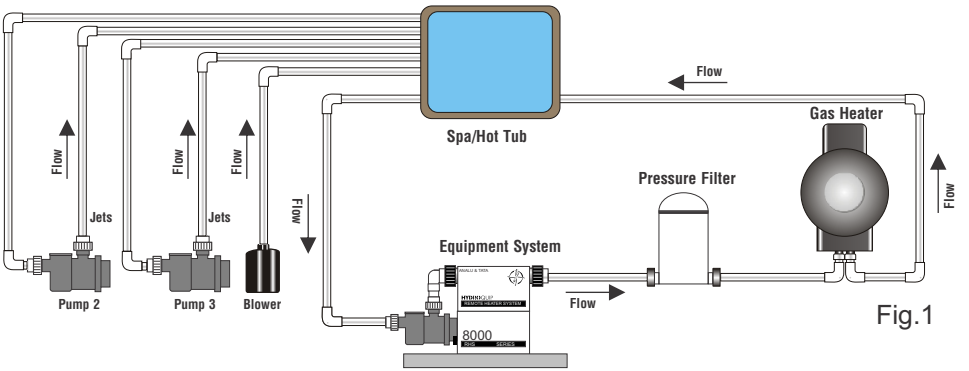


Fig.1

TYPICAL PLUMBING LAYOUT

Gas Heater Control Circuit

Your control system contains a Gas Heater Control Circuit Fig.2. This circuit is a passive or "dry contact" circuit, do not apply line voltage to this circuit. Connect this circuit to the gas heater's Fireman Switch or Fireman Circuit. Refer to the instructions provided with your gas heater to identify the circuit / switch and correct wiring connection. Additional programming may be required to the gas heater to utilize an auxiliary control system.

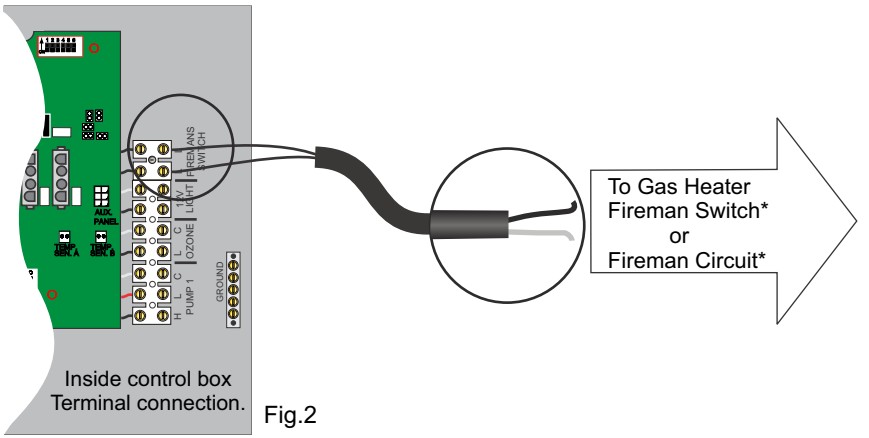


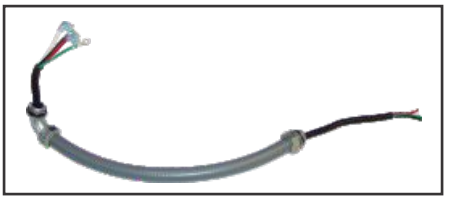
Fig.2

IMPORTANT: Applying line voltage to Gas Heater Control Circuit voids all warranty.

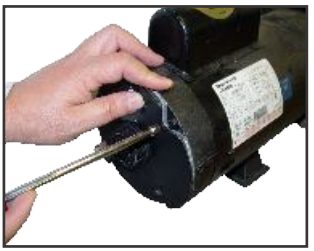
PUMP CORD INSTALLATION

The equipment system has been provided with a pump power cord and liquid-tight conduit assembly. This is to be used on the main 2-speed pump supplied with the system. Any other components or accessories attached to the equipment system should be attached in a similar manner.

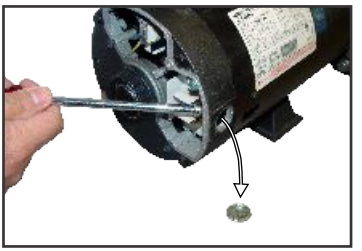
Follow the simple instructions below to quickly attach the cord assy to the pump:



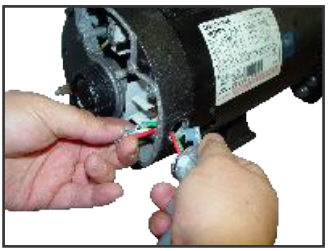
Cord Assy included for Pump 1



1) Remove the terminal cover off the back off the pump



2) Remove the conduit hole cover



3) Route the power wires through the conduit hole and pull toward you to allow for the cord assy to be rotated for tightening.

4) While holding the wires as shown thread the liquid-tight connector into the pump until secure then connect the power wires to the pump per the label on the pump.

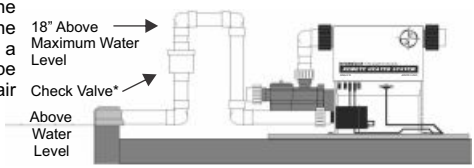
WIRING NOTE:

RED = LOW
BLACK = HIGH
WHITE = COMMON
GREEN = GROUND

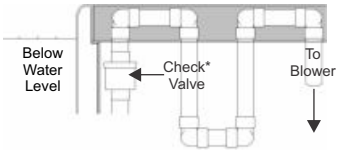
5) Route the other end of the conduit through the empty knock-out and secure with lock-nut. The cord inside will route up to the terminal strip inside the upper portion of the enclosure.

AIR BLOWER INSTALLATION (Optional)

CAUTION: The air blower must be connected ONLY to the spa's air distribution plumbing. Connecting the air blower to the air piping associated with the hydrotherapy jets will create a hazzard by providing a path for high-pressure water to be forced into the blower motor. This will result in damage to the air blower, and create an electrical shock hazzard.



- The air blower must be installed to ensure that water cannot enter the air blower motor. This can be accomplished by installing a single or double air loop that incorporates a check valve.



SYSTEM CONFIGURATION

This System was pre-configured by the manufacturer as follows:

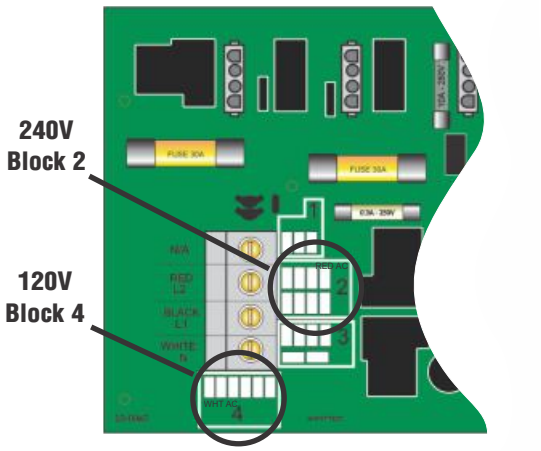
Pump 1: 240V **Pump 3: 240V** **Ozone: 120V**
Pump 2: 240V **Blower: 240V**

CHANGING CONFIGURATIONS

Below are illustrations and instructions for converting the universal circuits of your control. Hydro-Quip utilizes color coded connectors to help identify each circuit. Simply locate the colored connector on the Neutral (white) wire from each component receptacle on the PCB. Using the wiring diagram provided with each control (located inside of cover), remove the Neutral connector from its Block 4 / Neutral position and reconnect to an empty position at the Block 2 / Line 2 connection block. Once accomplished the conversion is complete, repeat these steps for each component that operates on 240V.

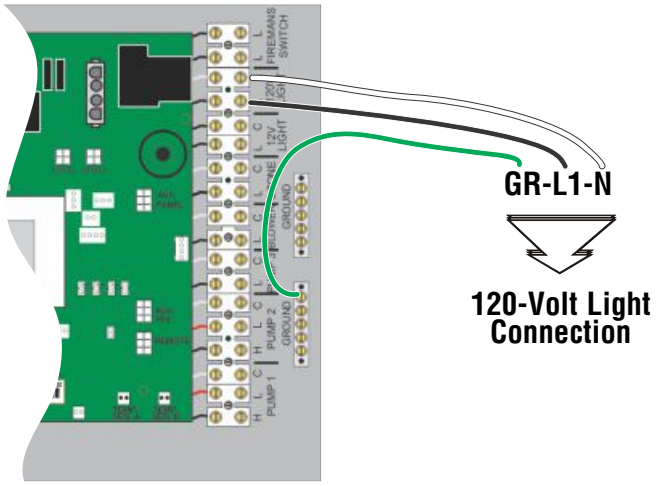
(1) Remove connector from Block 4 connection
(2) Reinstall connector onto Block 2 connection

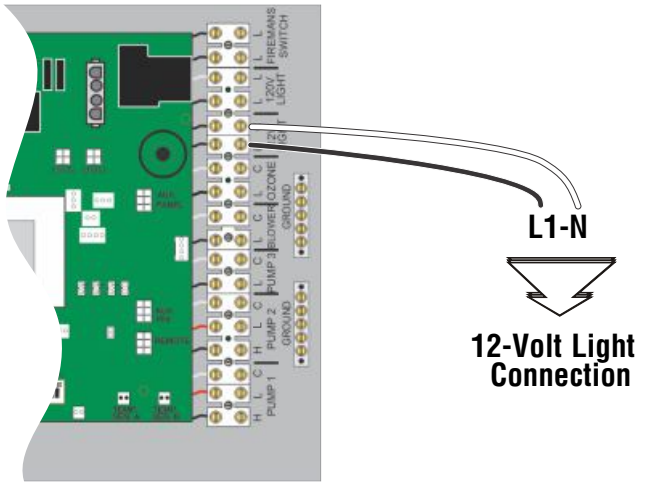
COMPONENT	COLOR CODE
PUMP 1	RED
PUMP 2	VIOLET
BLOWER	BLUE
OZONE	YELLOW



SPA LIGHT INSTALLATION

To offer the most flexibility, Hydro-Quip configures each 8000 Series system so that it can accept a 120-Volt light and/or 12-Volt light. A terminal block has been provided for connection purposes. Connect your light using the illustration below.





SPASIDE CONTROL INSTALLATION

If required, you may have to cut out a hole in the spa shell to install spaside control.

- The mounting area must be above the maximum water level of the spa and in an area with good drainage to prevent any standing water on or around the spaside.
- The spaside should never be submerged.
- The spaside should be protected from extended periods of exposure to sunlight.
- Do not step or stand on the spaside

Step 1 - Clean area and insert spaside control. (Fig.1)

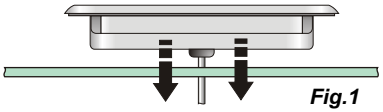


Fig.1

Step 2 - Remove the double sided adhesive from the back of the spaside. Make certain the spaside is straight and adhere to the spa shell. (Fig.2)

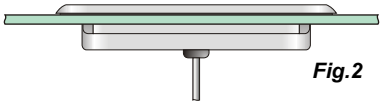


Fig.2

Step 3 - Remove protective film from display window then clean the face of the spaside. Now carefully align and apply the label. (Fig.3)

Overlay may vary

Fig.3

Step 4 - Connect spaside to an empty connection marked MAIN. (Fig.4)

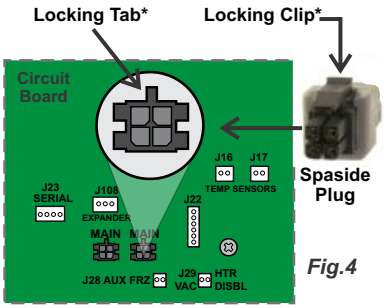


Fig.4

CONNECTING SPASIDE & EXTENSION

Must align Locking Clip on spaside plug with Locking Tab on circuit board for proper function.

When utilizing a spaside extension cord, the clip and tab must also be aligned at all connections. **Fig.5**

Fig.5

Cord plugs are labeled to insure proper plug alignment as shown in **Fig.6**

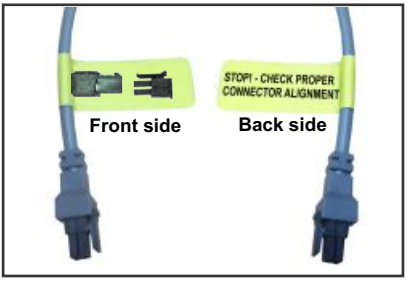


Fig.6

CAUTION: **Damage may occur to the circuit board and spaside if the spaside plug is not properly aligned to the receptacle on the circuit board or if the spaside plug is connected or disconnected while the power is on.**

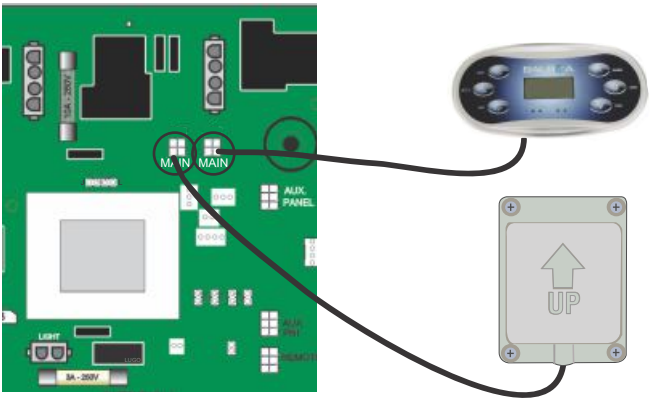
Any resulting damages are not covered under manufacturer's warranty*

WIFI MODULE INSTALLATION KIT (OPTIONAL)

Your new system has the capability to connect with the internet using a wifi module.

If Provided with your system, please make sure to install the module following these few steps:

Step 1 - Insert wifi cable connector into an empty connection mark “Main”



* If no main connections are available, you may use the “Y” cable provided with the wifi module kit (34-0216E)

Step 2 - You may mount the wifi module inside the lower control system enclosure.

Step 3 - Please follow the instructions provided with the wifi module kit to properly install your BWA™ App

Note: If you experience poor operation via the wifi module, it may be necessary to relocate the module closer to your wifi router.

SYSTEM CONFIGURATION (Optional)

Set Up Reference Table

HQ Set Up	Set Up #	Pump 1	Pump 2	Pump 3	Blower	Y Splitter Req.
Default	18	2-Speed	1-Speed	None	1-Speed	No
Opt 1	3	2-Speed	2-Speed	None	1-Speed	No
Opt 2	2	2-Speed	2-Speed	1-Speed	None	No
Opt 3*	5	2-Speed	1-Speed	1-Speed	1-Speed	Yes

*See page 23 for Option 3 considerations.

Changing Software Setups

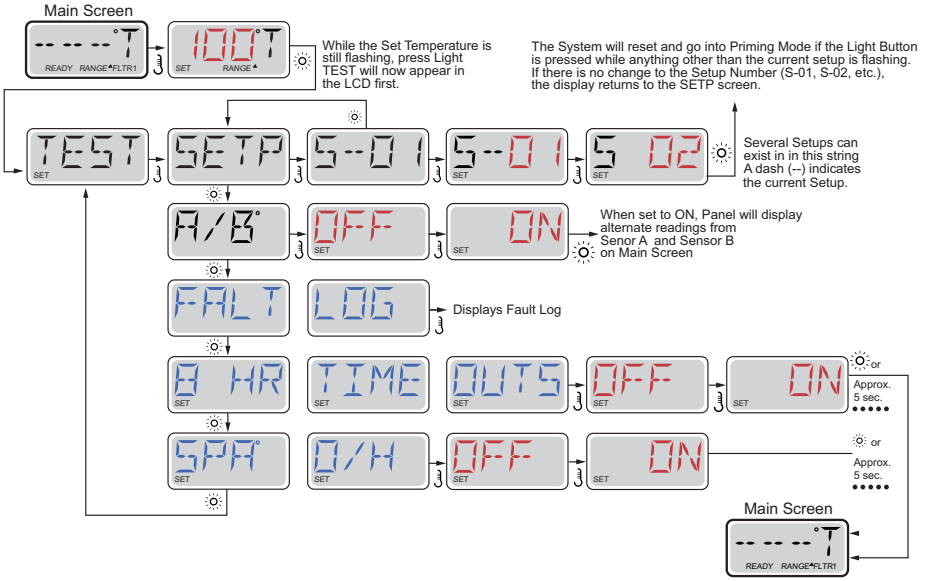
Under the TEST Menu, the Setup screen will allow changing the Setup from 1 to any number established by the Manufacturer. While the system is running, move DIP Switch 1 (on S1 on the Main circuit board) to ON.

When the panel displays RUN PMPS PURG AIR, press any Temperature button ONCE to exit Priming Mode. You should see "---T" where the T indicates the system is in Test Mode.

You will have 1 minute to complete the setup change after you manually exit Priming Mode. Immediately after exiting Priming Mode, press this sequence of buttons: Warm, Light, Warm, Warm, Warm, Warm. Continue to press Warm until the diplay shows the Setup Number (S-01, S-02, etc.) you want to switch to. When the correct setup number is showing, press Light once, and the system will reset, using the newly-selected Setup from that point on.

Move DIP Switch 1 to the OFF position to take the spa out of Test Mode. °F or °C will replace °T.

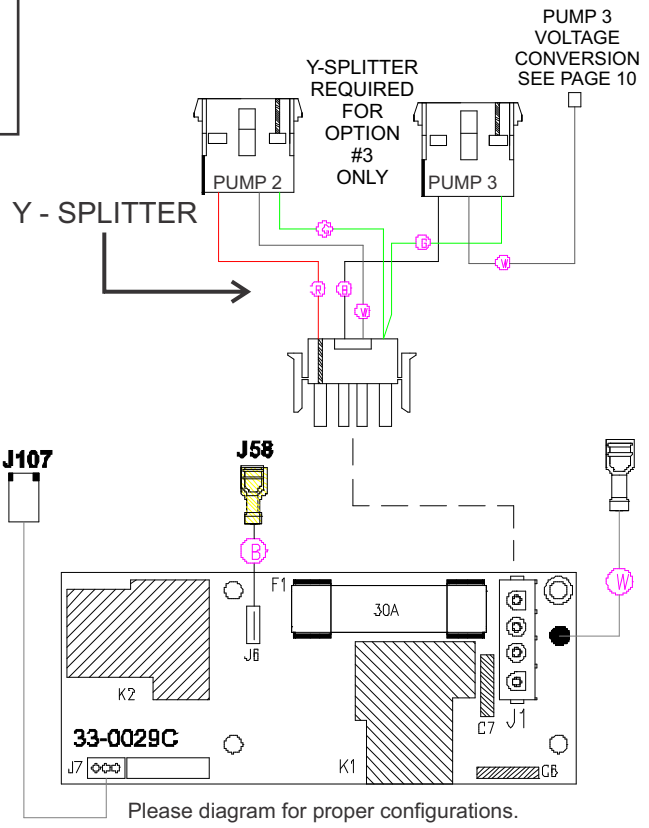
NOTE: Changing the Setup may require wiring changes as well - refer to the wiring diagram.



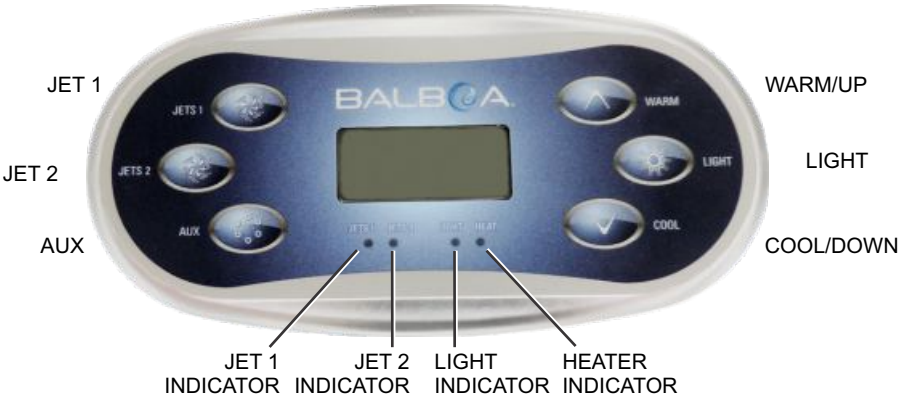
OPTION 3 SETUP CONSIDERATIONS

The Y-Splitter (included) is required when choosing Option #3 on the setup menu (see Pg. #22). You will also have to utilize a single button spaside control (not included) shown below.

Single Button
Auxiliary
HQ PT#: 34-0224
(for Option #3)

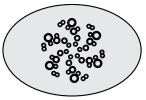


YOUR SPASIDE CONTROL

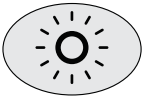


Jets 1 Key: Pressing this key when the pump is OFF will turn it ON to Low Speed, a second press switches the pump to High speed, a third press turns the pump OFF. If the pump is ON from manual activation, an automatic timer will turn the pump OFF after 15 minutes of operation. Jet 1 indicator will illuminate when it is active. If the pump cannot be turned OFF a filter cycle is active.

Jets 2 Key: Press this key to turn Pump 2 ON and OFF. An automatic timer will turn the pump off after 15 minutes of operation. Jet 2 indicator will illuminate when it is active.



Blower / AUX Key: Press this key to turn the blower ON and OFF. An automatic timer will turn the blower off after 15 minutes of operation.



Light Key: Press this key to turn the light ON and OFF. An automatic timer will turn the light off after 4 hours of operation. The Light indicator will illuminate when it is active.

Temperature Set Keys: Press the “Cool/Down” button or “Warm/Up” button to display the current set water temperature. Pressing either button while the set temperature is displayed will increase or decrease the set temperature by 1°F. The temperature is adjustable between 80°F - 104°F / 26°C - 40°C or 50°F - 99°F / 10°C - 37°C (See Temp Range Settings Pg.8)

MAIN MENU NAVIGATION

Navigation

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 LIGHT Button is also used to choose the various menus and navigate each section.

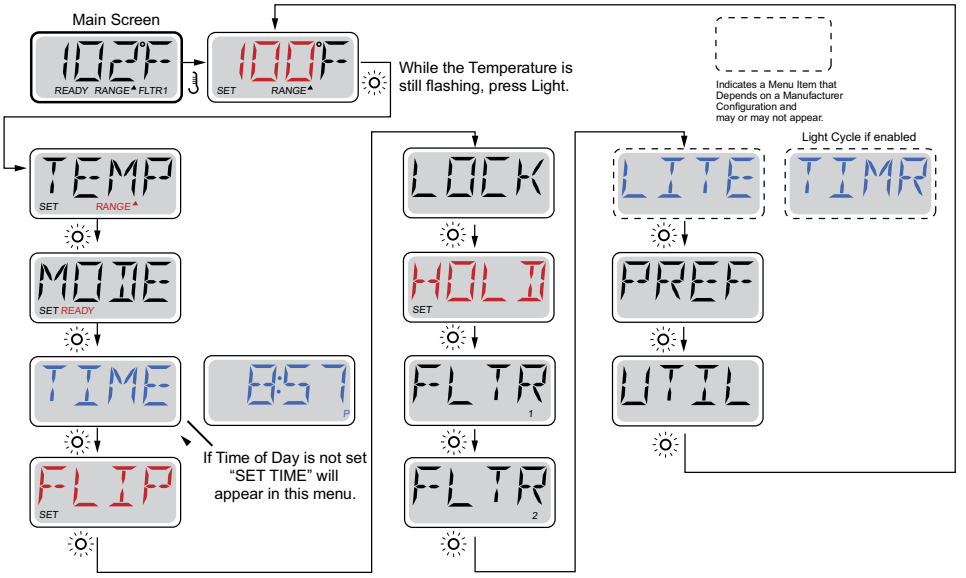
Typical use of the Temperature button(s) allows changing the Set Temperature while the numbers are flashing in the LCD. Pressing the LIGHT button while the numbers are flashing will enter the menus.

The menus can be exited with certain button presses. Simply waiting for several 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 4).



Main Screen

Waiting Several Seconds in the Main Menu will allow the display to revert to the Main Screen. Most changes are not saved unless Light is pressed. Refer to Key above.

Key

- A temperature button, used for "Action"
- Light or dedicated "Choose" button, depending on control panel configuration
- ●●●●● 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.

SYSTEM START-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

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

Regardless of whether the priming mode ends automatically or you manually exit the priming mode, the system will automatically return to 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 “Jet” buttons. If the spa has a Circ Pump, it can be activated by pressing the “Light” button during Priming Mode.

Priming the Pumps

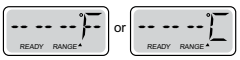
As soon as the above display appears on the panel, push the “Jet” button once to start Pump 1 in low-speed and then again to switch to high-speed. Also, push the Pump 2 or “Aux” button, if you have a 2nd pump, to turn it on. The pumps will now be running in high-speed to facilitate priming. If the pumps 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 a “Temp” button (Up or Down). 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 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.



SYSTEM FUNCTIONS / FEATURES

Pumps

Press the “Jets 1” 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. The pump 1 low-speed will time out after 30 minutes. The high-speed will time out after 15 minutes.

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 7), Pump 1 low may also activate for at least 1 minute every 30 minutes 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.

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 8)
A second filter cycle can be enabled as needed.

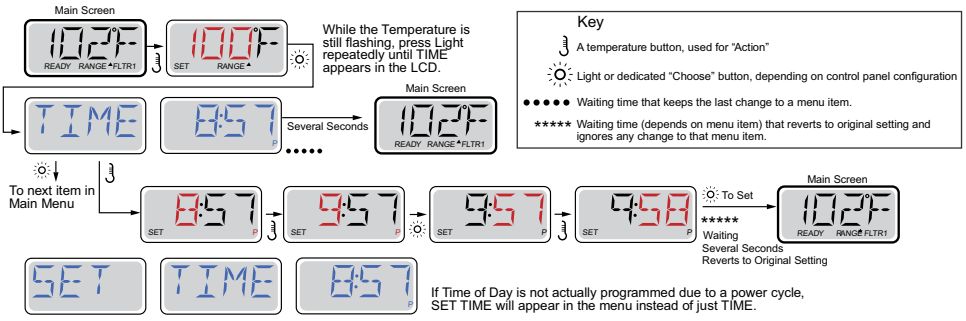
At the start of each filter cycle, the blower (if there is one) or Pump 2 (if there is one) will run briefly to purge its plumbing to maintain good water quality.

Freeze Protection

If the temperature sensors within the heater detect a low enough temperature (44°F) , 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.

SETTING 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.



Note:

If power is interrupted to the 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 the 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.

TEMPERATURE SETTINGS

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 an “up” arrow, and the Low Range designated in the display by a “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.

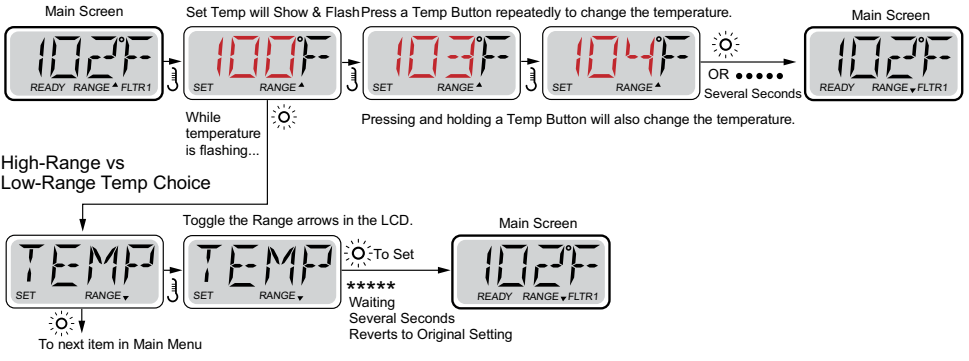
For example:

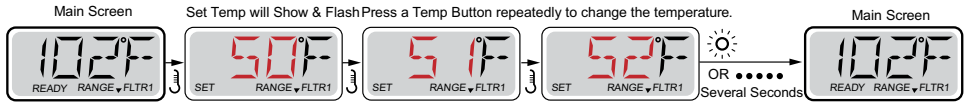
High Range might be set between 80°F and 104°F.

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

Freeze Protection is active in either range.

See Mode Setting on Page 27
for additional heating control information.





Key

- A temperature button, used for “Action”
- Light or dedicated “Choose” button, depending on control panel configuration
- ●●●●● 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.

MODE SETTINGS

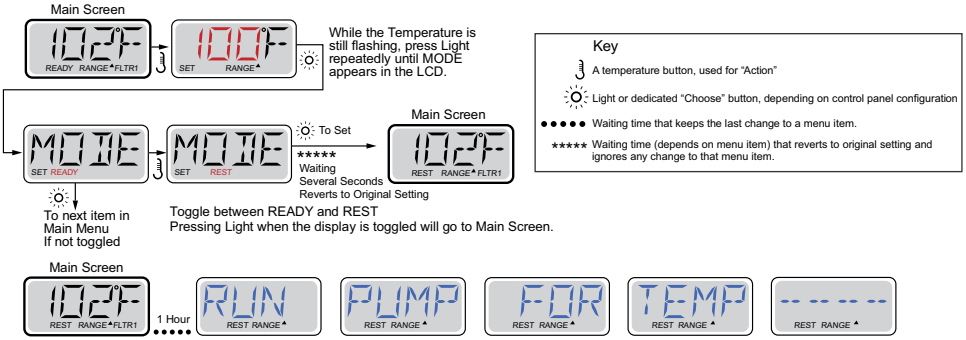
Setting Modes

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 “heater pump.”

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

READY Mode - If the heater pump is a 2-Speed Pump 1, will circulate water every 1/2 hour, 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 - Will only allow heating during programmed filter cycles. Since polling does not occur, the temperature display may not show a current temperature until the heater pump has been running for a minute or two.



The Main Screen will display RUN PUMP FOR TEMP if the filtration 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 filtration pump has been off for an hour or more, when any function button, EXCEPT Light, is pressed on the panel, the pump used in conjuncton with the heater will run so that temperature can be sensed and displayed.

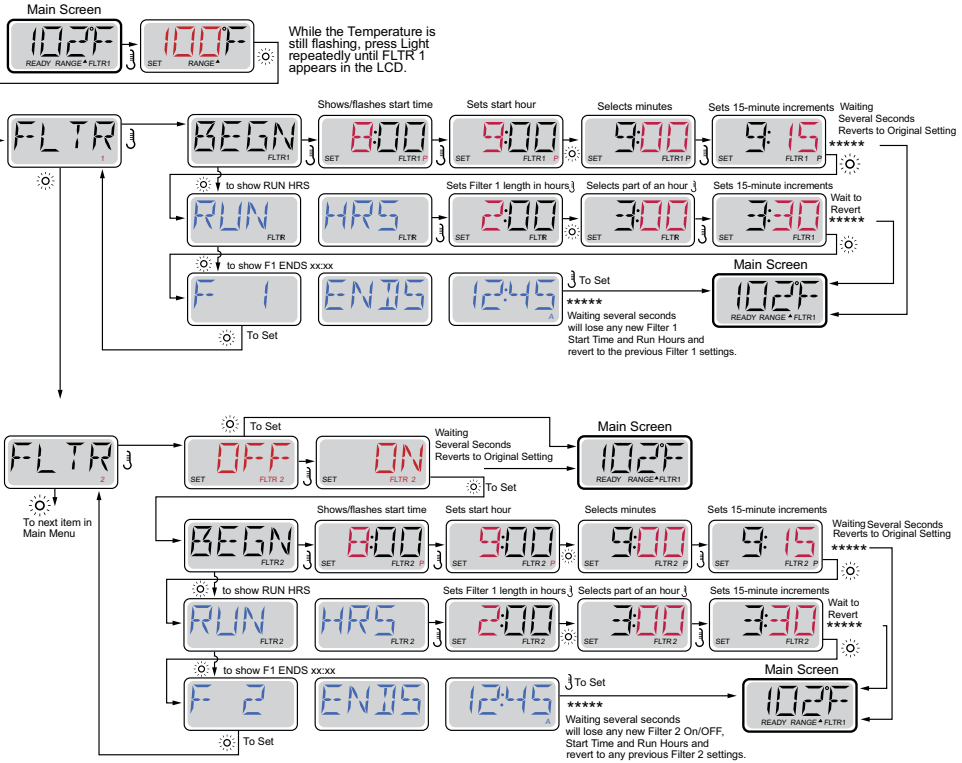
Ready-in-Rest Mode

READY/REST appears in the display if the spa is in Rest Mode and Jet 1 is pressed. It is assumed that the spa is being used and will heat to set temperature. While Pump 1 High can be turned on and off, Pump 1 Low 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.

FILTER SETTINGS

Main Filtration

Filter cycles are set using a start time and a duration. Start time is indicated by an “A” (AM) or “P” (PM) 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.



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.

The Meaning of Filter Cycles

1. The heating pump always runs during the filter cycle*
2. In Rest Mode, heating only occurs during the filter cycle
3. Purges happen at the start of each filter cycle

* For example, if your spa is set up for 24/hour circulation except for shutting off when the water temperature is 3˚F/1.3˚C above the set temperature, that shutoff does not occur during filter cycles.

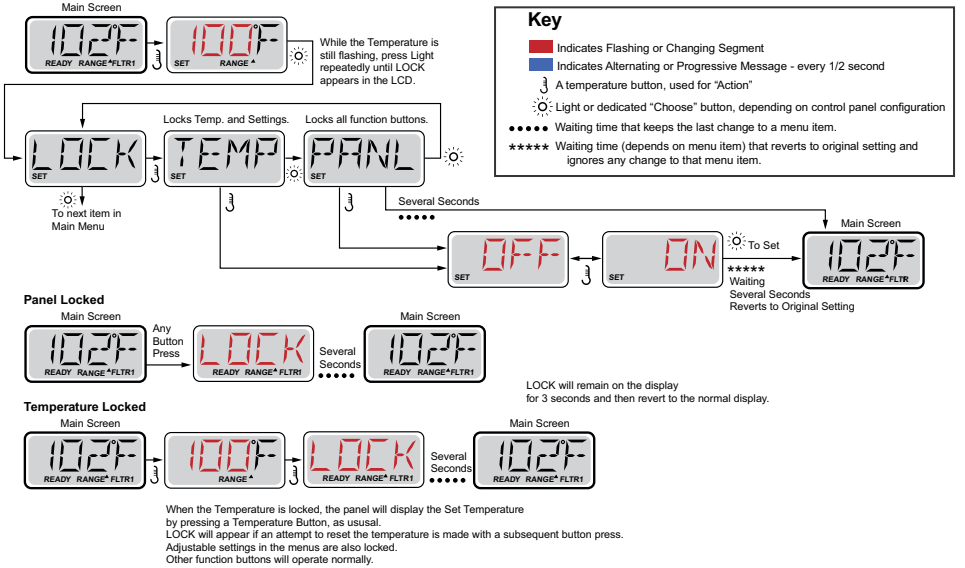
LOCKING AND UNLOCKING SPASIDE

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.

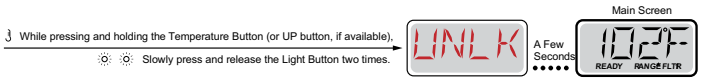
Locking the Temperature allows Jets and other features to be used, but the Set Temperature and other programmed settings cannot be adjusted.

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



Unlocking Spaside

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



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.

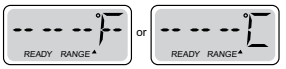
SPASIDE MESSAGES

General Messages

Priming Mode

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 Jets 1 in Priming Mode. The Circ Pump will run by itself when Priming Mode is exited.



Water Temperature is Unknown

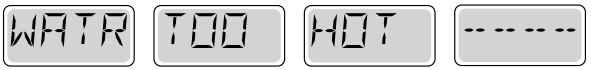
After the pump has been running for 1 minute, the temperature will be displayed.

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. 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.



Water is too Hot (OHS)

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.

Safety Trip - Pump Suction Blockage*

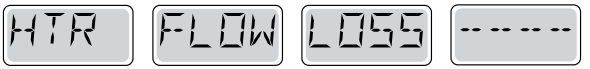
The Safety Trip error message indicates that the vacuum switch has closed. This occurs when there has been a suction problem or a possible entrapment situation avoided. (Note: not all spas have this feature.)

---

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

SPASIDE MESSAGES

Heater-Related Messages



Heater Flow is Reduced (HFL) –

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.

Heater Flow is Reduced (LF)* –

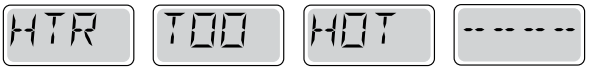
There is not enough water flow through the heater to carry the heat away from the heating element and the heater has been disabled. See “Flow Related Checks” below. After the problem has been resolved, you must press any button to reset and begin heater start up.

Heater may be Dry (dr)* -

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.

Heater is Dry* .

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.



Heater is too Hot (OHH)* -

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.

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.

SPASIDE MESSAGES

Sensor-Related Messages

Sensor Balance is Poor –

The temperature sensors MAY be out of sync by 2°F or 3°F. Call for Service.

Sensor Balance is Poor* –

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

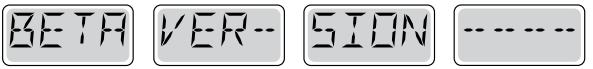
Sensor Failure -

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

Miscellaneous Messages

No Communications

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



Pre-Production Software

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

°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.

SPASIDE MESSAGES

System-Related Messages

Memory Failure - Checksum Error* –

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.

Memory Warning - Persistent Memory Reset* – I

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.

Memory Failure - Clock Error* –

Contact your dealer or service organization.

Configuration Error – Spa will not Start Up

Contact your dealer or service organization.

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

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

A Pump Appears to be Stuck ON –

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

A Pump Appears to have been Stuck ON when spa was last powered – M

POWER DOWN THE SPA. DO NOT ENTER THE WATER.

Contact your dealer or service organization.

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

TROUBLESHOOTING

The following describes operational problems, and the possible solution. Note that your system may not include all the components listed in this guide

Warning: Allow only a qualified electrician, service technician or your system installer to test the electrical components and wiring

NOTHING OPERATES

Set GFCI breakers and quick disconnect to “on” position. If power will not reset, contact your electrician or installer. If power restores, but there are no lights on topside, or the system fuse has blown, contact your installer

GFCI TRIPS IMMEDIATELY OR RANDOMLY

Make sure the equipment is not wet internally. Moisture inside equipment, or malfunctioning parts will cause GFCI Trip. Reset breaker when conditions are dry, and inspect for water leaks in or around equipment.

Loose wires can cause over amperage, and malfunctioning equipment can also be the cause of intermittent GFCI tripping. Contact your electrician or installer if tripping persists

*If a particular component trips the GFCI when operated. This will assist your installer with faster repairs

PUMP DOESN’T START

Confirm spaside command for pump
Confirm motor is not overheated, and wait for it to cool down.
Recheck pump cord installation was done correctly per instructions
Have electrician or installer check supply fuse and system voltage

MOTOR RUNS/NO FLOW

Confirm gate valves are 100% open & spa is full of water
Confirm pump basket and spa filter are free of debris
Confirm adjustable spa jets are in the open position
Confirm pump is not frozen with ice, or has clogged pipes
Prime pump with water on high speed (see start-up inst)
Have installer confirm pumps have correct voltage supply per instructions

PUMP HAS LOW FLOW

Check for dirty filter or basket, low spa water level, valves partially closed, or all jets in the off position. Jet system should be plumbed using spa manufactures instruction for pipe sizing.

TROUBLESHOOTING

PUMP STOPS DURING TIMED CYCLE

Motor overheat protection has tripped, allow motor to cool before reactivating
If motor continues to overheat, have an electrician check voltage and connections.

PUMP SURGES OR LOSES PRIME

Check for low water level, loose lid on pump, pipe leaks on suction plumbing, debris in filter or suction fittings

PUMP MAKES CAVITATION OR “GRAVEL” SOUNDS

Check filter and baskets for debris overload
Check gate valves for full open position
Pump not having baskets or filters removed could clog pump impeller. contact your installer.

PUMP DOESN’T STOP AFTER FILTER OR JET CYCLE

Pump will continue to run in low speed, if the water is not at the set temperature. See “standard mode” in operations manual.
If filter cycle programs are overlapped, see operations manual
When freezing weather protection is activated. See “ICE” in operations manual
Main system pump #1 will operate once an hour for a few minutes to sample the spa/hot tubs vessel temperature.

BLOWER DOESN’T START

Confirm operational command on spaside. Have installer review wire connection and test fuse.

BLOWER TRIPS GFCI

Blower internals could be wet. Make sure device was placed above water level and/or incorporates a loop per the installation instructions, so water cannot reach motor. If motor is confirmed dry and continues to trip GFCI, contact your installer.

BLOWER RUNS, NO AIR

Make sure all blower plumbing is connected, and there is no ice formed in the lines. The blower will not clear long distance pipes holding too much water. Confirm a plumbing loop was installed near the spa per the assembly instructions

Confirm correct voltage has been supplied to blower, if added to system. If problem continues call your installer

TROUBLESHOOTING

LIGHT NOT WORKING

Confirm operational command on spaside. Light installed should be 120v. unless installer used 12v light, and reprogrammed board wiring and logic using this manual

Make sure the bulb is in the correct position in the light assy. Contact your installer or electrician to confirm wire connection, bulb operation, and light fuse

OZONE NOT WORKING

The ozone circuit will only work when the main pump #1 is in low speed operation. Confirm with ozone suppliers operations manual for appliance testing. Ozone circuit supply voltage is factory set at 115V (unless altered), test for correct supply voltage for ozonator.

NO HEAT

Main pump must be on and pumping water for heater to operate. Low water levels, dirty filters, or loss of prime will cause the pump to surge, and heater will not function

Confirm the heat light is on the spaside. And there is no error code message on spaside. Spas heat slowly, so allow the system to run several hours before testing for temperature rise.

On some system the heater is not allowed to operate when 2 or more pumps are operating. Reference setup in this manual for programming changes, when power supply allows.

NO HEAT (GAS HEATER)

Gas heaters have their own operating system, independent from the 8000 series control. You must have the gas heaters thermostat set to “max” and the fireman electronic control wired to the 8000 system for proper control.

Refer to the gas heater hookup instruction in this guide for proper fireman switch connection, and consult the heater suppliers manual for all other operation and troubleshooting

WATER NOT REACHING SET TEMPERATURE

Note that pump must be primed completely and running for heater to operate. Additionally the system will not allow programmed temps above 104F.
Confirm heat indicator is on spaside display
Spaside should be programmed for a higher temp than current water temp., and in “Standard Mode” see operations manual.
Check for heating error codes on spaside display and follow instructions
If heater is on its own GFCI breaker, check for tripped condition and reset
Consult gas heater manual for correct thermostat setting to work with 8000 series
Burned out elements are rare, but if all conditions for the heater have been checked, consult an electrician for power supply problems, and heater element operation

TROUBLESHOOTING

WATER TEMPERATURES HIGHER THAN SET TEMPERATURE

In warmer months, running the pump in prolonged timing cycles will add heat kinetically to the water. Shorten filter times in summer to prevent heat gain.

* NOTE that frequently in warmer months; expect spa/hot tub water to settle just below ambient air temps. During these months it's impossible to set a temperature on the spaside below the natural water temp. For this reason, you can experience water temps above your desired set temperature.

REQUIRED MAINTENANCE

Water chemistry maintenance information will be provided by your installer. Care should be taken to properly sanitize the water and balance the ph. Poor water conditions can cause permanent damage to heaters and pumps, that may void your warranty. Consult a local pool and spa professional for water treatment.

Filters and strainer baskets should be inspected and cleaned frequently, so it does not effect water flow and operation.

Plumbing when starting systems, after refilling, inspections are a good idea to find leaks in seals, valves, connections etc.

GFCI breakers should be tested monthly by following the manufacturer's steps for test and reset.

Equipment area should be kept clean, not allowing snow, leaves or other moisture holding material to buildup

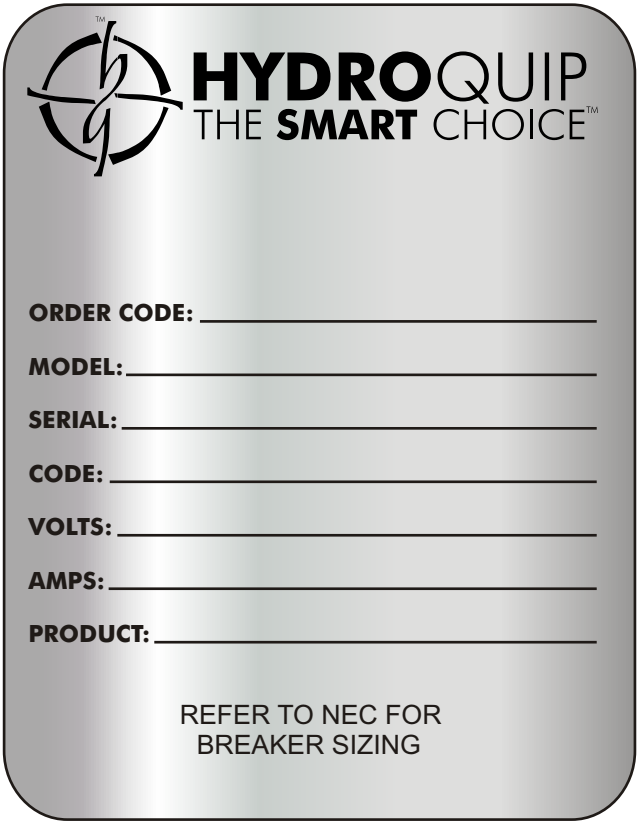
Electrical connections should be inspected and tightened by a certified electrician every few years. This includes bonding wires, conductors, breakers and terminal strip connections

When servicing the filters or replacing the water, power OFF the system at the GFCI or disconnect. Once service is complete, follow the startup procedures in this manual.

SYSTEM DATA LABEL

The system data label is located on the control box. This label is very important and contains information you will need to establish your electrical service. The voltage and amperage ratings are shown on the bottom of the label. Product, Model, Serial and Code numbers are also shown on the label.

Note: This information will be necessary if you should ever have to request warranty or any other type of service.



WARRANTY INFORMATION

Hydro-Quip warrants its products to the original purchaser to be free from defects in material and workmanship for a period of 1 year (12 months) from the original date of purchase, except as noted below.

Products which become defective within the warranty period will be repaired or replaced (at the option of Hydro-Quip) except for damage due to freezing, water chemistry, negligence, abuse, misuse, misapplication, unauthorized modification, improper installation, normal wear and tear or chemical attack.

This warranty extends only to normal, personal (non-commercial) usage by the original purchaser. Pump seals, o-rings, gaskets, air blower brushes are only covered for 90 days from original date of purchase.

Hydro-Quip will not be responsible for labor incurred in removing, inspecting or reinstalling of warrantable products. Hydro-Quip will not be responsible for any travel related charges or labor costs attributable to disassembly and reassembly of the spa, skirt, decking or any other materials enclosing the product, or attributable to difficulties in gaining access to the product.

Hydro-Quip will not be responsible for labor incurred for routine maintenance, adjustments or alterations to the calibration of electrical devices.

Any products which are claimed to be defective must be shipped freight prepaid to Hydro-Quip and the repaired or replaced product will be returned to the sender freight collect. When sent to Hydro-Quip, the product must be accompanied by the sales receipt or other proof of the purchase date as well as the sender's name, mailing address, daytime phone number and a detailed description of the defect as well as any other information relating to this claim.

Unless state law expressly provides otherwise, Hydro-Quip will only be responsible for repair or replacement of any of its products that are found to be defective as provided above, and will not bear the cost of any consequential damages. This warranty gives you specific legal rights but you may have other rights which vary from state to state.

HYDROQUIP™
510A N. Sheridan Street · Corona, CA 92880-2024
Email: info@hydroquip.com · Internet: http://www.hydroquip.com/
Telephone: 951.273.7575 · Fax: 800.332.7190