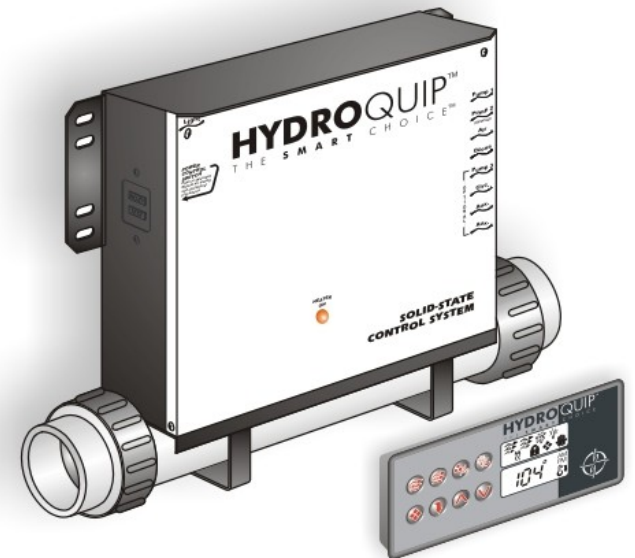


# HYDROQUIP™

## ULTIMATE SERIES SOLID-STATE

### SYSTEM OPERATION MANUAL

THE SMART CHOICE™



# HYDROQUIP™

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## Table of Contents

<b>IMPORTANT SAFETY INSTRUCTIONS</b>	<b>2</b>
<b>Spaside Operation</b> .....	<b>4</b>
<input type="checkbox"/> <i>Pump 1 Key</i>	
<input type="checkbox"/> <i>Pump 2 Key</i>	
<input type="checkbox"/> <i>Accessory Key</i>	
<input type="checkbox"/> <i>Light Key</i>	
<input type="checkbox"/> <i>Temperature Set Keys</i>	
<input type="checkbox"/> <i>Program Key (Setting Filtration)</i>	
<b>Programming and Alarms</b> .....	<b>5</b>
<input type="checkbox"/> <i>Filtration Start Time</i>	
<input type="checkbox"/> <i>Filtration Duration</i>	
<input type="checkbox"/> <i>Temperature Display</i>	
<input type="checkbox"/> <i>Economy Mode Start Time</i>	
<input type="checkbox"/> <i>Economy Mode Duration</i>	
<input type="checkbox"/> <i>Panel Lock</i>	
<input type="checkbox"/> <i>Economy Key</i>	
<input type="checkbox"/> <i>Smart Winter Mode</i>	
<input type="checkbox"/> <i>Over Temperature Protection</i>	
<input type="checkbox"/> <i>Power Up Detection</i>	
<b>Error Messages</b> .....	<b>6</b>
<input type="checkbox"/> <i>Three Flashing Dots <u>with</u> Pump Off</i>	
<input type="checkbox"/> <i>Three Flashing Dots <u>with</u> Pump On</i>	
<input type="checkbox"/> <i>Temperature Sensor</i>	
<input type="checkbox"/> <i>High Temperature</i>	
<input type="checkbox"/> <i>Freeze Protection &amp; Winterizing</i>	
<b>Troubleshooting</b> .....	<b>7</b>

## LIMITED WARRANTY

To all original purchasers, HYDROQUIP warrants its products to be free from defects in material and workmanship for a period of one year from the date of purchase.

HYDROQUIP will repair or replace the part, which in our opinion, is defective.

This warranty excludes damage as a result of: normal wear, freezing, low voltage, chemical abuse, accident, negligence, alteration, improper installation, use or care.

To obtain warranty service, return defective products within the warranty period to HYDROQUIP.

Purchaser is responsible for removal or reinstallation labor, freight charges, or any other such costs incurred in obtaining warranty service.

HYDROQUIP assumes no responsibility for incidental or consequential damages. Some states do not allow the exclusion of incidental or consequential damages, so the above limitations and exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights, which vary from state to state.

**THE SPA DEALER MAY PROVIDE A DIFFERENT WARRANTY,  
CONTACT YOUR SPA DEALER FOR DETAILS**

## Control Data Label

The equipment 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.

<b>HYDROQUIP</b> "THE SMART CHOICE"	
<b>ORDER CODE</b>	_____
<b>MODEL</b>	_____
<b>SERIAL</b>	_____
<b>CODE</b>	_____
<b>VOLTS</b>	_____
<b>AMPS</b>	_____
<b>PRODUCT</b>	_____
<b>REFER TO NEC FOR BREAKER SIZING</b>	

## IMPORTANT SAFETY INSTRUCTIONS

### READ AND FOLLOW ALL INSTRUCTIONS

**DANGER** – To reduce the risk of injury. Do not permit children to use this product unless they are closely supervised at all times.

**WARNING** – RISK OF CHILD DROWNING. Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, ensure that children cannot use a spa or hot tub unless they are supervised at all times.

**DANGER** – To reduce the risk of injury to persons, do not remove suction fittings.

Spa location must accommodate sufficient drainage of water around the base of the structure as well as the power source compartment.

Prolonged immersion in water that is warmer than normal body temperature can result in a dangerous condition known as HYPERTHERMIA. The causes, symptoms, and effects of hyperthermia may be described as follows: Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6°F. The symptoms of hyperthermia include dizziness, fainting, drowsiness, lethargy, and an increase in the internal temperature of the body. The effects of hyperthermia include (1) unawareness of impending hazard, (2) failure to perceive heat, (3) failure to recognize the need to exit spa, (4) physical inability to exit spa, (5) fetal damage in pregnant women, (6) unconsciousness resulting in danger of drowning.

**WARNING** – The use of alcohol, drugs or medication can greatly increase the risk of fatal hyperthermia in hot tubs and spas.

**DANGER** – RISK OF ELECTRICAL SHOCK. Install at least 5 feet (1.5m) from all metal surfaces. (A spa may be installed within 5 feet of metal surfaces if each metal surface is permanently connected by a solid copper conductor attached to the wire connector on the terminal box that is provided for this purpose. Refer to NEC and local codes in effect at the time of installation.

A pressure wire connector is provided on the control box to permit connection of a solid copper bonding conductor between this point and any equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within 5 feet (1.5m) of the unit as needed to comply with local requirements.

Bond accessible metal to the dedicated connector on the equipment grounding bus, bond the equipment ground bus to the local common bonding grid as part of the installation in the form of (1) a reinforced concrete slab for support, (2) a ground plate provided beneath the hot tub or spa, or (3) a permanent ground connection that is acceptable to the local inspection authority.

**DANGER** – RISK OF ELECTRICAL SHOCK. Do not permit any electrical appliance, such as a light, telephone, radio, or television, within 5 feet (1.5m) of a spa or hot tub.

**WARNING** – To reduce the risk of injury:

- a) The water in a spa or hot tub should never exceed 104°F (40°C). Water temperatures between 100° (38°C) and 104°F (40°C) are considered safe for a healthy adult. Lower water temperatures are recommended for extended use (exceeding 10 – 15 minutes) and for young children.
- b) Excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy, pregnant or possibly pregnant women should limit spa or hot tub water temperatures to 100°F (38°C).
- c) Before entering the spa or hot tub, the user should measure the water temperature with an accurate thermometer.
- d) The use of alcohol, drugs, or medication before or during spa or hot tub use may lead to unconsciousness with the possibility of drowning.

- e) Persons suffering from obesity or with a medical history of heart disease, low or high blood pressure, circulatory system problems, or diabetes should consult a physician before using a spa or hot tub.
- f) Persons using medication should consult a physician before using a spa or hot tub since some medication may affect heart rate, blood pressure, and circulation.

**For Units with a GFCI (Ground Fault Circuit Interrupter)**

**WARNING** – This appliance is provided with a ground-fault-circuit-interrupter located on the control box. Before each use and with the unit operating, push the test button. The unit should stop operating and the reset button should appear. Push the reset button. The unit should now operate normally. If the interrupter does not perform in this manner, a ground current is flowing indicating the possibility of electrical shock. Disconnect the power, or unplug from receptacle, until the fault has been identified and corrected.

**For Cord and Plug Connected Units**

Connected to a grounded, grounding type receptacle only. NEVER connect the spa to an extension cord.

Do not bury the cord.

**WARNING** – To reduce the risk of electrical shock, replace damaged cord immediately.

**For Permanently Installed Units**

A terminal marked “G” or “ground” is provided in the wiring box located inside the equipment compartment. To reduce the risk of electric shock, connect the terminal or connector to the grounding terminal of your electrical service or supply panel with a continuous green insulated copper wire in accordance with National Electric Code Table 250-95 and any other local codes in effect at the time of the installation.

**For Permanently Installed Units not Provided with an Internal Disconnecting Method**

The electrical supply for this product must include a suitably rated switch or circuit breaker to open all ungrounded supply conductors to comply with Section 422-20 of the National Electric Code, ANSI/NFPA 70 –1987. The disconnecting means must be readily accessible to the tub occupant but installed at least 5 feet (1.5m) from the tub water

SAVE THESE INSTRUCTIONS

**No Heat**

- Temperature not set correctly** – Adjust setting.
- Hi-Limit protection tripped** – Allow unit to cool down and reset by turning power off then on.
- No Power to Heater** – Reset breaker at service panel.
- Low water flow** – Clean or Replace filter.
- Spa Cover not installed** – Replace Spa Cover.

**Low Heat**

- Inaccurate Thermometer** – Measure water temperature with an accurate thermometer.
- Temperature no set correctly** – Adjust Set Point.
- Spa Cover not installed** – Replace spa cover.
- Overheat Protection tripped** – Allow unit to cool down and restart by turning power off then on.
- Temperature Sensor not in Drywell** – Place sensor in drywell or contact your local dealer.

**High Heat**

- Temperature Sensor not in Drywell** – Place sensor in drywell or contact your local dealer.
- Jets left running continuously** – Turn Jets Off.
- Temperature set too high** – Adjust Set Point.
- High ambient temperature** – Remove spa cover.

**GFCI Trips Occasionally**

**Lightning or Electrical storm, Power surge, Extremely humid conditions, or Radio frequency interference** – Reset GFCI. NOTE: Assure that the GFCI is properly grounded and bonded.

**GFCI Trips Repeatedly**

**Defective Component** – Contact your local dealer.

**Warm Weather Conditions**

Since your spa will normally be expected to maintain warm to hot water to be ready for your use, a great deal of attention has been directed to the energy conservation detail of insulation so as to keep electrical costs down. This energy conservation efficiency may be achieved by extensive insulation of the skirt, plumbing and spa shell, and in some climates full foam insulation may have been provided.

This energy conservation feature may cause an inconvenience during warmer times of the year. During warm periods of the year, the temperature within the equipment compartment can elevate to a point that the pump will automatically turn off for a short period of time (15-30 minutes) to allow the pump to cool down before automatically restarting. This cool down feature will not harm your spa but serves only to protect the pump from damage and as an indicator that it is too hot. To minimize this occurrence, refrain from using your Hydrotherapy Jets for prolonged periods of time during warm seasons.

The jet pump chosen for your spa has been specifically sized for maximum performance and your Hydrotherapy enjoyment.

**Spaside Control**

The spaside control provided with your new spa offers a safe and convenient method to operate the various features of your spa. Allowing children to PLAY with these controls will shorten the life of the electrical components and possibly damage the Hydrotherapy Jet Pump and Air Blower. Please assure that these controls are used for the intended purpose and in the correct manner. Failure to properly use these controls may void the manufacturers warranty on affected components.

**High Water Temperature**

There are many factors that can cause your spa water to exceed your desired temperature. The following are the most common causes:

- ▮ High Outside Temperature
- ▮ Running the Jets Too Long
- ▮ Thermostat Setting was Changed
- ▮ Poor Underskirt Ventilation

## Troubleshooting

The following are some basic trouble shooting tips designed to aid the user in identifying some common problems. If a problem still exists, do not hesitate to phone your local dealer or service technician. **Note: your system may not include all components listed.**

### Nothing Operates

- Main Breaker is Off – Set to On.
- Sub-Panel Breaker Off – Set to ON.
- Equipment GFCI Off – Set to On.
- Power switch in Off position – Set to On.
- Components not plugged in – Plug in components.
- Power cord not plugged in – Plug in power cord.
- Hi-Limit Protection Tripped – Allow unit to cool down and restart by turning power off then on.

### No, Low or Surging Water Flow

- Air lock in plumbing system – “Bleed” the system.
- Restricted Flow – Insure that the water shut-off valves are open and that suction fittings are not blocked by debris.
- Dirty Filter – Clean or replace filter.
- Low Water Level – Increase water level to recommended level.

### No Low Speed Pump

- Pump not Plugged in – Plug in the Pump.
- Low Level Programming – Contact your local dealer or authorized service center.
- Blown Pump Fuse on System Board – Contact your local dealer or authorized service center.

### Therapy Jets Inoperative

- Blower or Pump not Plugged in – Plug in the Blower or Pump.
- Low Level Programming – Contact your local dealer or authorized service center.
- Blown Pump or Blower Fuse on System Board – Contact your local dealer or authorized service center.

### No Jets or Blower

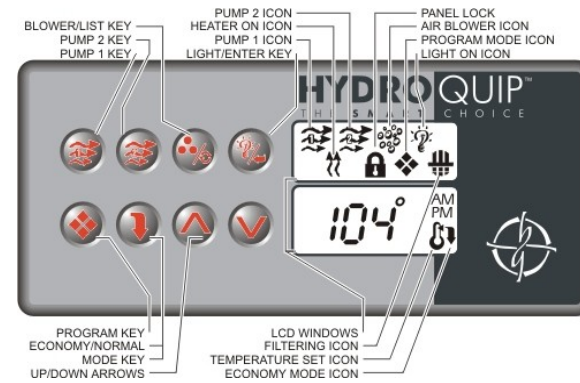
- Blower or Pump not Plugged in – Plug in the Blower or Pump.
- Low Level Programming – Contact your local dealer or authorized service center.
- Blown Pump or Blower Fuse on System Board – Contact your local dealer or authorized service center.

### Light Inoperative

- Light Bulb defective – Replace bulb or contact your local dealer.
- Reflector fallen off – Replace deflector or contact your local dealer.
- Light not plugged in – Plug in the Light.
- Blown Light Fuse on System Board – Contact your local dealer or authorized service center.

### Water Leaks

- Spa Overfilled – Adjust water level.
- Too many people in spa – Adjust water level.
- Drain valve left open – Close drain valve.
- Couplings or Unions loose – Tighten or contact your local dealer.
- Pump Seal leaking – Contact your local dealer.
- Plumbing / Connections leaking – Contact your local dealer.
- Water leaking from Spa-Side control – Contact your local dealer.
- Water in Air Blower plumbing – Contact your local dealer.



**Pump 1 Key:** Press this key once to turn Pump 1 on. A second press will turn it off. For dual speed pump operation; Press this key once to turn Pump 1 onto Low speed, press this key a second time to turn Pump 1 onto High speed, a third press will turn the pump off. A built-in timer will shut the pump off after 20 minutes of operation unless done so manually. The Pump 1 Icon will appear on the LCD while the pump is running in High speed and flash while it is in Low speed. If the filter icon appears, a filtration cycle has begun and you will not be able to turn the pump off.



**Pump 2 Key:** Press this key once to turn Pump 2 on. A second press will turn it off. For dual speed pump operation; Press this key once to turn Pump 2 onto Low speed, press this key a second time to turn Pump 2 onto High speed, a third press will turn the pump off. A built-in timer will shut the pump off after 20 minutes of operation unless done so manually. The Pump 2 Icon will appear while the pump is running in High speed and flash while it is in Low speed.



**Accessory/List Key:** Press this key once to turn blower onto High speed, a second press will turn the blower onto Low speed and a third press will turn the blower off. A built-in timer will shut the pump off after 20 minutes of operation unless done so manually. The Accessory Icon will appear while the blower is running in High speed and flash while it is in Low speed.



**Light/Enter Key:** Press this key to turn the light onto its highest intensity, a second press will turn the light onto low and a third press will turn it off. If equipped with Fiber Optic: Press this key once to show “L1”. Use the Up arrow key to turn the light onto High, Low and Off. Press the light key a second time, “F1” will appear. Use the Up arrow key to turn the Fiber Optic wheel and light on, Fiber Optic wheel off with light on and both Off. The light will automatically shut off after 2 hours. The Light Icon will appear while the light is on.



**Temperature Set Keys:** Press the Up arrow key to increase the desired temperature. Press the Down arrow key to decrease the temperature. The temperature can be adjusted in 1°F increments from 59°F to 104°F (5°C to 40°C). The new setting will remain on the display for 5 seconds as a confirmation. During this time the Set Point icon will be appear to let you know this is the desired and not the actual temperature. After 5 seconds the display will return to the current temperature reading. When the temperature drops to 1°F below the set temperature, the heater will be turned on until the temperature is 1°F above the set temperature. The heater icon will appear while the heater is on and flash when there is a call for heat and the heater has not yet been activated.



**Programming Parameters:** There are 7 parameters that may be programmed. Follow these procedures to set each parameter: (1) Press and hold the Program Key for 5-seconds until the program icon appears. (2) Press the List (Accessory) Key until the parameter to be modified is displayed. (3) Once the parameter is displayed, press the Enter (Light) Key to show the current setting. (4) Use the Up/Down arrows to adjust the setting. (5) Once the parameter has been adjusted, press the Enter (Light) Key to confirm the change. The display will then revert back to the Temperature/Time mode. Repeat these steps as needed to modify each parameter.

**Power Loss:** Any interruption of power will cause the unit to reset and revert to the default programming of 95°F set point temperature and 2, 2-hour filtration cycles.

**Filtration Start Time:** Press the Program key. Press the List key until **Flon** is displayed. Press the Enter key to show the current setting **12:00**. Use the Up/Down arrows to adjust the parameter. Press the Enter key to confirm the change and return to the Temp/Time mode.

**Filtration Duration:** Press the program key. Press the List key until **Fldu** is displayed. Press the Enter key to show the current setting **OFF to 12:00** (constant). Use the Up/Down arrows to adjust the parameter. Press the Enter key to confirm the change and return to the Temp/Time mode.

**Temperature Display:** Press the Program key. Press the List key until **TuF or TuC** is displayed. Press the Enter key to show the current setting **F° or C°**. Use the Up/Down arrows to adjust the parameter. Press the Enter key to confirm the change and return to the Temp/Time mode.

**Time of Day:** Press the Program key. Press the List key until the time **12:00** is displayed. Press the Enter key to show the current setting. Use the Up/Down arrows to adjust the parameter. Press the Enter key to confirm the change and return to the Temp/Time mode.

**Economy Mode Start Time:** Press the Program key. Press the List key until **ECon** is displayed. Press the Enter key to show the current setting. Use the Up/Down arrows to adjust the parameter. Press the Enter key to confirm the change and return to the Temp/Time mode.

**Economy Mode Duration:** Press the Program key. Press the List key until **ECdu** is displayed. Press the Enter key to show the current setting of **OFF to 24:00** (always active). Use the Up/Down arrows to adjust the parameter. Press the Enter key to confirm the change and return to the Temp/Time mode.

**Panel Lock:** Press the Program key. Press the List key until **Loc** is displayed. Press the Enter key to show the current setting of **On or OFF**. Use the Up/Down arrows to adjust the parameter. Press the Enter key to confirm the change and return to the Temp/Time mode.

**Note:** Once the spaside panel has been locked, **Loc** will appear in the display. To **Unlock** the spaside panel the user must follow this procedure. Press the Program Key (**Loc** will appear). Press (**in this order**): Up Arrow Key, Pump 1 Key and the Light Key. The **Loc** will disappear.



**Economy Mode:** Press this key to toggle between Economy and Normal operation. The **Normal Mode** will automatically maintain the water temperature at the desired set point. The **Economy Mode** will maintain the water temperature at 20°F below the set point until manually removed from this mode. This mode is ideal for energy saving.

## Alarms

**Smart Winter Mode:** If the system detects ambient conditions below a preset factory setting, the system will automatically activate the Smart Winter Mode for a period of **24 hours**. In this mode, if a pump has not been powered in the last 2 hours, the system will turn it on for one minute to prevent freezing. The Filter Mode light indicator will flash while the pump is running in this mode. **Note: If you notice the pump coming on every 2 hours. This is the most likely cause. This will continue for a 24-hour period. This is normal and is the Systems protection against freezing.**

**Freeze Mode:** If the actual spa water temperature drops below a preset factory setting, the pump and heater will be turned on until the spa water has been sufficiently heated to prevent freezing. All functions (*except the alarms*) will be disabled while the freeze protection is active.

**Over Temperature Protection:** If the water temperature exceeds 112°F at the Temperature sensor 3 flashing dots will appear below the temperature display and the heater as well as all other outputs will shut off. After the water has cooled down power to the spa must be cycled off then on to reset the system. If the spa water temperature does not seem to be elevated, the error indication may have been caused by poor water flow or electrical line interference (*thunder storms, voltage surges, etc.*). Simply reset and monitor the system.

**Power-Up Detection:** Upon first powering the system or if a power outage occurs, the display will flash until a key is pressed. This feature also lets the user know there has been a power failure.

## Error Messages



### Three Flashing Dots with Pump off

**Pressure or Flow Switch Activated:** To prevent damage to your equipment, Hydro-Quip installs a pressure or flow switch. If 3 flashing dots appear below the temperature display while there is no pump(s) operating, turn the pump(s) on. If the 3 flashing dots went away this indicates that the pressure or flow switch was activated although there was no water flow.

**Contact your local dealer**



### Three Flashing Dots with Pump On

**Pressure or Flow Switch Not Activated:** If 3 flashing dots appear below the temperature display while the pump(s) is operating, turn the pump(s) off. If the 3 flashing dots went away this indicates that the pressure or flow switch was not activated although there was water flow.

**Contact your local dealer**

**Note:** A dirty filter limiting the water flow will also cause this error message to appear.

*When the pump is turned on, there is a 7-second delay before the system will start to auto check the pressure or flow switch.*



OR



### Temperature Sensor

If the display shows a constant 33°F and this is not the actual temperature or the displayed temperature greatly differs from the actual spa water temperature, a problem with the water temperature sensor has occurred.

**Contact your local dealer**



### High Temperature

If the water temperature exceeds 119°F, the Hi-Limit protection will be turned on and the heater will be deactivated until the water has cooled to 110°F. 3 flashing dots will appear below the elevated temperature. Power to the system must be cycled off then on to reset the system.

**Contact your local dealer.**

**Freeze Protection & Winterizing:** When freezing weather and/or power losses are expected, contact your local spa dealer for freeze protection or winterizing recommendations for both the spa and the equipment system. Freeze related damage is not covered by the Hydro-Quip warranty.