



HYDROQUIP™
Premier providers of quality retrofit control systems

Installation, Operation & Service Procedures



Heater System Model BES-7009

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IMPORTANT SAFETY INSTRUCTIONS

- DO NOT DISCARD -

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRICAL SHOCK OR INJURY TO PERSONS READ AND FOLLOW ALL INSTRUCTIONS

You should have received safety instructions with your hydromassage bathtub system. Please read and follow them carefully. Those instructions should include the following warnings:

1. **WARNING - Risk of Electrical Shock** - Do not permit any electrical appliances (such as a light, telephone, radio, or television) within five feet of the bathtub.
2. **DANGER** - To reduce the risk of injury, do not remove the suction cover from the bathtub.
3. To Reduce the Risk of Injury:
 - A. The water in your bathtub should not exceed 104 Fahrenheit. Lower water temperatures are recommended for extended bathing (exceeding 10-15 minutes) and are definitely recommended for young children.
 - B. Pregnant or possibly pregnant women should consult a physician before using the hydromassage bathtub. Water temperatures in excess of 104 Fahrenheit are not recommended.
 - C. The use of alcohol, drugs or medication before or during the use of the hydromassage bathtub may lead to unconsciousness with the possibility of drowning. Consult your physician before using the bathtub if you are using medication.
 - D. 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 the hydromassage bathtub.
4. **WARNING - Risk of Child Drowning** - To reduce the risk of accidental drowning, do not permit children to use the hydromassage bathtub unless closely supervised.
5. **WARNING - RISK OF ELECTRICAL SHOCK** - All electrical connections must be accomplished by a qualified electrician in accordance with Article 680 of the National Electric Code and any local codes. In addition, a GFCI MUST protect all branch circuits to the bathtub and every electrical component MUST be grounded.
6. The heater must be connected only to a supply circuit that is protected by a ground-fault-circuit-interrupter (GFCI). The GFCI should be tested on a routine basis. To test the GFCI, push the test button. Power to the bathtub should be turned off. Push the reset button. Power should be restored. If the GFCI fails to operate in this manner, the GFCI is defective. If the GFCI interrupts power to the bathtub without the test button being pushed, a ground current is flowing, indicating the possibility of an electrical shock. Do not use the bathtub. Disconnect the hydromassage bathtub and have the problem corrected by a qualified service technician before using

7. **WARNING** - Prolonged immersion in hotter water may induce hyperthermia. Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6 Fahrenheit. The symptoms of hyperthermia include an increase in the internal temperature of the body, dizziness, lethargy, drowsiness and fainting. The effects of hyperthermia include:

- A. Failure to perceive heat
- B. Failure to recognize the need to exit the bathtub
- C. Unawareness of impending hazard
- D. Fetal damage in pregnant women
- E. Physical inability to exit the bathtub

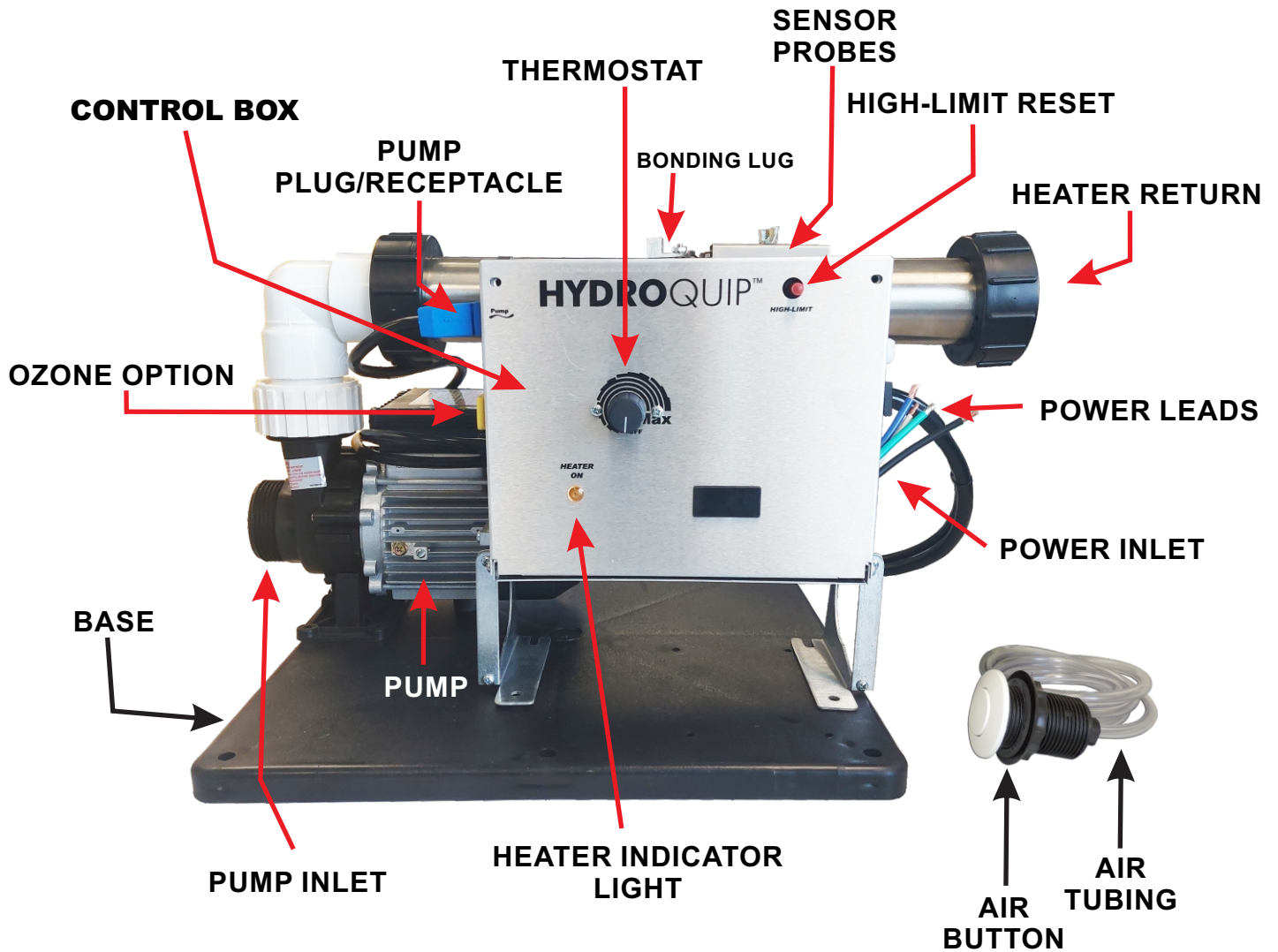
INSTALLATION INSTRUCTIONS



When using electrical products, basic precautions should always be followed, including the following:

1. **DANGER - RISK OF ELECTRICAL SHOCK** - Connect only to a circuit protected by a Ground-Fault-Circuit-Interrupter.
2. Grounding is required. The heater should be installed by a qualified technician and grounded.
3. Install to permit access for servicing.

Product Description



Note: Pump provided may vary

Assembly

Note:

This heater system is designed to be used with water only, as furnished by municipal water distribution systems. The warranty does not cover its use with mineral, sea, salt, or any other non-potable water. The minimum piping to be used in the suction and return connections of the heater to the tub is to be 1.5" Schedule 40PVC.

HEATER MAY BE INSTALLED VERTICALLY OR HORIZONTALLY

1. Locate the BES-7009 system in an accessible area adjacent to the tub. The area should be at the same elevation as the tank itself, or as near as possible. Installation must be in a manner that no person can touch the water or any source of electrical power. Electrical power considered accessible when they can be touched by a person having a 6' reach (1.83m) from inside the tank. This is only necessary if the heater assy and the tank **ARE NOT** divided by a solid wall or partition which would make physical contact impossible.
 - The system must be located in an **indoor location only**, with a minimum clearance of six (6) inches to all combustible construction.
 - For best efficiency, the heater **should be located within five (5) feet of the tub**.
 - Maintain adequate access clearance for servicing the heater in the event of a problem.
 - The heater assembly must not be installed on a combustible surface.
 - Locate the heater in a manner that should any connections between the heater and the tub leak water damage cannot occur.
2. Position the heater/pump assembly in its approximate location. The centerline of the suction fittings and inlet to the pump should be 3"- 4" above the bottom of the tub floor.
 - Mark the locations of the suction fittings, a minimum of 36" apart or on separate walls of the tank.
 - Using a 2 3/8" hole saw drill holes into the tub shell and install the fittings.
 - The return fitting should be located directly above and inline with the heater/pump vertical centerline as far down the tub wall as possible.
 - Mark the location of the return fitting then using a 2 3/8" hole saw drill the tub and install the fitting.
3. With the heater/pump assembly positioned in its approximate desired final location, **in line and level with** the suction fittings. Determine the exact pump mounting position by preassembling the plumbing. **Be sure to align the pump in such a way that the plumbing is not applying tension/stress to the tub wall. Allowing such tension will cause unnecessary noise/vibration and can cause leaks.**
4. After all parts have been pre-assembled and aligned with the holes, dis-assemble the unit and glue the necessary connections.
5. Once all glued parts are dry, re-assemble, making sure **all gaskets and o'rings are in place** on all union type connections. **Union connections should be hand tight only!** Over tightening these connections can cause them to crack and leak.
6. Determine a location for the power air button in a convenient location above water level within 10' of the heater. Drill a 1 1/4" hole and mount the air button, route the air hose back to the heater and connect to the air switch. **Use caution not to kink or pinch the air hose.**

Wiring

Attention: Due to the risk of electrical shock a licensed electrician experienced in spa, tub and pool heaters should install this unit in strict compliance with the National Electric Code and any state or local laws in effect which may apply. For units intended for use in other than single family dwellings a clearly labeled emergency switch shall be provided as part of the installation. The switch shall be readily accessible to the occupants and shall be installed at least 5 feet (1.52m) away, adjacent to, and within sight of the unit.

The BES-7009 has been completely factory wired for proper operation and requires only field connection to the branch circuits. Field wiring, power supply conductors and branch circuit protectors must be installed by a qualified electrician in accordance with Article 680 of the National Electric Code ANSI/NFPA No. 70-1981 and in accordance with local codes and/or utility requirements.

Operation of the heater is controlled primarily by the thermostat; however, a built in pressure switch is incorporated to prevent the heater from activation if there is insufficient water pressure detected in the heater. The pump is connected to a 3-pin blue connector on the control box and can be powered on and off remotely via a pneumatic air switch on the control box.

CONNECTING POWER TO HEATER:

120V/15A (1.0kw):

Provided w/15A GFCI Cord - *Connect to dedicated 15A receptacle*

240V/20A (4.0kw): *Always connect heater system to a GFCI protected power source.*

Black = Line 1
Blue = Line 2
White = Neutral
Green/Bonding Lugs = Ground

CONNECTING/BONDING PUMP TO HEATER: A cord and plug has been provided on the pump assembly to allow easy connection to the heater control box. Connect to the receptacle on the bottom the control box and complete this step by using the solid #8 copper bonding wire to **BOND** the pump to the heater assembly utilizing the bonding lug on each component.

VERIFY PROPER OPERATION:

1. Fill the tub with water above the return fitting.
2. Turn the thermostat to its lowest setting
3. Apply power to the system - *The heater should not come on, if it does immediately turn the power off to the system and do not continue until this issue is corrected - See troubleshooting section Page #8, correct and move to next step.*
4. Connect the supplied air tubing to the air switch on the control box and the other end to the supplied air button. Pressing this air button will activate and deactivate the pump.
5. Activate the pump by pressing the air button, the pump should activate and water should now be flowing out of the return fitting.
6. Once all the air has been evacuated from the plumbing you can safely turn the thermostat up, the heater indicator light should illuminate indicating power is now applied to the heater.
7. Now press the air button to de-activate the pump and assure the heater shuts off when the pump does. If the heater does not shut off then immediately reactivate the pump then proceed to the troubleshooting section on page #8.

Start-up & Operation

1. Fill the tub to the proper level.
2. Turn the thermostat to its lowest setting
3. Apply power to the system
4. If the pump is connected to the control box, connect the supplied air tubing to the air switch on the bottom of the heater control box and the other end to the supplied air button. Pressing this air button will activate and deactivate the pump **only if connected to the control box**.
5. Activate the pump by pressing the air button or whatever means are present for activating the pump, water should now be flowing out of the return fitting.
6. Once all the air has been evacuated from the plumbing you can safely turn the thermostat up, the heater indicator light should illuminate indicating power is now applied to the heater.

Operation:

The BES-7009 is designed to allow the pump to run independently of the heater, simply turn the thermostat to its lowest position and activate the pump as desired.

Warnings:

- ☞ Always turn the power off to the system before draining the tub
- ☞ Remember there are live electrical connections inside the heater and pump assy.
- ☞ **Never attempt any service unless power is turned off to the system.**
- ☞ Do not operate the system unless the water is above the return fitting. Operating without a proper level may cause the heater to operate at a higher internal temperature causing premature failure of the heater element and/or other components
- ☞ Pregnant women need to be alerted to the danger of fetal damage and should consult their physicians before using tub.
- ☞ Before entering the tub users should **check the water temperature** with an accurate thermometer; thermostats may vary by as much as 4 Fahrenheit.
- ☞ Do not tamper with the controls as **scalding** can result if safety controls are not in proper order and/or altered in anyway

High-Limit Protection:

The heater is equipped with a high-limit protection device to disable the heater in the event of water temperature overheat. If this device trips, reset by pressing the red reset button on the front of the control box. If the switch trips repeatedly turn the power off to the system and contact a service agent.
DO NOT USE TUB UNTIL ISSUE IS CORRECTED

Troubleshooting

Equipment system will not operate:

1. Check the main circuit breaker panel. If the circuit breaker has tripped reset the breaker. If the circuit breaker trips repeatedly, contact a service technician to correct the problem.
2. Check the Ground Fault Circuit Interrupter, if equipped, if the breaker has tripped, reset the breaker. If the GFCI trips repeatedly, contact a service technician to correct the problem.
3. Make sure the Power Air Switch is turned "ON"
4. For cord connected units check the receptacle.
5. Make sure the high-limit has not tripped. Push to reset.

Pump will run but there is no water flow:

1. Make sure system is installed below water level.
2. Check the suction fittings to make sure that they are not clogged with debris.
3. Check the water level and make sure it is above the jets and at the proper level on the skimmer opening.
4. Check the pump for trapped air. With the pump running, loosen the union at the pump outlet to release any trapped air. You may need to use a sponge to collect the water released during this procedure.

Pump runs and there is water flow but no heat:

1. Turn the thermostat to a higher temperature setting. Do not expect to feel hot water coming from the jets.
2. Check to see if the high limit switch reset button, located on the front of the control box, has popped outward. If so, reset by pressing inward.
3. Check to make sure that any valves are open and that there is full flow. Limited water flow may not activate the pressure switch to allow the heater to come on.

The water will not maintain the desired temperature:

1. Turn the thermostat to a higher setting.

Pressure Switch adjustment:

With pump running and thermostat calling for heat if no heat indicator is illuminated perform the following:

1. Insure flow is moving into tub from equipment and that no air bubbles are present at tub return fitting (if air present open pump bleed valve on face to let air escape).
2. Insert flat tip screwdriver into slot on top of pressure switch and adjust CCW until heat engages (if heat indicator flickers continue adjusting until it remains steady).
3. Once heat indicator remains on steadily adjust the pressure switch knob an additional ½ turn CCW.
4. Disconnect pump power by unplugging it from the control box. Insure that heat indicator does not come on with the thermostat turned up. If indicator does illuminate immediately disconnect power, reconnect pump, and repeat steps 1-3 until proper operation is observed.



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