



OPERATION AND CARE GUIDE

THIS GUIDE IS INTENDED TO SUPPLY YOU WITH THE INFORMATION TO GET THE MOST FROM YOUR SPA. WITH PROPER CARE AND REGULAR MAINTENANCE, YOUR SPA WILL PROVIDE YOU WITH YEARS OF TROUBLE FREE RELAXATION, HYDROTHERAPY AND ENJOYMENT.

SPA PRE-SITE PREPARATION

Installation Considerations:

It is highly recommended that the owner/user of this spa carefully read all instructions in this manual prior to having your spa installed at your chosen location, whether indoors or outdoors. **IMPROPER INSTALLATION MAY RESULT IN EQUIPMENT DAMAGE AND VOID THE SPA'S WARRANTY.**

GETTING THE SPA TO YOUR SITE

- All portable spas require 40 inches or more of clearance through gates, doors, between houses and side fences, around corners and at least 9 feet of overhead clearance depending on the size of the unit. It is the customer's responsibility to make sure all clearance requirements are met.
- If we attempt to deliver and discover that a crane is necessary, or the yard is not fully prepared, there will be an additional charge for the second delivery. Customer pays for the crane service and/or any additional manpower needed. If a section of fence or other obstacles are in the way, it is the customer's responsibility to remove and replace these obstacles.

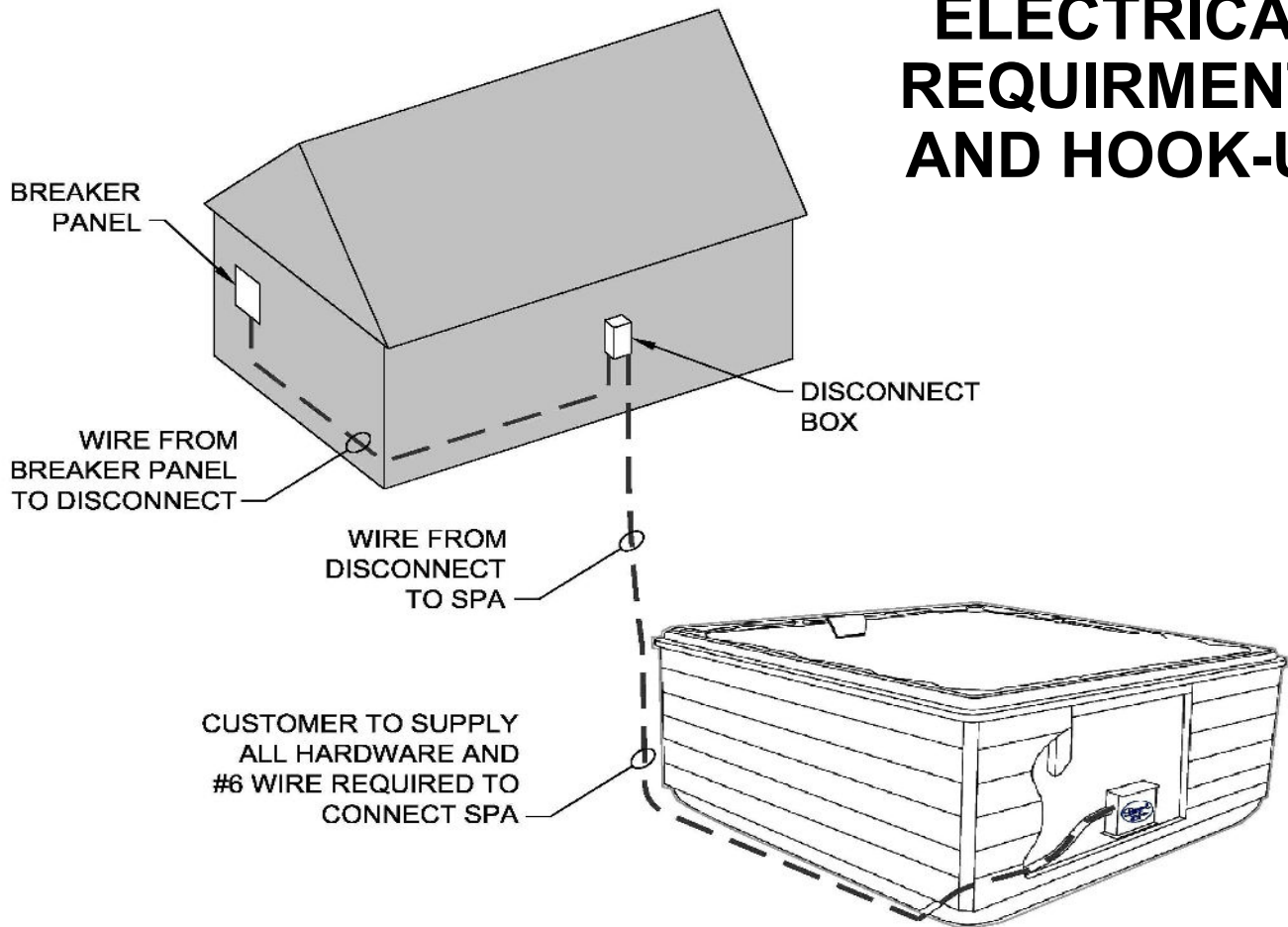
SPA PAD REQUIREMENTS

Your new spa **MUST BE PLACED ON A UNIFORMLY FIRM AND LEVEL SURFACE.** The pad foundation recommended is a concrete pad at least 4 inches thick. As an alternative, a pea gravel foundation pad could be used, but it must be contained in a secure wood or concrete restraining border so that the loose gravel cannot shift once the spa is in place. Refer to your brochure for foundation/pad size requirements. If a concrete pad is poured, this is the logical time to "plumb-in" your electrical conduit for 220 volt power line if desired. Be sure the concrete has cured for at least one week before setting the spa in place. A typical spa, once filled with water, could weigh as much as 7000 lbs. **AN UNEVEN OR CRACKED CONCRETE PAD, OR IMPROPERLY SHIMMING YOUR SPA MAY CAUSE THE SPA TO BUCKLE, DISTORT AND / OR CRACK, RESULTING IN THE VOIDING OF YOUR SPA'S WARRANTY.** Royal Spa does not level the area you want to place your spa, customer is responsible for leveling area if needed.

ADDITIONAL REQUIREMENTS

- Royal Spa does not bring water to fill your spa. The delivery crew will require the use of your garden hose and your water supply to fill your spa. You may make arrangements to have water delivered for your spa if you do not wish to use your water supply.
- All installations require the equipment system to be shielded from the weather. If the equipment system is placed away from the spa then an enclosure will need to be built over it. The customer is responsible for providing this enclosure. Spas delivered without their cabinet structure, (not *skirted*) will need additional requirements to prevent environmental damage.
- Balconies and decks must be constructed to current state and local codes to safely support the maximum load of your water filled spa and the number of people using the spa. Check with your construction contractor for these specifications. Balconies and decks should support at least 110 pounds per square foot.
- It is the responsibility of the owner to provide clear access on **all sides** of the spa in the event a repair is necessary. Otherwise, additional costs to the customer for the service and repair of the spa may be incurred.
- If the spa is to be set in-ground, (both in a cabinet or without a cabinet) even support of bottom, sides, and lip are absolutely necessary to insure proper structural support and to keep warranties valid. A properly constructed vault is recommended for in-ground installations. In-ground installations also require proper drainage of water and may require a sump pump to remove spa and rain water from a vault. Flooding of the vault will damage the spa's equipment and will not be covered by any warranty. An access door must be provided to the equipment area and must allow complete and clear access to the inside of the spa's equipment area.
- It is not recommended to backfill against the spas shell or cabinet. This will damage the spa and void your warranty. All in-ground spas should be placed in a vault.
- During colder months: You will need to have your fill hose and water supply thawed and ready for filling your spa at delivery. ***The Delivery Crew does not bring a hose or water.***

ELECTRICAL REQUIREMENTS AND HOOK-UP



220 Volt 50 Amp. (3 Wires Total)

Most 220 volt, 4.0 KW Equipment Systems requires two #6 gauge wires plus a ground wire (**3 wires total**). A 50 Amp. Double Pole GFCI Breaker should be directly hard-wired to the breaker panel. (Copper Wire Only) A Disconnect Box is required within eyesight but **5 ft. from the spa or more**. The GFCI may be located in the Main Breaker box or in the Disconnect Box. Allow plenty of extra wire from the Disconnect Box to the Spa Equipment System area so the equipment can be directly hard-wired. **IF THE WIRE IS TOO SHORT, ROYAL SPA WILL NOT BE ABLE TO HOOK-UP YOUR SPA. ROYAL SPA IS NOT A LICENSED ELECTRICAL CONTRACTOR AND CANNOT RUN EXTRA WIRE.**

220 Volt 60 Amp. (3 Wires Total)

All NEW 220 volt, 4.0 KW Equipment Systems require two #6 gauge wires plus a ground wire (**3 wires total**). A 60 Amp. Double Pole GFCI Breaker should be directly hard-wired to the breaker panel. (Copper Wire Only) A Disconnect Box is required within eyesight but **5 ft. from the spa or more**. The GFCI Breaker can be installed in the home's Main Breaker Panel or in the Disconnect Box. Allow plenty of extra wire from the Disconnect Box to the Spa Equipment System area so the equipment can be directly hard-wired. **IF THE WIRE IS TOO SHORT, ROYAL SPA WILL NOT BE ABLE TO HOOK-UP YOUR SPA. ROYAL SPA IS NOT A LICENSED ELECTRICAL CONTRACTOR AND CANNOT RUN EXTRA WIRE.**

The wire for all Medical Package Spas can NOT be stubbed up through the floor of the spa.

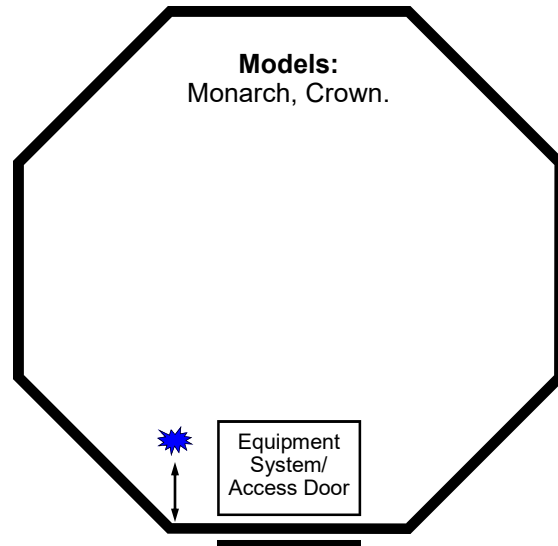
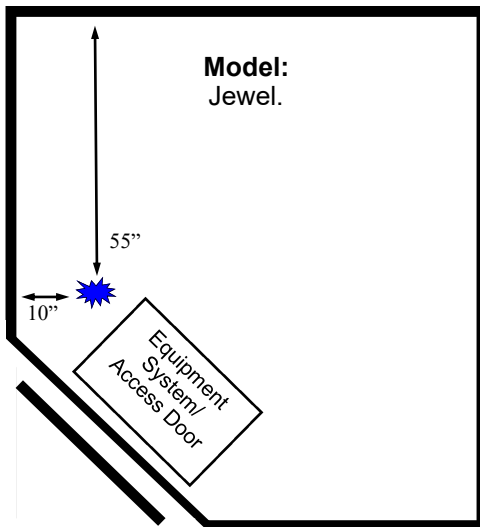
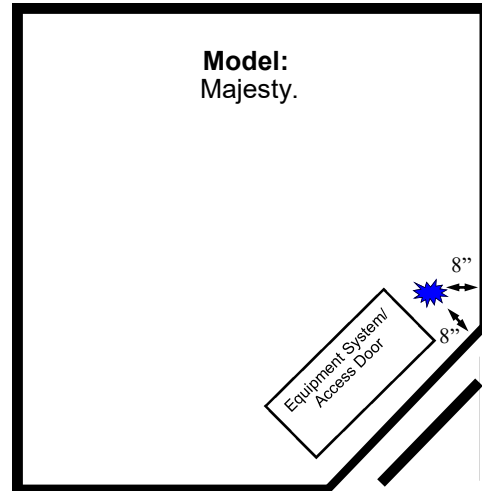
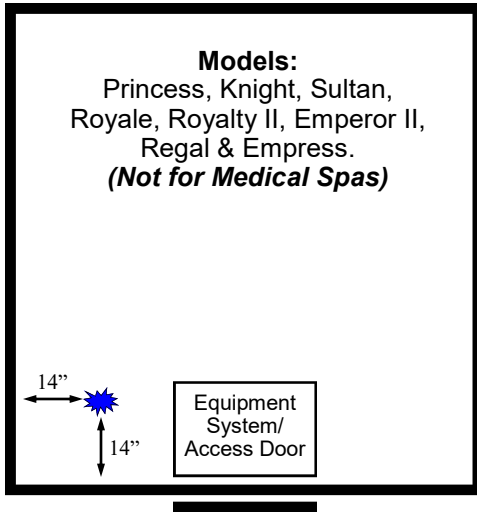
The wire must come through the side wall of the cabinet or Spa Pan.

Electrical Stub-Up Locations

For Portable Spas In Cabinets

With Their Standard Equipment Location

****Measurements Are For Non-Medical or Ultra Package Spas**
(Medical or Ultra Package Spas require the electrical wire to be brought into the spa's cabinet through the side wall of the spa and not from underneath.)



For wiring a "Crown" or "Monarch", start at the corner immediately to the left of the Access Door. From that corner, measure **12 inches** back from the Access Door wall. This location is the best stub-up location for your electrical connection.

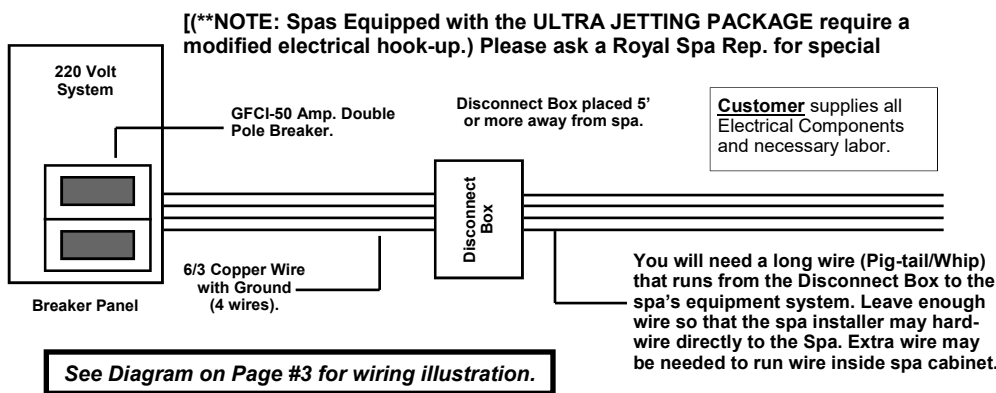
This form refers specifically to Royal Spas in their standard cabinets and with their standard equipment locations. Customizing the location of your equipment system or the design of the cabinet may change the location dimension outlined on this form.

OTHER ELECTRICAL REQUIREMENTS

Some spa models new and used require the electrical specifications listed immediately below. Please ask your Royal Spa Representative to be sure which electrical hook-up your spa will require.

**220 Volt
50 Amp.
(4 Wires Total)**

Some 220 volt, Hot Tub Equipment Systems require three #6 gauge wires plus a ground wire (**4 wires total**). A 50 Amp. Double Pole GFCI Breaker should be directly hard-wired to the breaker panel. (Copper Wire Only) A Disconnect Box is required within eyesight but **5 ft. from the spa or more**. Allow plenty of extra wire from the Disconnect Box to the Spa Equipment System area so the equipment can be directly hard-wired. **IF THE WIRE IS TOO SHORT, ROYAL SPA WILL NOT BE ABLE TO HOOK-UP YOUR SPA. ROYAL SPA IS NOT A LICENSED ELECTRICAL CONTRACTOR AND CANNOT RUN EXTRA WIRE.**

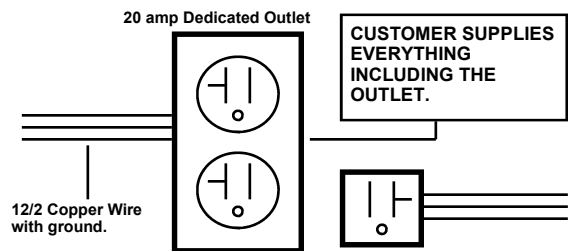


SPA

Contact your local Royal Spa Representative for Electrical Stub-Up Location.

**110 Volt
20 Amp.**

All 110 volt, 1.5 KW Equipment Systems require a 20 Amp. Grounded Dedicated Outlet close to where the spa is to be located. All 120 volt Equipment Systems come complete with their own power cord. The supplied power cord will only fit a Dedicated 120 Volt Outlet. It will not fit in a standard house 120 volt wall plug. **ROYAL SPA IS NOT A LICENSED ELECTRICAL CONTRACTOR AND CANNOT RUN EXTRA WIRE.**



NO EXTENTION CORDS are to be used in conjunction with the operation of the spa. Low voltage damage could result which is not covered by warranty. All electrical work must be done according to NEC (National Electric Code) and any other applicable electrical codes.

IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY

Clearly understand the specifics of safe operation and proper maintenance of your spa. Spas are fun; but along with the fun comes serious responsibility. Establish rules and enforce them. It is your responsibility to be sure that you, your family and guests use the spa safely.

INSTALLATION SAFETY NOTES

- WARNING:** Turning the spa equipment switch **off** does not prevent risk of shock. Power in the equipment area is still live until the main breaker is shut off
- WIRING:** Wiring must be done by a licensed electrical contractor. Spa must be installed with a GFI (ground fault interrupter) in the home breaker panel and dedicated to the spa only. Wiring must meet the requirements of National Electric Code, ANSI/NFPA70-1999 and any other applicable state and local codes.
- ELECTRICAL SHOCK:** Never allow any electrical appliance or device within reach (5' to 10') of spa. Electrical appliances include, but not limited to lighting, radio, TV, yard tools, extension cords or any plug-in devices.
- EQUIPMENT MAINTENANCE:** Never perform any work on the spa equipment or electrical components with out first turning off the main **spa breaker** in your home. It is recommended that a qualified Royal Spa Service Tech do any spa equipment repairs. Any problems with Breakers, GFI, main wire or disconnect should be serviced by a licensed electrician.
- SPA BASE:** The spa base must be designed to hold the weight of the spa, water, and occupants. **Base** must be level and designed to prevent settling. **Base** must meet any applicable local and state codes.

MAINTENANCE SAFETY NOTES

- REPAIRS:** Always contact Royal Spa Service and Repair Department before attempting electrical or mechanical maintenance / repairs.
- FILTERS:** Always turn spa off when removing skimmer or filter for cleaning, reinstall and turn power back on when cleaning is complete.
- WATER BALANCE:** Proper water balance must be maintained to prevent damage to the spa and equipment, and to keep the water a comfortable neutral environment for bathers.
- BACTERIA:** Proper use of sanitizers after spa use and at weekly intervals is recommended to maintain safe and bacteria free spa water.
- CHEMICAL LEVELS:** Excessive chemical levels or the lack of chemicals continue to be the main cause of spa damage, strong and unpleasant odor, and bather discomfort.
- CHEMICAL HANDLING:** Always use caution when handling chemicals. Spa chemicals are **concentrated**, poisonous if swallowed or inhaled, corrosive to the touch and can cause burns to the skin and eyes. It is recommended to wear eye protection when working with chemicals and immediately rinse off any chemical that comes in contact with your skin.
- CHEMICAL STORAGE:** Always store chemicals out of the reach of children. Make all family members aware of the chemicals potential dangers. Store chemicals in a dry, cool, safe place. NEVER mix chemicals together! REMEMBER, chemicals are made to be put into water. NEVER add water to the chemicals.

SPA USE SAFETY NOTES

- SPA COVER:** The spa cover should always be kept closed and locked when not in use. When the spa is in use the cover should be removed from spa or left fully open. NEVER use spa with the cover partially open or in a position that it can fall on someone in the spa.

SPA USE SAFETY NOTES

HYPERTHERMIA: Hyperthermia occurs when the body's internal temperature increases a few degrees above normal body temperature of 98.6°F (37°C). The symptoms include lethargy, drowsiness, dizziness, and fainting. **PREVENTION-** reduce the spa temperature, reduce the length of time in the spa or both.

SICKNESS: It is not recommended that any person enter a spa with open wounds, sores, viral or infectious diseases.

SUCTION FITTINGS: Large fittings/grates in the bottom foot area of the spa are designed to pull in water at a safe suction/flow rate. It is still recommended to keep bathers hair away from this area for added safety. If any of these suction grates break or crack, discontinue use and call Royal Spa Service for repair.

MEDICATION: Soaking in hot water may intensify or exaggerate the effects of many medications. You should contact your physician for his recommendations prior to spa use.

ALCOHOL OR DRUGS: Soaking in hot water will intensify or exaggerate the effects of alcohol and most drugs. The use of alcohol or drugs could make one unable to get out of the spa or cause unconsciousness and drowning. It is recommended that you avoid consuming alcohol or drugs before or while using a spa.

TIME LIMITS: Always observe a reasonable time limit and temperature while using your spa. Remind family and guests of these limits.

WATER TEMPERATURE: Temperatures should not exceed 104°F (40°C). Water temperatures between 99° and 104° are considered safe for a **healthy** adult. Lower temperatures are recommended for people with some health conditions when spa use exceeds 10 minutes. People with any health condition, including pregnancy, should consult their physician prior to use.

CPR: It is a good idea to have at least one responsible person who is trained in artificial respiration and/or cardiopulmonary resuscitation (CPR).

CHILDREN'S SAFETY AND YOUR SPA

ACCIDENTAL DROWNING: Extreme caution must be exercised to prevent unauthorized use or access to spa by unsupervised children. The spa cover must remain closed and locked when not in use.

COVER: Never allow a child to stand or play on the spa cover. Spa covers are not designed to safely hold the weight of a child and could present an extreme danger if it cracked or broke thru.

WATER TEMPERATURE: Should remain at or below normal body temperature (98.6°F) when a child's time in a spa exceeds 5 minutes. Please consult your physician prior to them entering your spa.

CONDUCT: There should be no playing, wrestling or rough-housing in, on or around the spa. Never allow children to walk around spa top area, jump or dive into the spa. It is not recommended children use jet pumps or turbo due to high jet pressures and turbulence could push them under water and disorient them. Children should always keep their heads above the water.

RESPONSIBILITY

The responsibility of proper maintenance, conduct, use, and above all safety is all in your hands as a spa owner. The responsibility of informing your guests and their children of spa rules and safety concerns is also your responsibility and a very important prevention tool.

USING CHEMICALS

The chemicals needed for your spa or hot tub help make it clean, disinfected and more attractive to use. But remember, these chemicals are potentially dangerous and may present some hazards if not used properly. Carefully follow the manufacturer's instructions for the use and storage of chemicals.

In general, here are some tips for chemical usage and storage: Before using chemicals, read the labels and directions carefully. Follow label use instructions. Keep all chemicals out of the reach of children.

Storage & Usage of Your Spa Chemicals

- Chemicals for test kits should be replaced every year.
- Keep the original lids on all chemical containers and make sure the lids are closed tightly when not in use.
- Do not stack different chemicals on top of one another.
- Store your spa or hot tub chemicals in a clean, cool, dry and well ventilated area preferably off the floor to prevent contamination from other materials. Keep them away from chemicals and equipment used for garden and lawn maintenance.
- Do not store your spa or hot tub chemicals where other flammable items may mix with them. For example, a mixture of these chemicals and fertilizer can cause a fire or explosion.
- Keep liquid chemicals away from dry chemicals. Keep apart chemicals which are different forms of oxidizing compounds. Physically separate all different forms of chemicals.
- Do not inhale dust or fumes from any chemicals. If necessary, use proper protective devices for breathing, handling and eye protection. Promptly wash off any chemical residues which get on your skin.
- Never reuse old chemical containers unless specified by the manufacturer.
- If you have any questions regarding safe handling, storage or use of spa or hot tub chemicals, contact the manufacturers.
- Wash out empty disinfectant containers before disposing to eliminate danger of fire, explosion or poisoning
- Carefully clean up any spilled chemicals with large amounts of water, to dilute and wash away the chemicals. Disinfectants and pH adjustment chemicals can usually be sent to the sewer with large quantities of water, since they are intended for use at low levels.
- Always add the chemicals directly to the spa or hot tub water, either in a suitable feeder, distributed across the surface of the water or diluted and poured into the water. Always add chemicals to water. Never add water to chemicals. Follow label use instructions.
- When preparing water solutions for feeder application, pour the chemical slowly into the appropriate amount of water, stirring constantly to provide mixing and dilutions.
- Never add chemicals to the spa or hot tub water while people are using the facility/spa.
- Test the water in your spa or hot tub with a reliable test kit on a schedule recommended by your spa or hot tub professional. Add the necessary chemicals according to the test results and the manufacturer's instructions. In the hot water environments of spas and hot tubs, disinfectants may rapidly break up and spread out, requiring more frequent water testing. Follow your manufacturer's instructions in this regard. The more people who use the facility/spa, the more frequently you should test the water.
- If you find it necessary to drain your spa when the temperatures drop to or below the freezing mark, the spa needs to be filled back up immediately and turned on or winterized to prevent spa damage.
- If you are adding any kind of salt mixture (including Epsom Salt), be sure to add it only after the water has been balanced and the Alkalinity is close to 100 ppm.

INITIAL START UP

1. Fill tub with water from a garden hose. Filling through the Skimmer Basket for the first several minutes can help prevent an airlock in your circulating pump.
2. Turn thermostat(s) **OFF** - at Equipment System in cabinet, and at Command Center (if your spa is equipped with one.)
3. Turn power on at your Disconnect Box.
4. Be sure **ON/OFF** switch is **ON** at Equipment System inside the cabinet.
5. Be sure the Hi-Limit Switch is pushed **IN** on Equipment System-(on 110 volt units, check to be sure **GFI** breaker is **ON** located on the plug.)
6. Check to be sure the Circulating Pump is operating (water flowing from small jets in foot-well). One jet may be the Ozonator Jet and not appear to be working. You can also check the tube coming out of the small Circulating Pump, (at Equipment System inside of the cabinet) and going into the Heater Housing, to see if the water is flowing.
7. Run jets for 2-3 minutes with the heat still in the **OFF/Minimum** position.
8. Check to be sure there are no air locks:
 - a. Filter (loosen Bleeder Valve on top of filter lid until water runs out)
 - b. Circulating Pump
 - c. Therapy Water Pump

*(**WARNING** Air locks can cause instantaneous heater failure, known as “dry firing”, and this is **not** covered under warranty)*
9. Check for water leaks at Couplers on Pumps-hand tighten if necessary.
10. Turn temperature on the Command Center (or, on Equipment System on models without a Command Center) to maximum level. Periodically check temperature of water to until desired temperature is reached. Reduce thermostat setting until **HEAT** light turns off.
11. Check Alkalinity and PH with test strips or test kit—adjust accordingly.
12. Add initial chemicals according to the “Refilling Your Spa” section of this manual.
13. Do Timely Maintenance as directed, and **ENJOY YOUR SPA!**
14. Contact your local Royal Spa Representative to answer any questions that you may have.

SPA CHEMISTRY

REFILLING YOUR SPA

(The following instructions are applicable for 400-500 gallon spas. Smaller spa water capacities will need fewer chemicals for the start-up.)

After filling your spa and Initial Start Up on Page :

- **Add 8 oz. of Metal Gone.** (Used primarily for spas filled with well-water to prevent staining of the spa's surfaces.)
- **Add Sodium Bromide Packet.** (This will give you an instantly available level of bromine in the water.)
- **Add 2 oz. of Renew.** (This activates your Bromine.)
- **Add 2 oz. of Defender.** (This prevents build up of stains, scale and calcium)
- **Bromine Tablets: Put 1 to 3 Bromine Tablets into your Bromine Floater.** Allow to continuously float in your spa. Temporarily remove your floater when using your spa. If you do not have an ozonator more tablets will be needed in the your floater depending on the size of your spa. **(Chlorine may be substituted for Bromine, please get proper instructions from your Royal Spa Representative.)**
- **Check Alkalinity and pH:** Bring them in the Ideal Range on the Test Strips. It is best to balance the Alkalinity within the first 24 hours of filling your spa. Try to get your **Alkalinity around 100 ppm** and your pH will generally come in to range within a day or two. Fine tune the pH as necessary.
(Balancing instructions located on the next page.)

NOTE:

- **Be sure to remove the pillows from the spa when the spa is not in use.**
- **Be sure to rinse your swim suits thoroughly after washing to keep soaps out of your spa. Avoid wearing street clothes in your spa to help keep soaps out of your spa.**

Once A Week :

- **Test Water with Testing Kit.**
(Bromine will test low with most Royal Spas equipped with a properly working Ozonator.)
- **Add 1 oz. of Metal Gon.** (For spas filled with well-water.)
- **Add 1 oz. of Renew.**
(An additional 1 ounce of Shock Out may be used after any heavy bather load.)
- **Add 1 oz. Defender.**
- **Add 1 to 3 Bromine Tablets to your Bromine Floater per week depending on spa usage.**
(Chlorine may be substituted for Bromine, please get proper instructions from your Royal Spa Representative.)

More Bromine will be required with more frequent spa use. The number of Bromine Tablets needed is determined by the size and frequency of bather loads. If the spa is hardly used, you may only use one tablet per week. If the spa is used several times a week by four or more people, then you may use 3 or 4 tablets of Bromine. This will take some fine tuning from week-to-week to establish an ongoing useful routine. It is common have an acceptable Bromine level of less than 2 ppm with a working Ozonator. Never allow the your Bromine level to exceed 6 ppm. Please contact your Royal Spa Representative with any questions on proper Bromine use.

There are several ways to properly take care of your spa with chemicals. Your Royal Spa Representative will help you determine what is best for you in your spa.

WATER MAINTENANCE

FIXING YOUR ALKALINITY AND pH

In many areas of the country, the pH & Total Alkalinity is very HIGH.

How To Bring Your pH & Alkalinity Down:

1. Add 1 ounce of pH/Alkalinity Down per 100 gallons of spa water (500 gal. = 5 oz.) and run the jets to mix and dissolve for several minutes.
2. (Approximately 15 minutes later) Re-check the spa water and if either the pH or Alkalinity is still High, add 1/2 ounce of pH/Alkalinity Down per 100 gallons of spa water (500 gal. = 2 to 2.5 oz.) and run the jets to mix and dissolve for several minutes.
3. Repeat step (2) until both the pH and Alkalinity are within the ideal ranges of your testing kit.
4. Re-check the spa two days later and adjust again if needed.
5. Do not add pH Up and pH Down in the same day. This will help avoid pH Bounce.
6. Log the number of ounces used to balance your hot tub water as you balance it the first time so that in the future you can add that amount all at once at time of fill up to achieve balanced water much quicker. (For Example: If it takes 10 ounces over the first day or two to balance the water, then add 10 ounces all at once the next time you refill your spa.)

Every Spa is Different: Important Chemistry Information

Every spa is different and maintaining a proper water chemical balance is not an exact art. Different spas will require different maintenance intervals and chemical amounts. Water balance is maintained within a safe range that is friendly to both spa and the spa's bathers/occupants.

Many factors effect the maintenance, chemical amount, and frequency of chemical balancing of a spa. Factors that greatly effect spa maintenance and chemicals include: spa size or gallons, source and quality of water, environment around spa, what is tracked into spa water, cleanliness of bathers, number of bathers, frequency of use, temperature of water, drain and refill intervals, overall quality of maintenance and the quality of the chemicals used (all chemical brands/types are not all the same quality).

The chemical and water balancing information provided in this book is designed to give our customers a base line or starting point. The information may not be perfect or exact for your application but will help give you a good starting point and general idea of what needs to be done to properly maintain your spa. Any of the information can be modified or fine tuned by a qualified Royal Spa professional to match your particular hot tub needs.

Special Note:

It is extremely important that you check and re-tighten your pump couplers several times during the initial weeks of ownership of your new spa. We have done this during the delivery process; but, the couplers may need to be re-tightened after the initial fill and warm up of the water.

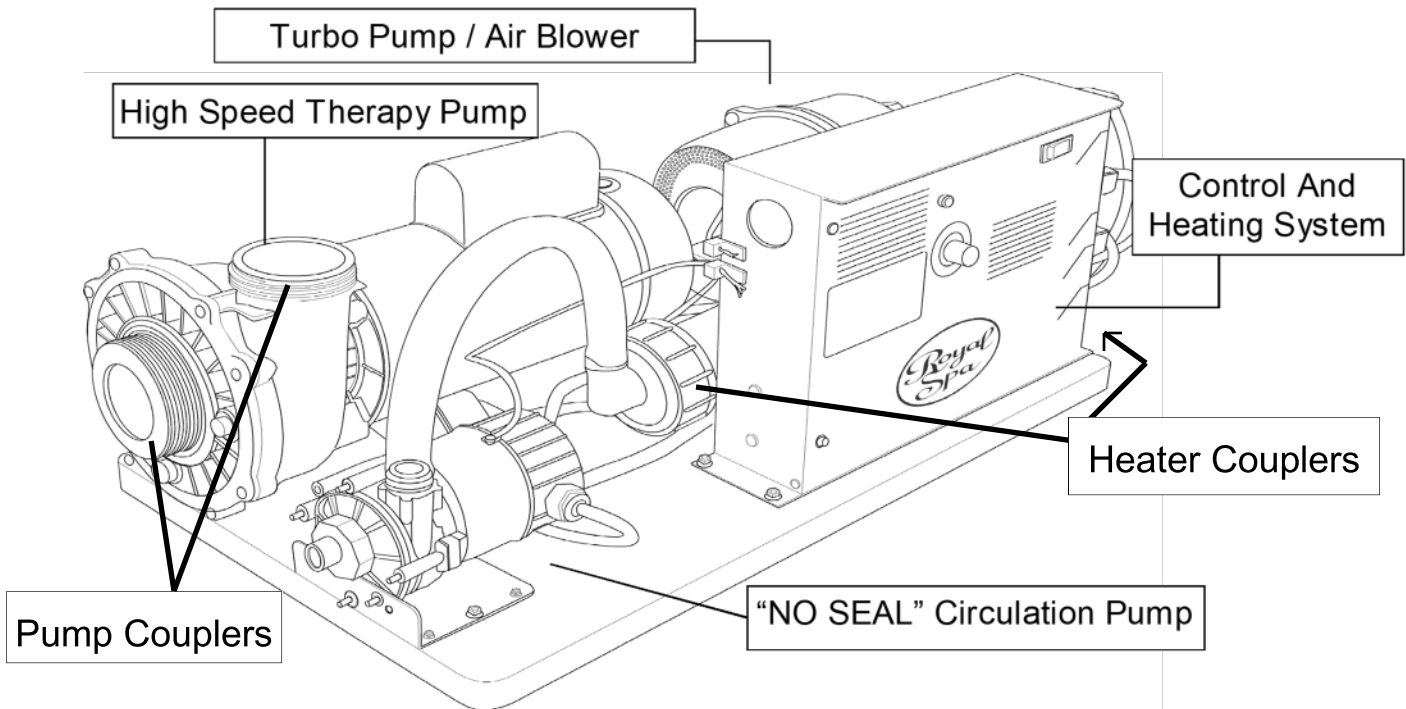
Additionally, You should check the couplers often to insure they stay tight. If you have any questions please call your local dealer or 1-800-541-1248.

THINGS TO REMEMBER:

- **Clean your Filter regularly.** (Every 4-6 weeks) Clean your filter by spraying off with your garden hose. Cleaning your filter with **Spray and Rinse** will help eliminate oil and grime. You may rotate two filters exchanging the dirty filter with a clean one. If a garden hose is not available, you can run your filter through the dishwasher (**DO NOT USE SOAP OR DRY BY HEAT**). It is recommended that you clean your filter after the first week of operation. When cleaning the filter, it is recommended that you turn your thermostat all the way down and leave it down until after the filter is cleaned and the spa is running again.
- **Clean your Skimmer Basket regularly.** (Every 1-2 weeks) Unscrew the basket, pull it out and remove any foreign debris. It is good practice to turn off your spa before removing your spa's Skimmer Basket.
- **Rinse Swim Suits.** It is recommended to rinse all swim suits an extra time after washing to avoid transferring soap from the laundry into the spa's water.
- **Tighten the Pump Couplers** in the equipment area. They can loosen over time from vibration causing a small drip near the pump. Hand tighten only. Loose couplers are not covered under warranty.
- **Bleed the excess air** from the filter **Bleeder Valve** after cleaning the filter or changing the water.
- **The Turbo Jet** control (on some models) can be placed in a position that will cause only one half of the jets to operate. Turn the jet control to the proper position to get the desired performance.
- **Filling the spa** from inside the Filter Housing or from inside the Skimmer Basket opening can help prevent an air-lock in the Circulating Pump.
- Keep your **pH & Alkalinity** levels of the water in the proper range to avoid damage to the spa's components. Improper levels may cause damage to the spa that is not covered by your warranty. If your pH and Alkalinity level are high, add pH/Alkalinity-Down. This will lower the levels at the same time. If your pH level and Alkalinity level are low, add pH/Alkalinity-Up. This will raise the levels at the same time. It is very important to keep levels up, if the pH is low for a long period of time the water becomes acidic and will corrode the components on your spa. It is important to keep both the pH and Alkalinity levels balanced because they help to hold each other within desired limits. Proper pH and Alkalinity levels help other chemicals used in your spa to be more effective. You are looking to achieve a Alkalinity reading of 100 ppm and a pH reading of about 7.4 to 7.6.
- **High Bromine and High Chlorine** levels may cause damage to the spa that is not covered by your warranty. Contact your authorized Royal Spa Representative for instructions on lowering high levels of Bromine or Chlorine. It may not be necessary to put Bromine or Chlorine into your spa every week depending on use.
- **Royal Spa Stereo Remote Controls** cannot be left inside of the spa or floating in the water when the spa is not in use. The Remotes are waterproof but are not chemical proof. Normal spa chemicals will damage the watertight seal if the remote is left inside of the spa when the spa is not being used. Please store your remotes inside of your home or inside of the spa cabinet when not being used.
- **Rotate your cover inserts annually** to prolong the life of your cover. Generally, unzip the cover, remove the insert, turn it over and then re-insert it into the cover's skin. Zip up the cover and place cover back on the spa. Seal any holes or tears in the plastic vapor barrier prior to re-inserting the insert into the cover's skin.
- **Cold Weather Draining of your spa:** If you find it necessary to drain your spa when the temperatures drop to or below the freezing mark, the spa needs to be filled back up immediately and turned on or winterized to prevent spa damage.
- **Winterizing Your Spa:** Draining your spa is NOT winterizing your spa. There is a very involved process to winterizing a spa. If it is not done properly you will cause damage to your spa that will not be covered by your warranty.
- **Pillows & Filter Covers** in your spa need to be removed from the spa when it is not in use. They will fade and this is not covered by your spa's warranty. Storing the Pillows and Filter Cover outside of the spa when it is not in use will drastically increase the life of these items.

Spa Mechanical

Equipment Identification

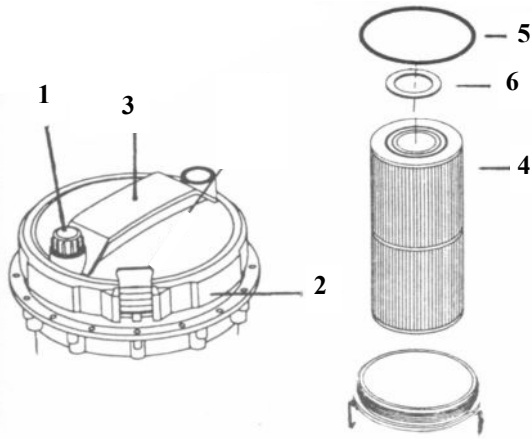


Command Center:

Most Royal Spas come equipped with our Command Center controller. If you have a Command Center, you will either have 3 or 4 buttons on the controls. Different buttons will operate different features of the spa including Pumps and Lighting Options. Each button is operated by pushing the button once for "ON" and pushing the same button again to turn that feature "OFF". The Thermostat control is designed for ease of use and maximum durability. Simply turn the Thermostat knob to the approximate location of the desired temperature and adjust accordingly for the fine tuning.

Indicator Lights:

- READY = Indicates the spa water temperature is at or above the thermostat's set position.
- HEAT = Indicates the spa water temperature is below the thermostat's set position and the heater is "ON" to bring the temperature up.
- JETS = Indicates the primary jet pump is on the "ON" position.



REMOVING YOUR FILTER (with power off)

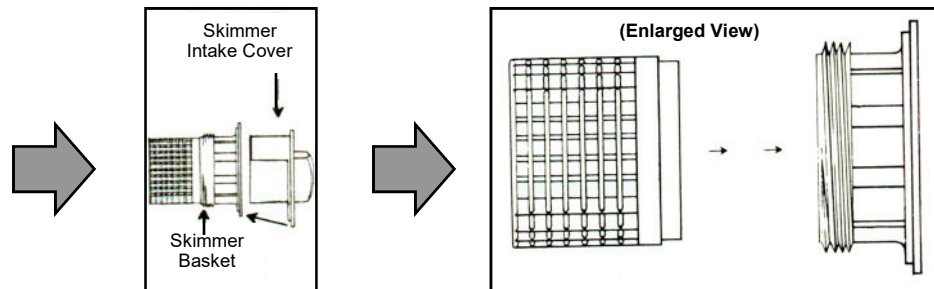
- Bleed air from filter housing and turn knob (1) counter-clockwise.
- Rotate filter ring (2) counter-clockwise and remove.
- Pull up on filter lid handle (3) and remove (4) filter to clean or replace. Check O ring (5) for damage.

REPLACING YOUR FILTER (with power off)

Turn your thermostat down. Replace ring (6), and reverse above steps turning filter ring (2) clockwise until hand tight. Turn power on - when water comes out of bleed knob (1), close, turning clockwise hand tight. Then turn your thermostat back up to your desired temperature.



Spa Skimmer: This device is located at the water level of the spa. It pulls debris from the surface, pre-filters the water through the "Skimmer Basket", and then pumps the water through the fiber filter. The Skimmer Basket should be cleaned about once every two (2) to four (4) weeks. The basket is removed for cleaning by un-threading the Skimmer Retainer and removing the basket. There is a "Water Level" line on the Skimmer to help you maintain the right water level for your spa.



DRAINING YOUR SPA

Draining your spa is an easy procedure. Place one end of your garden hose in a drain or in your yard, and place the other end against a water jet. Turn on the jets and let it push water through the hose until it produces a stream out of the hose. At this point, put the jet end of the hose in the bottom of the foot-well of your spa, and it will siphon the water down to that point. **Be sure to turn off the jets and power** after putting the hose in the foot-well.

CAUTION

WINTER DRAINING OF YOUR SPA

CAUTION

If you are draining your outdoor spa during freezing temperatures, be careful to not let water in the lines and equipment of the spa freeze while the spa is draining or refilling. Water that freezes during this time can cause damage to the spa that will not be covered under your Royal Spa Manufacturing included warranty. **It is recommended to drain and refill your spa when the temperatures are above freezing.** If you choose to winterize a spa, you should do so during weather that includes temperatures in excess of 40 degrees Fahrenheit. It is recommended that a Royal Spa Professional winterize your spa to prevent freeze damages and future warranty issues.

SPA CHEMISTRY 101

Water Quality Maintenance

Maintaining the quality of the water within specified limits will enhance your enjoyment and prolong the life of the spa's equipment system and other spa components. It is a fairly simple task, but it requires regular attention because the water chemistry involved is a balance of several factors. There is no simple formula, and there is no avoiding it. A careless attitude in regard to water maintenance will result in poor and potentially unhealthful conditions for soaking and even damage to your spa. For specific guidance on maintaining water quality, consult your authorized Royal Spa dealer who can recommend the appropriate chemical products for sanitizing and maintaining your spa.

pH Control

pH is a measure of relative acidity or alkalinity of water and is measured on a scale of 0 to 14. The midpoint of 7 is said to be neutral, above which is alkaline and below which is acidic. In spa water, IT IS VERY IMPORTANT TO MAINTAIN a slightly alkaline condition of 7.2 to 7.6. Problems become proportionately severe the further outside of this range the water gets. A low pH will be corrosive to metals in the spa equipment. A high pH will cause minerals to deposit on the interior surface of the spa and its components (scaling). In addition, the ability of the sanitizers to keep the spa clean is severely affected as the pH moves beyond the ideal range. That is why most all spa water test kits contain a measure for pH as well as the sanitizer.

Total Alkalinity

Total Alkalinity refers to the ability of the spa water to resist a change in pH. The key purpose total alkalinity serves is to help manage or control the pH in the water. It does this by acting as a buffer so that when materials are added to a spa that would cause the pH to go up or down these changes are controlled and do not result in severe changes to spa water balance. Total alkalinity is measured in parts per million (ppm) using a total alkalinity test kit or test strip. Total alkalinity is best kept in the range of 80-120 ppm. When the value is less than 80 ppm, the water can become aggressive, and the pH can swing easily up, down and back again. If the value is higher than 120 ppm, the water can become cloudy and scale forming and the pH will tend to drift upward.

Sanitizing

To destroy bacteria and organic compounds in the spa water, a sanitizer must be used regularly. Chlorine and Bromine are the two most popular sanitizers used. Shock Out is another sanitizer used that also enhances the effectiveness of Bromine and Chlorine. Many other additives are available for your spa. Some are necessary to compensate for out-of-balance water (pH/Alk Up & pH/Alk Down), some aid in cosmetic water treatment (Spa Brite & Foam Gone) and others simply alter the feel or smell of the water (Scum Out). Your authorized Royal Spa Dealer can advise you on the use of these additives.

Ozone Water Purifier

Royal Spas equipped with an Ozone Purifier have drastically better overall water quality. You will find that your water stays fresh and clear with significantly fewer chemicals. You will also likely be able to go longer between complete spa water changes. Most spa testing equipment recommends keeping the bromine level around 3-6 ppm. You will likely not need a level that high with a properly functioning Ozone Purifier.

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