Spa Owner's Manual AA6

PN 378301 Rev A
Domestic

OWNER'S INFORMATION

DEALER/RETAILER

Company _____
Address _____
Phone _____
E-mail _____

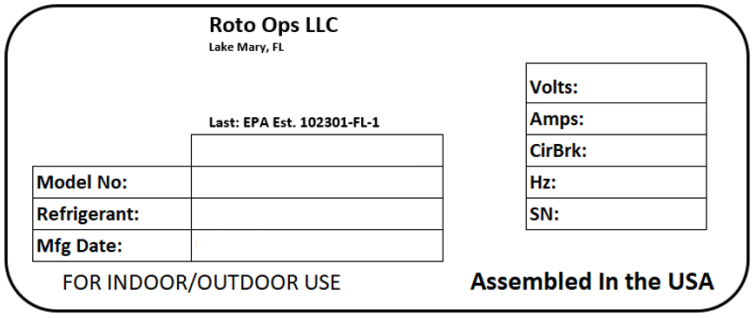
INSTALLER

Company _____
Address _____
Phone _____

SPA

Model (see below) _____
Serial Number (see below) _____
Color _____
Date of Delivery _____

Locate the white plate by access doors, near the floor.



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Important Safety Instructions

When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

READ AND FOLLOW ALL INSTRUCTIONS

1. WARNING: To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.
2. WARNING: A wire connector is provided on this unit to connect a minimum 6 AWG (4.11 mm) solid copper conductor between this unit and any metal equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within 5 feet (1.5m) of the unit.
3. DANGER RISK OF INJURY: (For cord and plug connected units):
    a. Replace damaged cord immediately.
    b. Do not bury the cord.
    c. Connect to a grounded, grounding type receptacle only.
4. WARNING: (For units with a Ground Fault Circuit Interrupter (GFCI): This product is provided with a Ground Fault Circuit Interrupter GFCI on the end of the spa's power cord. This GFCI must be tested before each use. With the product operating depress the "test" button on the GFCI the spa should not operate. Depress the "reset" button on the GFCI. The product should now operate normally. If the spa fails to operate in this manner, there is a ground current flowing indicating a possible electric shock. Disconnect the power until the fault has been identified and corrected by a certified licensed electrician.
5. DANGER RISK OF ACCIDENTAL DROWNING: Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, ensure that they cannot use this spa unless they are supervised at all times. For additional protection, use a safety cover which is classified as meeting ASTM F1346-91 requirements. The cover supplied by the manufacturer meets these requirements.
6. DANGER RISK OF INJURY: If your spa is equipped with suction fittings, the suction fittings in this spa are sized to match the specific water flow created by the pump. Should the need arise to replace the suction fittings or the pump, be sure that the flow rates are compatible. Never operate the spa if suction fittings are broken or missing. Never replace a suction fitting with one less than the flow rate marked on the original suction fitting.
7. DANGER RISK OF ELECTRIC SHOCK: Install at least 5 feet (1.5m) from all metal surfaces. As an alternative, a spa may be installed within 5 feet (1.5m) of metal surfaces if each metal surface is permanently connected by a minimum 6 AWG (4.11 mm) solid copper conductor to the wire connector on the terminal box that is provided for this purpose.
8. DANGER RISK OF ELECTRIC SHOCK: Do not permit any electric appliance, such as light, telephone, radio, or television, within 5 feet (1.5m) of a spa.
9. WARNING:
    a. People with infectious diseases should not use a spa or hot tub.
    b. To avoid injury, exercise care when entering or exiting a spa or hot tub.
    c. Do not use a spa or hot tub immediately following strenuous exercise.
    d. Prolonged immersion in a spa or hot tub may be injurious to your health.
10. CAUTION: Maintain water chemistry in accordance with manufacturer's instructions.

Your spa can be a source of great pleasure. It offers healthful stimulating recreation and is a delightful fun center for you, your family and friends. However, it contains large quantities of water and is deep enough to present inherent dangers to life and health unless the following safety rules are strictly observed.

11. Never permit the spa to be used unless it is attended by at least one person other than the bather.
    Someone should be present to lend assistance if the bather should be in trouble due to injuries, cramps, or drowning, especially in the case of children.
12. Always use care in and around your spa.
    The spa has many rigid, unyielding parts and many areas that become wet and slippery; these are all potentially dangerous when rough play is permitted or if care is not used, particularly when entering or leaving the spa.
13. Always keep the water sanitary and healthy.
    Your filter system will remove suspended particles from the water. Regular application of spa chemicals in proper quantities will destroy harmful bacteria and prevent formation of algae. Your surface skimmer will remove insects, leaves, and other debris from the water surface. Unsanitary water is a serious health hazard.

14. WARNING: Do not mix chlorine and bromine sanitizers. Use only one sanitizer for both the cold and hot water tubs. Mixing chlorine and bromine can create a dangerous chemical reaction. When mixed, they create poisonous chlorine gas and bromine gas.
15. WARNING: If equipped, broken or missing drain covers should be replaced immediately.
    Accidents can occur when long hair or a body part is trapped by suction from a drain or outlet whose cover is broken or removed. Children are particularly vulnerable, and they should be warned against danger.
16. WARNING: Do not use electrical appliances in or around your spa. Do not use glass or other breakable items in or around your spa. Do not remove spa access doors and attempt to make repairs. Do not attempt electrical repairs. Retain a certified licensed electrician.
17. This spa is for residential use only. It is not intended for commercial use.

    WHEN USING THE HOT SIDE:

18. WARNING TO REDUCE THE RISK OF INJURY:
    a. The hot side water should never exceed 104°F (40°C). Water temperatures between 100°F (38°C) and 104°F (40°C) are considered safe for a healthy adult. Lower water temperatures are recommended for your children and when spa use exceeds 10 minutes.
    b. Since excessive water temperatures have high potential for fetal damage during the early months of pregnancy, pregnant or possibly pregnant women should limit spa water temperatures to 100°F (38°C).
    c. The use of alcohol, drugs, or medication before or during spa use may lead to unconsciousness with the possibility of drowning.
    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 a spa.
    e. Persons using medication should consult a physician before using a spa since some medication may induce drowsiness while other medication may affect heart rate, blood pressure, and circulation.
19. Before entering the spa, the user should measure the water temperature with an accurate thermometer since the tolerances of water temperature-regulating devices vary. The hot side water must NOT be warmer than 100°- 104° F (38°-40°C).
    Always keep an accurate thermometer in the water because your spa's thermostat may be in error. Use a high quality, shatterproof thermometer with increments of one degree or less.
    The National Spa and Pool Institute considers a temperature of 100°F (38°C) safe and comfortable for a healthy adult. Most healthy adults can enjoy this water temperature for as long as desired, although it may raise the body temperature to the water temperature and eventually become uncomfortable (like a fever). At higher water temperatures the soaking time should be shorter; never soak for more than 20 minutes when the water temperature is 102°F (39°C) or higher. If you are planning a long rest in the spa, lower the water temperature closer to normal body temperature, about 99°F (37.2°C). Some people find even lower water temperatures relaxing and pleasing. Try different water temperatures in the 98°-102°F (36.6°-39°C) range until you find what temperatures suit you best.
20. Hot water can raise the body temperature high enough to cause heat stroke.
    This can be fatal even to healthy adults. If you have any questions about your own fitness or whether you should soak in the spa, check with your physician.
21. Prolonged immersion in hot water may induce hyperthermia.
    Hyperthermia occurs when internal body temperature reaches a level several degrees above the normal body temperature of 98.6°F (36.6°C). The symptoms of hyperthermia include: (1) dizziness, (2) fainting, (3) drowsiness, (4) lethargy, (5) increases in the internal body temperature. 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) unconsciousness resulting in danger of drowning.

22. WARNING: The use of alcohol, drugs, or medication can greatly increase the risk of fatal hyperthermia in hot tubs or spas.
Despite the popular image of people in spas drinking wine or other alcoholic beverages, DO NOT use alcoholic beverages before or during spa use. Alcohol is a depressant which causes slowed reflexes and drowsiness, especially in conjunction with relaxed soaking in hot water. This can lead to sleep or unconsciousness and possibly result in drowning. Using your spa with other people who are also drinking is not a preventative measure since they are likely to become similarly affected by the combinations of alcohol and hot water soaking.
Soaking in hot water causes changes in the circulatory system, such as enlargement of blood vessels near the skin. Therefore, people with a medical history of heart disease, circulatory problems, diabetes, high or low blood pressure should check with their physician before using spas. Additionally, people taking medications causing drowsiness, such as tranquilizers, narcotics, antihistamines, or anticoagulants should not use spas without asking their physician.

WHEN USING THE COLD SIDE:

23. DANGER: RISK OF DEATH: Dangers associated with ice baths and cold-water plunging are:
    a. DROWNING: Drowning occurs when water is inhaled into the lungs, suffocating the victim. Drugs and alcohol are often contributing factors in bathtub drownings among adults, but young children can also be at risk. Cold water immersion can cause an uncontrollable gasp reflex. If we are unable to control the gasp reflex while our mouth and nose are covered with water, we may accidentally inhale water and be at risk of drowning. Another risk is the loss of muscular control, which can worsen the longer someone is immersed in cold water, and potentially lead to drowning. Symptoms include feeling weak or exhausted and being unable to control the fingers, hands, arms or legs. For these reasons always do the following:
        - Plunge sober.
        - Supervise children.
        - Go feet first.
        - Never plunge alone.
        - Limit plunge time.
    b. HYPOTHERMIA: Hypothermia happens when core body temperature drops two-and-a-half or more degrees below normal. After one to three minutes of immersion in water with water temperatures below 70 degrees F (21 C), body temperature continues to drop, increasing the risk of hypothermia, which can begin at a core body temperature of 95 degrees F (35 C). Some studies suggest 50 to 59 degrees Fahrenheit (10 to 15 C) to be an optimal temperature range for cold plunges focused on reducing muscle soreness. However, there are not standard temperatures for cold plunges and temperatures vary depending on the user's preference. Most participants report using water temperatures ranging from 38 to 60 degrees F (3 to 16 C).
        - Risk of hypothermia from cold water immersion progresses through four stages:
            1. The first three minutes cool the skin,
            2. Three to about thirty minutes results in superficial neuromuscular cooling.
            3. Longer-term immersion (greater than thirty minutes) can pose a risk of hypothermia by inducing deep tissue cooling.
            4. Temperatures can continue to drop even after emerging from the cold water.
        - Always use an accurate thermometer to assure safe temperature before plunging.
        - Start with higher temperatures and short immerging times as you learn your body's reaction.
        - Allow time to rewarm. Allow yourself time to rewarm before driving or doing anything that requires your cognitive attention.
    c. HEART ATTACK: When our faces are submerged in water, our bodies automatically slow down our heart rate and metabolism to conserve oxygen. Attempted breath holding can lead to an irregular heartbeat or a fatal cardiac arrest.
        - Do not hold your breath.

24. DANGER RISK OF DEATH: Be careful before cold plunging when you have health problems:
    a. If you are sick or have a weaker immune system, you do not want to put too much stress on your system. Therefore, it is wise to skip ice baths when you are sick. Also be more careful when you have health problems and consult your doctor first, to find if ice bathing could be potentially be harmful in your case.
    b. Biggest risks (but not limited to) are:
        - Severe high blood pressure (without taking medicine).
        - Heart failure.
        - Raynaud syndrome type 2: (bad circulation in the extremities, caused by an underlying illness).
        - Cold urticaria (an allergy to the cold).
        - Any cardiovascular problems.
        - Diabetes can impact one's ability to sense tissue damage.
        - Raynaud syndrome type 1.
        - Pregnancy.

SAVE THESE INSTRUCTIONS

Selecting a location

- ❑ WARNING! DO NOT STORE OUTDOORS WITHOUT THE PROPER WATER LEVEL.

A spa stored outside in direct sun, without proper water level, uncovered or under a tarp/cover, can accumulate temperatures that will damage the spa, its components and void the warranty. Only store an empty spa indoors or in the shade.

- ❑ Will your spa's electrical cord reach an outlet?

WARNING! DO NOT SUPPLY ELECTRICAL POWER UNTIL THE SPA HAS BEEN SET IN PACE, LEVELED AND PROPERLY FILLED WITH WATER FOR 24 HOURS.

The oil in the chiller must settle before it can operate without damage to the compressor. Failure to let it settle for 24 hours before operating can void the warranty. Supplying electrical power before both sides are properly filled with water can damage equipment and void the warranty.

Locate your spa so that the GFCI plug, and cord will reach a standard 120 volt / 15-amp outlet*, but not closer than 5 feet (1.5m). Do not use an extension cord. Use of an extension cord will void your warranty. To extend the power cord, with a Philips screwdriver remove the hot side access door shown on page 11, locate the coiled GFCI cord, uncoil and extend the cord. Ensure that the cord is routed through the notch at the lower left of the opening before reinstalling the access door. Do not connect to the outlet until the spa is filled with water and sat for 24 hours (see page 12).

- ❑ Recommendations for optimal chilling performance.

If installing your spa outdoors, it is best to install under shade. Avoid direct sun or reflected sun from windows. This affects the cold side's ability to reach lowest temperatures. It is best to face the access doors (vents) toward open air. If they must face a wall, maintain a minimum of 4 feet (1.2 meters).

- ❑ If you choose to install your spa indoors.

CAUTION: If the spa is indoors or located in an enclosed area, proper ventilation should be discussed with an Engineer or authority competent enough to understand the necessary provisions needed to vent condensation or moist or heated air and air associated with chemical odors outdoors. When the spa is in use considerable amounts of moisture or condensation will escape potentially causing mold and mildew. This can cause health risks. Over time, this can damage certain surfaces, surroundings, and equipment.

Never install the unit in a closed room with a limited air volume in which the air expelled from the unit will be reused, or close to shrubbery that could block the air inlet. Such locations impair the continuous supply of fresh air, resulting in reduced efficiency and possibly preventing sufficient heat output.

- ❑ Is permitting required for construction, electrical, or barriers?

Most cities and counties require permits for exterior construction and electrical circuits. Some areas have codes requiring barriers such as fencing and/or self-closing gates on property to prevent unsupervised access to the property by children. Your local code enforcement department can provide information on which permits may be required and how to obtain them before delivery of your spa.

- ❑ Is the support surface adequate to support the weight of the spa?

Provide a solid flat level load-bearing surface. The surface must provide a solid foundation with a minimum load bearing capacity of 125 pounds per square foot (610 kg per square meter). Concrete slabs and decks must be designed to support this weight.

Warning! Your spa is constructed of a very resilient and flexible polymeric material. It is designed to flex as much as 2 inches (5cm) without damage. However, overfilling the spa, and/or installing it on a non-level surface for extended periods of time, can permanently distort the original shape of your spa, cause structural damage, effect the sealing of the cover and void your warranty.

- ❑ Is the support surface impervious to water and adequate to handle water overflow?

The surface must be suitable for a wet location and allow for adequate drainage for overflow water.

- ❑ The chiller will create condensation. A drain hose can be found under the access door. Connect the supplied hose to the drain and route drainage to a safe place away from the spa.

- ❑ Are there considerations for limiting access by children?

Childproof Your Spa. Plan for limiting access by children. Take precautions such as self-closing, locking gates, access doors, fencing and other child barriers, as dictated by the site.

- ❑ Are there overhead electrical lines?

Do not locate your spa under overhead power lines or in near proximity to existing buried or exposed electrical circuits.

- ❑ Is there adequate room to access the service door, drain, filter and insulating cover removal?

If you are installing your spa near a wall or with any type of structure on the outside, such as a gazebo, remember to allow access for service and insulating cover removal.

- ❑ Are there any privacy considerations?

*To avoid nuisance circuit breaker tripping, it is best to use an outlet on a circuit which does not supply power to any other major running appliance. This can be checked by turning off the circuit breaker that supplies the intended outlet and verifying that no other electrical devices no longer work, such as a refrigerator, dishwasher, washing machine, coffee maker, hair dryer, etc.

Spa Cover Installations

WARNING! AVOID DROWNING RISK

- Failure to follow instructions may result in injury or drowning.
- Non-secured covers are a hazard.
- Keep children away. People or objects cannot be seen under the cover.
- Because of entrapment possibility, remove cover completely before entry of bathers.
- Excess weight can break the insulating foam, bend the steel reinforcement and damage the cover. Do not allow people or pets to stand or sit on the cover. Do not allow loads such as snow, leaves or anything else to accumulate on the cover. Do not use the cover as a table.

Caution, to avoid damage to the cover always remove the cover while adding chemicals to the spa water. This will prevent damaging chemical vapors from being trapped under the spa cover. These vapors can prematurely damage the cover material and void the warranty.

When properly installed, the cover supplied with your spa meets the Manual Safety Cover requirements of ASTM F1346-91.

If you are installing your spa near a wall or with any type of structure on the outside, such as a gazebo, remember to allow access for cover removal.

To deter entrapment from somebody slipping under the cover, ensure that all latches supplied with the cover are securely screwed to the cabinet, straps are inserted into the latches, the latches are locked, and the key is kept in a secure location.

Keep spas covered when not in use to deter entry by unauthorized persons, reduce the loss of heat, and keep out rain and to keep foreign materials from settling in the water.

Follow these steps to properly install the cover.

1. Place the spa cover on top of the spa. Ensure the cover flaps and straps are not under the cover. Ensure the cover is properly seated in its final position.

2. Each strap is supplied with a cabinet latch snapped in place. Leave the cabinet latches at the end of the straps but remove the bag containing the screws and while lightly pulling downward on a strap, mark the center bottom of the latch (fig 1). A piece of tape may be a good method to do this. Mark each remaining strap in the same way.

3. Remove the strap by pinching the two barbs of the strap as indicated (fig 2).

4. Hold the cabinet latch on the mark and using a Phillips screwdriver, drive three screws through the holes in the cabinet latch and into the outside of the spa (fig 3).

5. While the spa is not in use place the cover on top of the spa and snap all straps into the cabinet latches. To further protect against entry, lock each latch by quarter turning the key clockwise (fig 4). Store the key in a secure place.

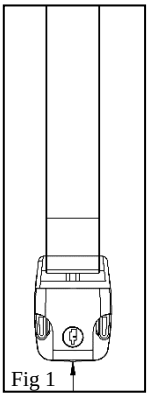


Fig 1

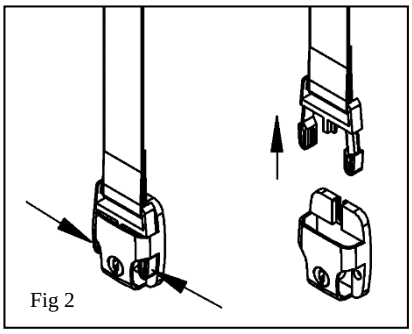


Fig 2

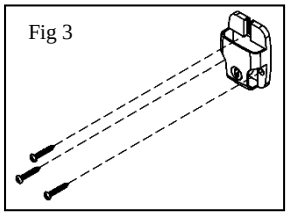


Fig 3

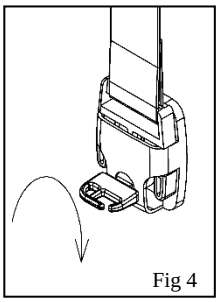
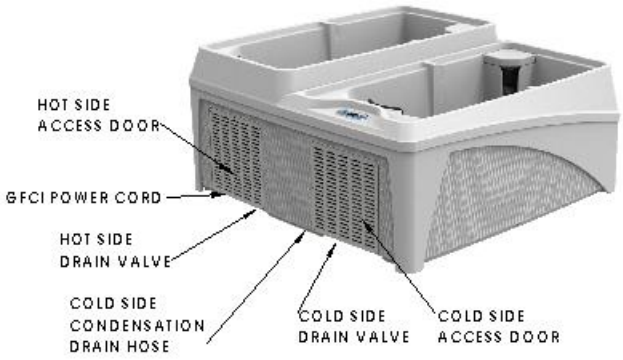
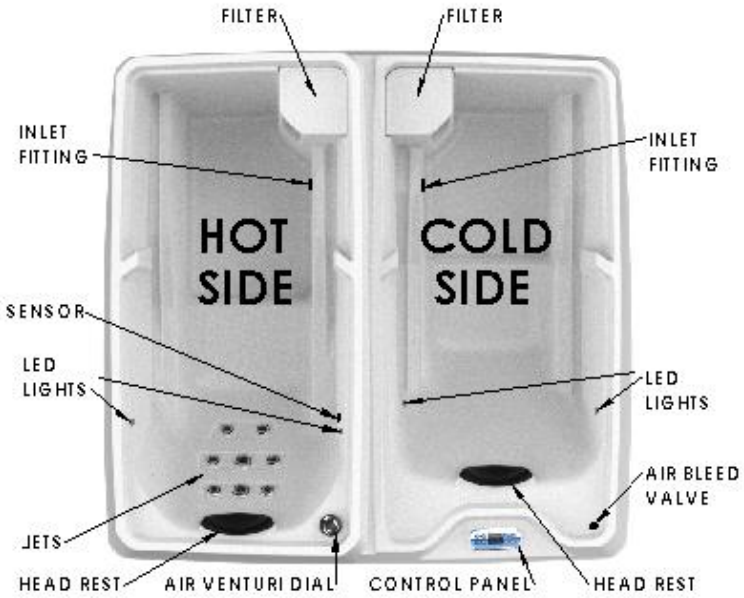


Fig 4

Component Locations and Identifications





Filling Your Spa

Warning! Your spa is constructed of a very resilient and flexible polymeric material. It is designed to flex as much as 2 inches (5cm) without damage. However, overfilling the spa and/or installing it on a non-level surface for extended periods of time can permanently distort the original shape of your spa, cause structural damage, affect the sealing of the cover and void your warranty.

WARNING! DO NOT SUPPLY ELECTRICAL POWER UNTIL THE SPA HAS BEEN SET IN PACE AND LEVELED FOR 24 HOURS.
The oil in the chiller must settle before it can operate without damage to the compressor. Failure to let it settle for 24 hours before operating can void the warranty.

WARNING! DO NOT SUPPLY ELECTRICAL POWER UNTIL BOTH SPAS (HOT & COLD) HAVE BEEN PROPERLY FILLED WITH WATER.
To prevent an air lock in the cold side plumbing, before you start filling and while you are filling, unscrew and remove the air bleed valve on the cold side, as seen below. After properly filling, screw-in the air bleed valve to a snug fit.

Air bleed valve opened

Air bleed valve closed

Locate the two drain hoses (one for each hot and cold sides) beneath the access doors and ensure the drain valves are closed, and the caps are secure (fig 2). Place a garden hose into hot side filter area (Fig 3) and fill the hot spa with cold (never warm or hot) water 6 to 8 inches (15 to 20 cm) below the top edge of the spa (Fig 2.1). Then, with the garden hose in the cold side filter area, fill the cold side to the fill marker (FIG 3.1). If there is not enough water in your spa, the pump may suck air into the plumbing system thereby damaging the pumps and void the warranty. Do not overfill, as the spa's water level will rise as each person enters the spa. Always keep the spa water level above the jet openings.

Fig 2

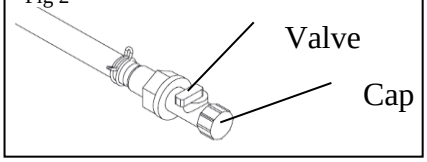


Fig 2.1

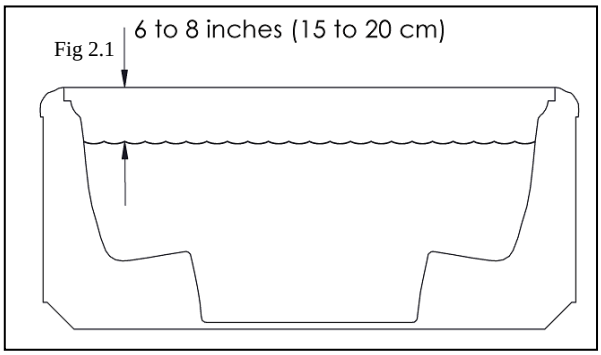
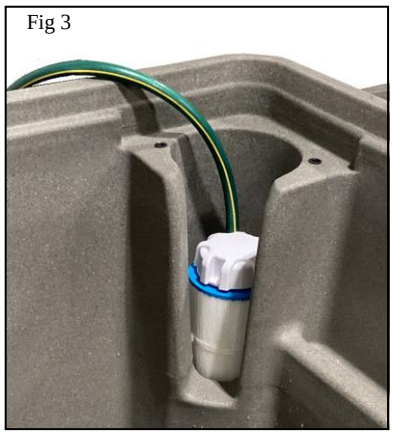


Fig 3



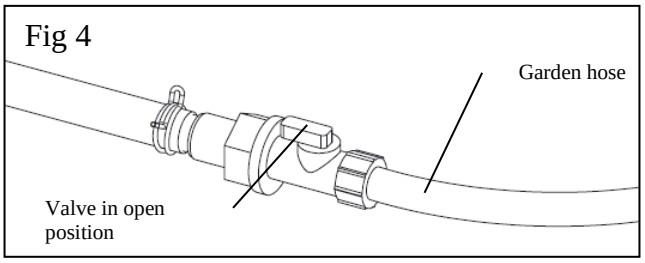
Cold side fill marker.
Fig. 3.1

Draining the spa

Draining both the cold and hot side spas on a regular basis rids the spa of dissolved solids and protects your spa equipment from the effects of residual calcium hardness and total alkalinity problems. Depending upon usage, it may be as often as every three months.

Drain both the hot and cold side spas, follow these steps:

1. Turn power off to the spas (unplug it form the receptacle).
2. Locate the drain valves.
3. Ensure that the drain valves are in the off position. If you need to drain the water to a remote location, remove the cap and attach a standard garden hose to one of the drain valves (Fig 4).



4. Route the garden hose to a sewer drain capable of safely assimilating 300 plus gallons of water which may contain both unsanitary contaminants and chemical residue. Open the drain valve (as shown in Fig 4). The spa drains slowly.
5. The spas can only drain to the lowest jet or inlet. It may be necessary to manually remove the remaining water.
6. Before refilling your spas, ensure that the drain valve is in the off position and the cap is secured.
7. Repeat the above for both hot and cold sides.

System Operation

Initial Start-Up

WARNING! DO NOT SUPPLY ELECTRICAL POWER UNTIL THE SPA HAS BEEN SET IN PACE, LEVELED AND PROPERLY FILLED WITH WATER FOR 24 HOURS.

The oil in the chiller must settle before it can operate without damage to the compressor. Failure to let it settle for 24 hours before operating can void the warranty. Supplying electrical power before both sides are properly filled with water can damage equipment and void the warranty.

Remove the hot side access door and locate the power cord. Bring the GFCI power cord outside of the equipment compartment, uncoil it and rout it through the notch in the door frame before reattaching the access door.

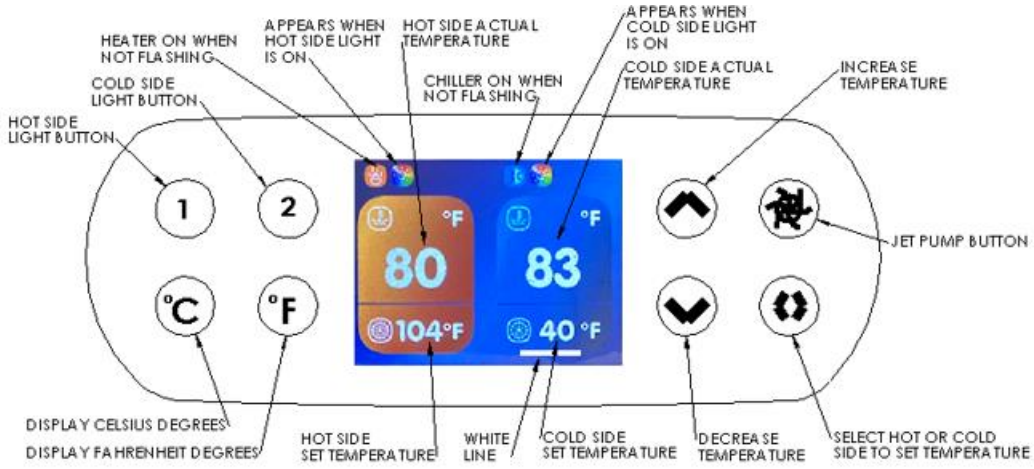
GFCI power cord in notch

When properly filled and the 24-hour waiting period has ended, you can supply electrical power (plug it into a properly grounded electrical receptacle).

After power is supplied the hot side pump will begin to operate, if the hot side's temperature setting is higher than the actual hot side water temperature. See Control Use to change the setting. After about 4 minutes the cold side pump will operate regardless of the cold side set temperature.

If either pump fails to flow, you may have an air lock. Un plug the spa and see purging the pumps to correct this, pages 26 and 27.

Control Use



Set temperatures. Touch the °C or °F button to select between Fahrenheit/Celsius degree display.

Touch the button to select between hot or cold side. When this button is touched, a white line will appear under either the hot or cold side. While the white line shows, use the and buttons to adjust the desired temperature. The desired will be the bottom temperature in the display. The upper temperature will show the actual water temperature. When completed the white line will disappear after a few seconds.

Jets. Touch the button to run the hot side jet pump. Touch again to turn it off. If left running, the pump will automatically turn off after 15 minutes.

Adjustable LED Light.

Touch the 1 button to turn on the hot side lights. Touch the 2 button to turn on the cold side lights. Touch again to turn each off.

To adjust the color modes, touch the button again, immediately after turning it off. The lights will come back on in a new color mode. Each time you repeat this procedure, the light will cycle to a new color mode. If left on, the light will automatically turn off after four hours.

Control panel warning information

The following is the screen status when this information is displayed, as shown.

When the following fault messages appear, first please try to power off the system and then power on again a few minutes later to clear the fault; If the fault occurs again, please follow the instructions below to handle the fault; During the troubleshooting process, please ensure that the power connection to the system is disconnected.

F1: Hot side temperature sensor is disconnected.

Temperature sensor disconnected. The control system has detected that a temperature sensor is not connected. Please check the temperature sensors and their connections, replace it if necessary.

F2: Hot side temperature sensor is short circuit.

Temperature sensor short circuit. The control system has detected a short circuit in a temperature sensor. Check the temperature sensors and their connections, replace it if necessary.

F3: Hot side temperature is too high.

Water temperature too high. The control system has detected that the temperature of a temperature sensor is too high. When the heater is started, if there is no water or water flow is low, this message may appear. Measure: Please ensure that there is sufficient water in the SPA and the heating circulation pipeline is unobstructed.

F4: Hot side temperature is too low.

The water temperature too low. The control system has detected that the temperature of a temperature sensor is too low. Please pay attention to freeze protection.

F5: EEPROM error

Memory Fault. When a memory fault occurs, please power off the SPA and power it back on after a few minutes. If the memory fault occurs again, contact the service provider or manufacturer.

F10: Communications error

Control panel and control pack cannot communicate. Reason: The control panel cannot exchange information with the control pack. Please turn off the power, and check if the wiring connection between the control panel and the control pack is good and if the connectors are tightly connected. After confirmation, power on again. If this fault cannot be eliminated, please contact the service provider or manufacturer.

F12: Cold side temperature is too high.

Heating tube protection temperature too high. The control system has detected that the temperature is too high. Please ensure that there is sufficient water in the SPA.

F13: Cold side temperature is too low.

Heating protection temperature is too low. The control system has detected that the temperature is too low. Please pay attention to freeze protection.

F14: Cold side temperature sensor is disconnected.

Heating protecting temperature sensor disconnected. The control system has detected the temperature sensor is not connected. Please check the temperature sensor and its connection, and replace it if necessary.

F15: Cold side temperature sensor is short circuit.

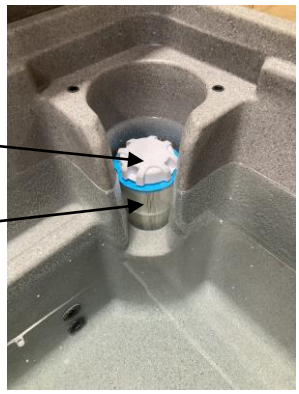
Overheating protecting temperature sensor short circuit. The control system has detected a short circuit in the temperature sensor. Measure: check the temperature sensor and its connection and replace it if necessary.

F20: Controller fault

When a microelectronic malfunction occurs. Please power off the SPA and power it on again after a few minutes. If a microelectronic malfunction occurs again, contact the service provider or manufacturer.

SKIMMER FILTERS CLEANING OR REPLACEMENT OF THE FILTER CARTRIDGE

The spa's automatic surface skimmer filters are designed to remove floating debris and contaminants, such as body lotions, by drawing water through a specially formulated filter cartridge element. It is critical that this element be routinely cleaned.



To Clean or Replace the Filter Cartridge

1. Never operate the spa without the filter cartridge in place. It is difficult to remove the filter cartridge while the water is flowing. Also, there is a risk that debris may be drawn into the plumbing system, damage the pump and void the warranty. Disconnect the power.

2. Remove the end nut by turning it counterclockwise.

3. Pull the filter cartridge straight up and out of the skimmer filter.

4. At this point you can install a new filter cartridge and proceed to the next step. To clean the filter cartridge, take it to an area where the runoff drains to a sewer drain capable of safely assimilating the water which may contain both unsanitary contaminants and chemical residue. Thoroughly rinse with the high pressure from a garden hose until the filter cartridge is free of dirt and debris.

5. Return the cartridge to the filter well by following steps 1- 4 in reverse order.

Hot Side Air Injection Venturi Adjustment

Air injection into the hot side's jet water stream is adjusted by turning the venture dials. Turn it counterclockwise to increase, and clockwise to decrease, the amount of air injected into the jets' water stream.

Cleaning the Dust Screens

To protect the electrical equipment, air entering the equipment compartment passes through dust screens. As dust accumulates on these screens, it's necessary to periodically remove the dust. Once per month should be fine. Without good air flow the equipment can overheat.

To remove the dust, follow these steps.

1. Remove the access doors.
2. Remove the eight screws on the back of the access doors.
3. Rinse both sides of the screens with water. Garden hose pressure should work fine. If the dust proves stubborn to remove, a soft scrub brush and mild soap can be used.

Screen on back of access door

Screen removed from access door

Water Chemistry

PRECAUTIONS-Important Chemical Safety

- Do not use this device with bromide products.
- Do not use Sodium Chloride as an additive.
- Do not use any Product containing Sodium Bromide.
- To prevent unintended mixing of chemicals, use the same sanitizer and chemicals for both sides of the spa.

WARNING: Mixing chlorine and bromine can create a dangerous chemical reaction. When mixed, they create poisonous chlorine gas and bromine gas.

Spa water chemistry (or water balance) affects the safety of your equipment as well as the appearance of your spa water. Water balance has five factors: pH, total alkalinity, calcium hardness, temperature and total dissolved solids. pH is the most critical but total alkalinity and calcium hardness must also be watched closely. Low calcium hardness can lead to corrosion of equipment, while high calcium hardness can lead to scaling, cloudy water and staining. Water temperature should never exceed 104°F (40°C), and total dissolved solids should be kept below 1500 PPM.

Algicidal and sanitizing chemicals are either alkaline or acid. Sodium and calcium hyprochlorites are alkaline. Chlorine gas and practically all other dry chlorine spa products are acid. On the market are a number of bromine sanitizers. Bromines are usually preferred since they don't emit a strong chlorine odor.

SEE YOUR SPA WATER EXPERT FOR ADDITIONAL INFORMATION

Damage due to improper chemistry will void warranty.

1. Check and adjust water conditions. You must maintain proper chemical balance to ensure safe conditions, do not allow your spa to become a breeding place for bacteria. This is done by:
   A. Test daily and maintain pH between 7.2 and 7.8. Adjust, if necessary, above 7.8 use pH decrease, if below 7.2 use pH Increase. Improper pH can damage spa finish, equipment, cause eye irritation and chemical loss. Use dosage according to manufacturer's label.
   B. Test alkalinity and maintain at 80 ppm to 140 ppm. Adjust, if necessary, above 140 ppm use pH Decrease, if below 80 ppm use Total Alkalinity Control. Use dosage according to manufacturer's label.
   C. Test daily and maintain proper sanitizer level. It's recommended to use bromine sanitizer and maintain bromine at 3.0 to 5.0 ppm. Typically, two or three bathers relaxing in an average spa with 103°F (39°C) temperature will consume all the bromine sanitizer in about twenty minutes. Therefore, prolonged or heavy use may require additional bromine to maintain sanitary conditions.
   D. "Shock" (with a non-chlorine shock) once a week and after each water change. Do not use spa until the bromine residual has dropped to less than 5.0 ppm. NOTE: Improper pH will cause early corrosion to your pump. Corrosion is not handled under any warranty.

SPA MAINTENANCE SCHEDULE

DAILY

Test and maintain pH: Ideal range 7.2 - 7.8b.

Test and maintain sanitizer: Free Chlorine 3.0-4.0 ppm Free or Bromine 2.0-4.0 ppm.

WEEKLY

Test and maintain alkalinity 80 - 140 ppm. Shock with a non-chlorine shock.

MAINTENANCE

Add defoamer as needed.

Inspect filter cartridge every 2 weeks and clean when needed.

It is recommended that the spa be drained regularly depending on its size, location and the frequency of use.

1. Clean filter and cartridge periodically according to manufacturer's instructions.
2. Keep the spa covered when not in use to reduce the loss of heat and to keep out leaves, dirt, and other foreign materials from settling in the water.
3. Since the water capacity of your spa is far less than that of a swimming pool, the chemical reaction caused by the presence of one or more person in the spa is more rapid and pronounced. For these reasons, it is important to frequently check the bromine level, the pH level and total alkalinity of water then add the prescribed chemicals as

necessary to maintain the proper chemical balances.

4. If questions or doubts arise regarding quantities and timing of chemical applications to your spa, contact your spa dealer who can assist you in prescribing the correct program for your spa.
5. Store all chemicals in a cool dry place and in such a manner as to prevent contact by children and pets.
6. When adding chemicals to your spa water, add to the center of the spa with the pump operating. Never add chemicals to unheated water as this will affect chemical action.

Replacing the LED light.

1. Turn off the power to the spa.
2. Remove the cabinet access door nearest the LED light.
3. Locate the LED light to be replaced.
4. Pull the LED light out of the light socket.
5. Locate the plug at the other end of the LED light.
6. Unplug the LED light and reverse these steps with the new replacement LED light.

3

4

5

6

DO NOT ALLOW THE SPA TO FREEZE

Caution, any damage caused by improper winterizing will void the warranty. You may want to consider contacting a spa professional for winterizing service.

If the spa is to be stored or transported in temperatures of 32°F (0°C) or lower, it is critical that the unit be fully winterized.

For unexpected freeze conditions, the spa is equipped with freeze protection. It will automatically operate the pumps to keep water moving in the circulation systems. The freeze protection only functions when both sides are properly filled and power is supplied to the spa. In extreme and prolonged freezing conditions, it is recommended you drain the spa and move it to a climate-controlled space.

Follow these steps to winterize the spa.

1. Completely drain both sides.
2. The filter cartridges must be removed, dried and stored. See page 10 for instructions for removing the filter cartridges.
3. Remove the plug from the cold side air bleed valve.
4. Remove the caps and open both drain valves.
5. The spa must be inverted (turned on end) for at least five minutes on each end to facilitate draining of the internal plumbing. Do not attempt this alone. The spa is heavy and does not balance in these positions.

CLEANING YOUR SPA

Do not use cleaners or compounds containing harsh abrasives. Also, avoid using heavy-duty rubbing or buffing compounds. Use a soft liquid cleaner.

CARE OF THE COVER

Your cover is designed to be easy to maintain. It can be washed or brushed off and rinsed. Proper care and cleaning are important to the life of all fabrics.

FOR NORMAL CARE AND CLEANING. Add 2 ounces of mild soap such as Woolite or Dawn dishwashing liquid to 1 gallon of lukewarm water. Clean the fabric with a "soft bristle brush. Rinse thoroughly with cold water and air dry.

- Why does my spa not shut off? The spa is designed to run from the time you plug it in. The hot side will run until it reaches your desired temperature. Once the desired temperature is reached then you can control the on/off with the buttons on the control panel. For example: On the initial startup the hot side will run for approximately 18 hours to reach 100°F (38°C). At that point the spa will shut off, and then the spa will maintain your desired temperature settings. Keep in mind that anytime power is disrupted from the spa, the spa will reset itself and run until it reaches the settings. The cold side pump and fan run continually.

- Why is my hot side not heating? All spas heat at approximately 1.5° F (1°C) per hour. If your water temperature is 70°F (21°C) when you first fill your spa it will take approx. 20 hours to reach 100°F (38°C). Remember, it is imperative to keep your safety cover on and the air control valve turned off while heating.

- Why is my spa not chilling to a low setting?
  Your spa may take a long time or not achieve lowest settings in extremely unfavorable conditions. These include heat waves, direct or reflected sun or a closed room without air conditioning. Allow up to 3 days to reach its lowest settings. To speed up the chilling time you can ice to the water. If the addition of ice raises the water past the fill marker you will have to remove water to lower the water to the fill marker.

- How many gallons of water does my spa hold?

Model	HC1 HOT SIDE	HC1 COLD SIDE
Gallons	95	80
Liters	360	303

- I see water on the floor. What does this mean?

  The cover can accumulate condensation between the seams and run down the sides of the spa. You can verify that water is coming from the cover by squeezing the seam. This only occurs when the temperature and humidity are at certain levels.

  Also, the cold side chiller creates condensation. A drain hose is supplied under the access door. Use the supplied connector and hose to drain to a remote location.

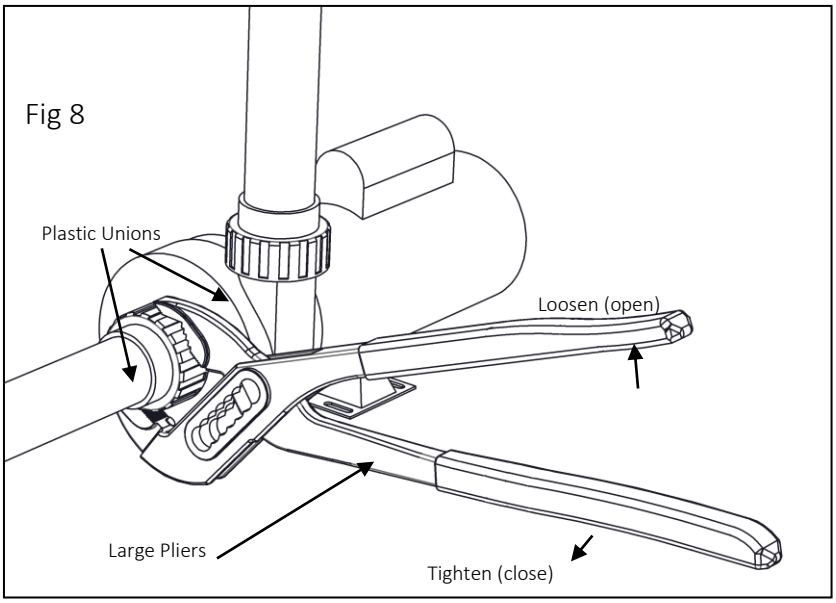
PURGING THE PUMPS

Hot Side.

Sometimes after a water change (draining and refilling the spa), or initial start-up of the spa, there is no water flowing from the jets. You may hear the pump operating or even see the shaft of the pump motor turning but have no water flowing from the jets. In addition to no flow out of the jets, you may even see an error message dr, dY, HH, OH, HL, or LF. All of these error messages can be caused by a lack of water flow. When this happens, there is probably an airlock in the pump. This airlock must be purged from the plumbing for the pump to operate normally.

To purge the pump, please follow these steps:

1. WARNING. Disconnect (unplug) electrical power to the spa.
2. Ensure the spa is filled 6 to 8 inches (15 to 20 cm) below the top of the spa.
3. Remove the access door to expose the water pump. The pipes entering and leaving the pump are connected with large plastic unions. To purge the air from the pump, one of these unions will be slightly loosened.
4. Place a towel under the union to be loosened.
5. Using large pliers, slightly turn the union nut counterclockwise (Fig 8). This will produce a faint hissing sound of the trapped air escaping the pump. This will be followed by a small squirt of water which signals it is time to close the union by turning it back (clockwise). Do not over tighten the union. It is designed to be hand tight.



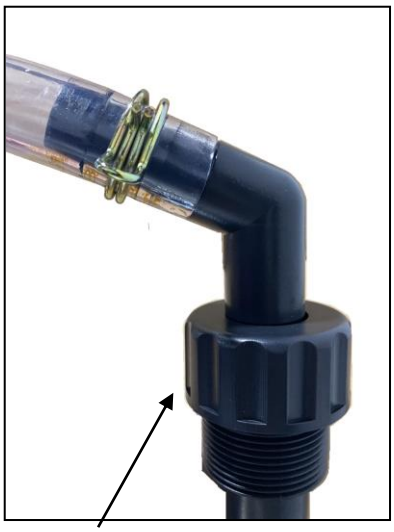
Purging the Cold Side

To prevent an air lock in the cold side plumbing, before you start filling and while you are filling, unscrew and remove the air bleed valve on the cold side, as seen below. After properly filling, screw the air bleed valve to a snug fit. If the cold side has an air lock you may want to try draining and filling again.

1. If not, disconnect (unplug) electrical power to the spa, remove the cold side access door and locate the chiller's union connector. It is located up and to the right. The one closest to the door.
2. Place a towel under the union.
3. By hand slightly loosen this union (counterclockwise). This will produce a faint hissing sound of the trapped air escaping the chiller. This will be followed by a small squirt of water which signals it is time to close the union by turning it back (clockwise). Do not over tighten the union. It is designed to be hand tight.

The air bleed valve opened.

The air bleed valve closed.

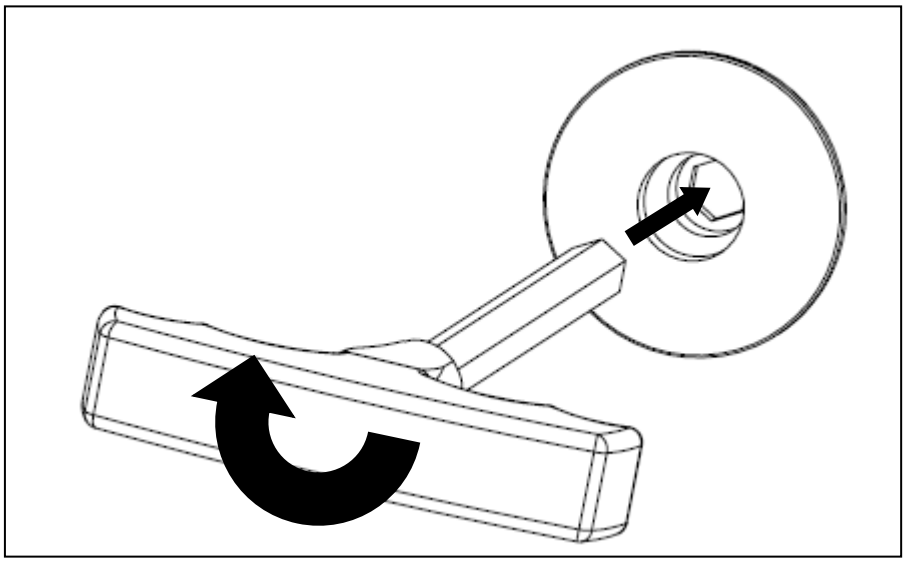


The chiller union.

Jet Tool

This wrench is used to tighten jets when needed.

To tighten the jets, insert the hex portion of the wrench into the hexagon hole at the base of the jet and turn clockwise. Do not over tighten.



Troubleshooting Guide

SITUATION	PROBABLE CAUSE	ACTION
NO HEAT OR HEAT TOO LOW	Operating while spa cover is open.	Ensure that spa cover is properly closed.
	Dirty filter	Remove filter cartridge and clean.
JETS WON'T COME ON	No power to spa control.	Check the GFCI plug, circuit breaker and/or disconnect switch.
NO CONTROL DISPLAY OR FUNCTIONS	No power to spa control.	Check the GFCI plug, circuit breaker and/or disconnect switch.
LOW WATER FLOW	Dirty filter.	Remove filter cartridge and clean. Pg. 10
	Low water level.	Make sure water level in spa is correct.
NO AIR BUBBLES IN JET	Air control valve in the closed position.	Open venturi dials. Pg. 11.
SPA IS LEAKING	Spa drain valve and cap partially open.	Ensure that drain valve and cap are fully closed. Pg. 8
NO SPA LIGHT	No LED light.	Replace LED light. Pg. 13
SLOW WATER DRAIN	Drain valve not fully opened.	Ensure that the valve is fully open. Pg. 8
	Dirty filter.	Remove filter cartridge and clean. Pg10
	Kinked garden hose	Ensure drain hose is not kinked and is in a downhill direction.
NO WATER FLOW FROM EITHER PUMP	Air lock in pump	Purge the pump. Pg. 16