



NESPA
TILED SPAS

NESPA Tiled Spas SC Equipment Manual 2019

2800 Richter Ave. Suite C, Oroville, CA 95965 • **voice:** (530)534-9910
fax: (530)534-9915 • **email:** sales@tiledspas.com • **website:** www.tiledspas.com

SITE PREPARATION / GENERAL GUIDELINES

Portable spa installation is simple when properly planned. To that end, it is important that you read the following information carefully and consult with your Nespa Tiled Spas dealer.

- 1) Access - The actual dimensions of your new spa will determine the amount of space that is needed in moving the spa from curbside to its final installation area. Be sure to measure side yard dimensions, gates or doors and vertical obstructions such as roof overhangs and overhead cables. Any other space limiting obstacles such as trees or shrubs must be evaluated.
- 2) If the spa is being installed indoors, dimension limitations such as stairs, ceilings and walls must be taken into consideration. Please have your Master Spas dealer or delivery service review site or installation plans prior to delivery.
- 3) Surface/Pad Requirements - When your new spa is filled with water and bathers, it may weigh as much as several tons. It is imperative that the base beneath the spa can support the actual weight. The spa must be on a uniformly firm, continuous, and level surface. The recommended foundation is a concrete pad with a minimum thickness of four (4) inches with steel reinforcement bars crossed throughout the pad.

IMPORTANT

When installing your spa indoors, on a wood deck, or balcony, the same load requirements must be met. Total load may be as much as 90 pounds per square foot. You should speak with a qualified contractor or your local building department to confirm that your surface is adequate for supporting a spa. Be sure to locate your spa so that equipment remains above grade and is not subject to flooding.

The equipment side(s) of the spa must be accessible in the event that future service is needed. Periodical maintenance checks require entry into the equipment bay. When possible, it is wise planning for the future to leave access to all sides of the spa in the event your spas plumbing requires maintenance. Your spa warranty does not cover the cost of providing access for service.

GENERAL CONSIDERATIONS FOR OUTDOOR INSTALLATION

Again, proper planning will increase your total enjoyment factor with your new spa. Listed below are some additional items to consider when planning your installation.

- How spa will complement landscaping and vice versa
- View from inside spa and view of spa from inside of home
- Exposure to sunlight and shading from trees
- Privacy
- Getting to spa from house and return
- Proximity to dressing rooms and bathrooms
- Storage for spa chemicals
- Local building codes (if applicable)
- Power cable

GENERAL CONSIDERATIONS FOR INDOOR INSTALLATION

Installing your spa indoors creates an entirely different set of considerations. Here again, with proper planning, no matter what room your spa goes in, it will be your favorite room.

- Work with your Master Spas dealer and contractor to insure all local building, electrical and plumbing codes are met
- Plan for a floor drain to drain off excess water or for draining and cleaning your spa
- A ventilation fan may be necessary due to high humidity created by your spa
- Finished material in your spa room should also be capable of withstanding increased humidity

ELECTRICAL INSTALLATION REQUIREMENTS

ELECTRICAL INSTALLATION REQUIREMENTS

HAVE YOUR ELECTRICIAN READ THE FOLLOWING INFORMATION BEFORE INSTALLATION BEGINS

Electrical connections made improperly, or the use of wire gauge sizes for incurring power which are too small, may continually blow fuses in the electrical equipment box, may damage the internal electrical controls and components, may be unsafe and in any case will void your warranty.

It is the responsibility of the spa owner to ensure that electrical connections are made by a qualified electrician in accordance with the National Electrical Code and any local and state electrical codes in force at the time of installation.

These connections must be made in accordance with the wiring diagrams found inside the control box. This equipment has been designed to operate on 60Hz, alternating current only, 240 volts are required. Make sure that power is not applied while performing any electrical installation. A copper bonding lug has been provided on the electrical equipment pack to allow connection to local ground points. The ground wire must be at least 6 AWG copper wire and must be connected securely to a grounded metal structure such as a cold water pipe. All Master Spas equipment packs are wired for 240 VAC only. The only electrical supply for your spa must include a 50 AMP switch or circuit breaker to open all non-grounded supply conductors to comply with section 422-20 of the National Electrical Code. The disconnect must be readily accessible to the spa occupants, but installed at least five feet from the spa. A Ground-Fault Circuit Interrupter (GFCI) must be used to comply with section 680-42 of the National Electrical Code. A ground fault is a current leak from any one of the supply conductors to ground. A GFCI is designed to automatically shut off power to a piece of equipment when a current fault is detected.

Power hook-up to the spa must be 240 volt 3 wire plus ground (6 AWG copper).

Route the cable into the equipment area for final hook-up to terminals inside the control panel. The spa must be hooked up to a “dedicated” 240 volt, 50 amp breaker and GFCI. The term “dedicated” means the electrical circuit for the spa is not being used for any other electrical items (patio lights, appliances, garage circuits, etc.). If the spa is connected to a non-dedicated circuit, overloading will result in “nuisance tripping” which requires resetting of the breaker switch at the house electrical panel.

Rev. 05/01/06

Permanently Connected Equipment Assembly with Pump(s), Heaters, Luminaine, Ozone, Spa Side Control(s), Pump shut off device, and Audio/Video Components.

Note: Some of the above components may be optional or not available with every spa model.

WARNING: FAILURE TO PROVIDE A DEDICATED CIRCUIT FOR YOUR SPA ELECTRICAL INSALLATION CAN CAUSE EQUIPMENT DAMAGE AND INVALIDATE YOUR WARRANTY.

Your spa electrical installation must be accomplished by a qualified and licensed electrician in accordance with the National Electrical Code (NEC) Article 680, Canadian Electric Code, and with any local codes effective at the time of installation.

All connections must be made according to the electrical installation label inside the control box. Follow the instructions from the label if they are different than instructions found in this manual. If your electrician is not absolutely sure how to correctly connect your system, call your dealer. Do not guess. Any mistake may be costly and invalidate your equipment warranty.

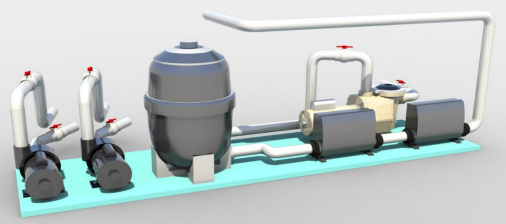
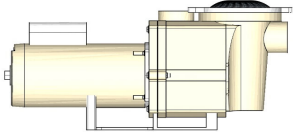
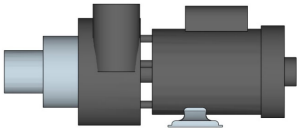

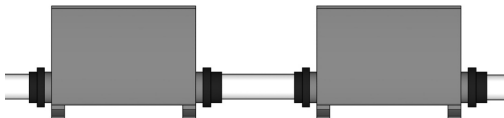

The GFCI is a mandatory electrical safety device required for all portable spas and hot tubs as specified in the National Electrical Code Article 680-42. The GFCI in your particular installation may be installed at the electrical service panel, a separate sub-panel or built into your Spa's Equipment System. Equipment systems with a built in GFCI meeting the code requirements will be marked on the top of the control panel with an identification label.

Your spa equipment requires a dedicated circuit. No other appliances or lights can be on this circuit. Refer to equipment data label for power supply requirements of your spa equipment. Use copper conductors only.

The ground must be equal to or larger than the largest power conductor.

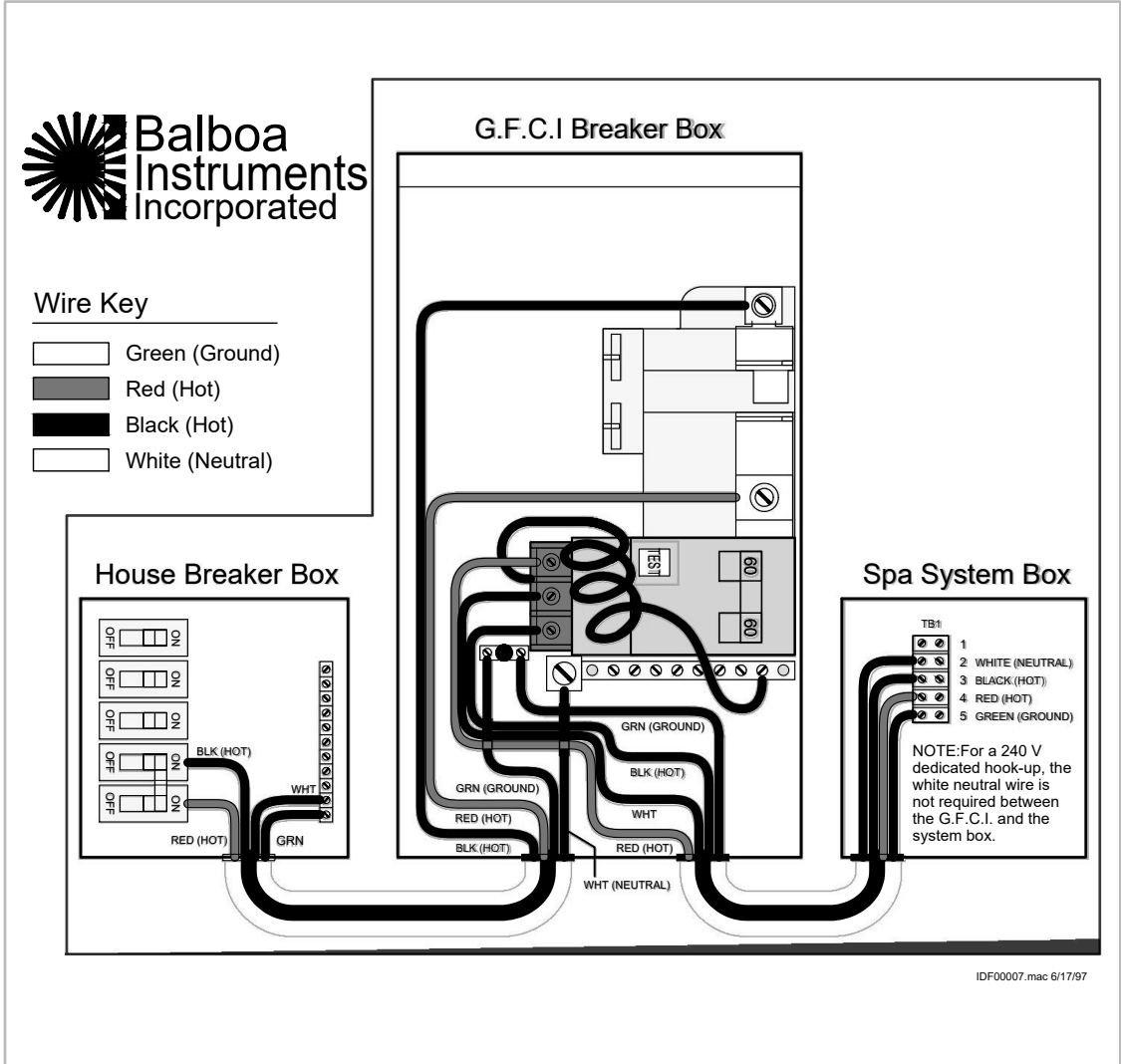
NOTE: Due to the spa electrical installation requirement of some models, it may be required to SPLIT the incoming electrical service to accommodate the GFCI Circuit Breaker limitations.

Contact your electrician if you need additional information on this topic or others related to your spa electrical installation.

A	B	C
<p>NESPA B20311AOP Spa Power Pack</p>		<p>Description: - Nespa B20311AOP Spa Power Pack is a spa support equipment assembly. Composed of circulation pump, cartridge filter, 5.5 KW heater, AUX 5.5KW heater, 2 Booster Jet Pumps, Ozone Sanitizer, LED Multi color light and Touch screen control panel.</p> <p>MODEL: NESPA B20311AOP Spa Power Pack SERIAL: NSC-B20311O-2019 VOLTS: 240V / 60HZ / 4 Wire AMPS: 50A</p> <p>Power Requirements: 240VAC, 60HZ, 50A, Class A GFCI-protected service (Circuit Breaker Rating = 50A max.) 4 Wires (Hot-Line 1, Hot-Line 2, Neutral, Ground)</p>
<p>FILTER PUMP -</p>		<p>PENTAIR - INTELLI-FLO i1 MODEL # - 011059 VFD i1 RATED - 340036 - 1.5 HP VOLTAGE - 230 Full Load AMPS: 5.4 A</p>
<p>BOOSTER PUMPS - (2)</p>		<p>WATERWAY EXECUTIVE - 5HP MODEL # - 3712021-13 RATED - 5HP VOLTAGE - 230 Full Load AMPS: 13.0 A</p>
<p>FILTER</p>		<p>STA-RITE - System 2 - Modular Media Filters - PLM Series MODEL # - PLM 150 Filter Area - 150 Sq Ft Flow Rated GPM - 56-150 Sq Ft Turnover Capacity in 1 HR - 4,000 Gallons</p>
<p>HEATER</p>		<p>BALBOA Heater - MODEL # - BP501G1 - PART # - 56487-04 120/240V - 60Hz - 16/48A</p> <p>BALBOA Heater Slave - MODEL # - RH-Slaves-CA-5.5K PART # 55986</p>
<p>OZONE</p>		<p>DEL AOP 25 Max Flow Rate = 20GPM VOLTAGE = 110/240VAC - 50/60 HZ - 0.3 Amps UL, cUL Certified</p>

WIRING SCHEMATIC - 240 VOLT SPA HOOK-UP

Primary Control Pack- Connect to the Balboa BP501G1 = 5.5KW heater
 For Auxiliary Heater- Install separate dedicated 30 AMP GFCI



*Actual wiring of GFCI will vary by manufacturer of GFCI. The GFCI shown is a Square D. Improper wiring of GFCI may result in permanent damage to spa system box. Repair / replacement of spa system box is not covered under warranty when damage results from improper wiring.

60 Amp
GFCI

Electrical
House Main

Sub
Panel

BP501-G1
Model 56487-03
240V 1PH,
48 Amp

30 Amp
GFCI

Switch Control from
Terminal 101 and 102

230V

Pentair IntelliFlo i1
Variable speed
230V, 1 ph
Filter RPM 1800 to 1950
Part # - 011059

230V

Balboa Executive 5HP
Booster Jet Pump
230V, PH1
3450 RPM
Part # 3712021-13
Amps 13 load

230V

Pentair- Bioshield
UV Disinfection System
240V, 80 watt lamp
56 GPM max flow
Part # 522636

12VAC

Jandy Pro Series
Color LED
20 watt 50' cord
Part # JLU4C20W50

Balboa Auxillary
Slave heater Model RH-
Slaves-CA-5.5 Kw
Titanium Part# 55986



BP501/601

"The Next Generation of Spa Controls"

- Wi-Fi Ready
- New Features in New Enclosure
- The first of a new series of systems
- Press & Hold Buttons for ease of use
- Based on Balboa's most popular model's
- Higher flame retardant and impact resistant materials



Made in the USA
BALBOA
water group

Incomparable System Reliability

The BP501/601 is the first of a new series based on Balboa's most popular models, utilizing advanced technology and higher flame retardent and impact resistant materials. Wi-Fi Enabled with press and hold buttons for ease of use, meet the newly designed BP501/601.

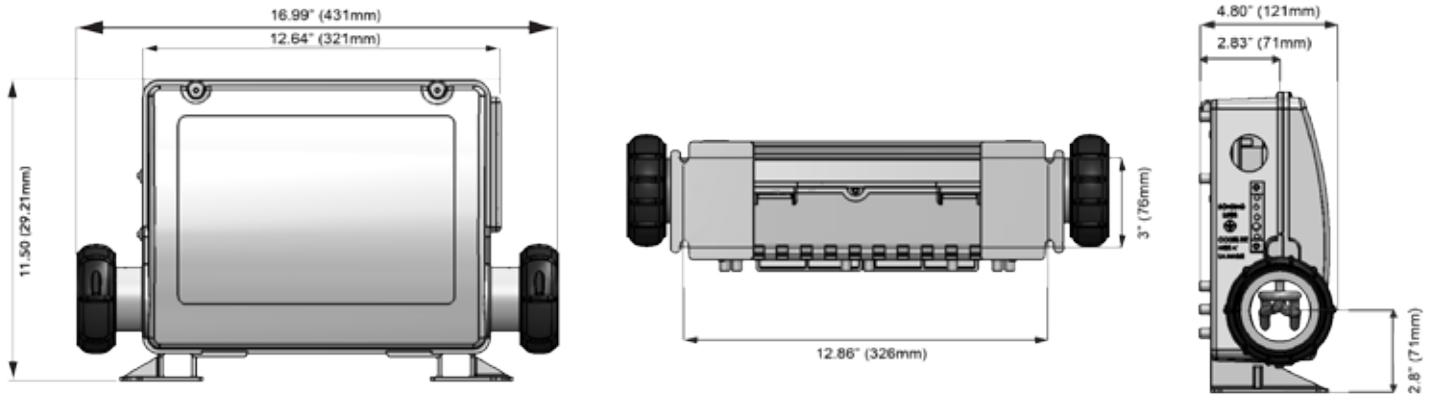
System Specifications

Voltage Supply: (BP501: 120V or 240V) (BP601: 230V)

Sensors: M7 patented temperature probes

Certifications: (BP501: UL recognized) (BP601: NEMKO)

Spa Lights Controls: 1 Amp Max



BP501 System Specifications (UL Recognized)

Material No.	Descriptions	Pump 1	Pump 2 or Blower	Pump 3 (Optional with Expander Card)	Heater
56485	SYSTEM BALBOA BP501G1 800INC – 60 Hz	2 spd or 1 spd with Circ	1 spd	NA	5.5 kW 800 Incoloy
56586	SYSTEM BALBOA BP501G1 825INC – 60 Hz	2 spd or 1 spd with Circ	1 spd	NA	5.5 kW 825 Incoloy
56487	SYSTEM BALBOA BP501G1 TITAN – 60 Hz	2 spd or 1 spd with Circ	1 spd	NA	5.5 kW Titanium
56480	SYSTEM BALBOA BP501G2 800INC	2 spd or 1 spd with Circ	1 spd	2 spd	5.5 kW 800 Incoloy
56486	SYSTEM BALBOA BP501G2 825INC	2 spd or 1 spd with Circ	1 spd	2 spd	5.5 kW 825 Incoloy
56482	SYSTEM BALBOA BP501G2 Titanium	2 spd or 1 spd with Circ	1 spd	2 spd	5.5 kW Titanium

BP601 System Specifications - Single Phase (CE Recognized)

Material No.	Descriptions	Pump 1	Pump 2 or Blower	Pump 3 (Optional with Expander Card)	Heater
56497	SYSTEM BALBOA BP601G1 800INC – 50 Hz	2 spd or 1 spd with Circ	1 spd	NA	3.0 kW 800 Incoloy
56498	SYSTEM BALBOA BP601G1 825INC – 50 Hz	2 spd or 1 spd with Circ	1 spd	NA	3.0 kW 825 Incoloy
56499	SYSTEM BALBOA BP601G1 TITAN – 50 Hz	2 spd or 1 spd with Circ	1 spd	NA	3.0 kW Titanium

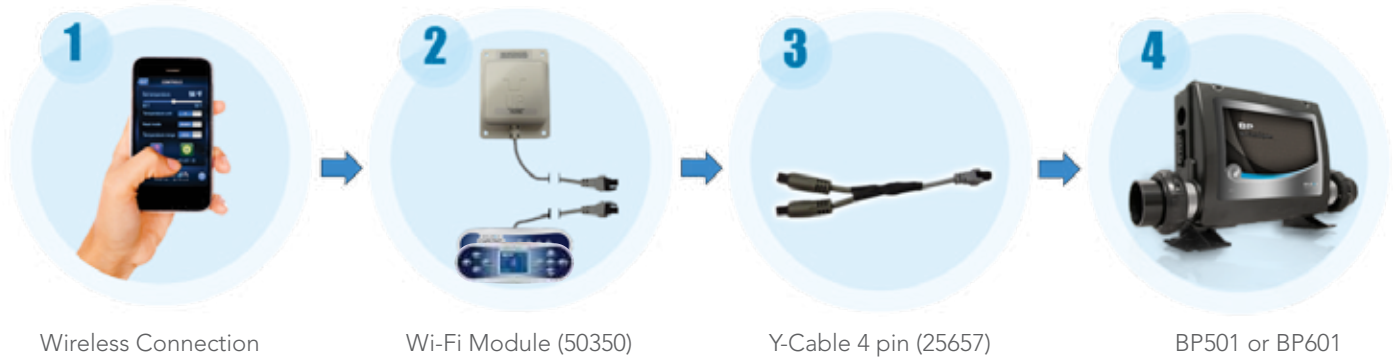
Note: Refer to tech sheet for optional devices and setups.

Material No.	Descriptions
55911	2" Tailpieces (2-Speed Pump 1). Compatible Plumbing Kits (Coupling nuts and seals included).

BP501/601 Wi-Fi Enabled

Wireless System Control

Now you can control your system wirelessly. With a few simple connections and some additional hardware you can have full control of your spa system. To download the software go to the Apple Apps store and download the free spa app, run through the quick setup and your done.



Powerful, Yet Simple Userface

A sleek new topside panel includes a large easy to read back-lit LCD with simple to follow end user menus. With new press and hold button technology, setting temperature and other common tasks have been simplified. User navigation is intuitive and easier than ever, reducing customer service help calls.

BP501/601 Panels And Overlays

Compatible Topside Panels



Panel TP400

- 4 button with LCD display

Material No.:

- 55702: No Overlay (TP400W)
- 55701: No Overlay (TP400T)
- 50259: With Overlay (12510)
- 50260: With Overlay (12511)



Panel TP600

- 6 button with LCD display

Material No.:

- 55676: No Overlay
- 56046: 15ft. Cord
- 50016: For International
- 55673: With Overlay (12101)
- 50014: For Intl' with overlay (12101)



Panel TP800

- 9 button with LCD display

Material No.:

- 50204: No Overlay
- 50261: With Overlay (12512)

Bigger Brighter Bolder

The all new SpaTouch2™



spaTouch²™

The All NEW SpaTouch2™ Touchscreen Panel

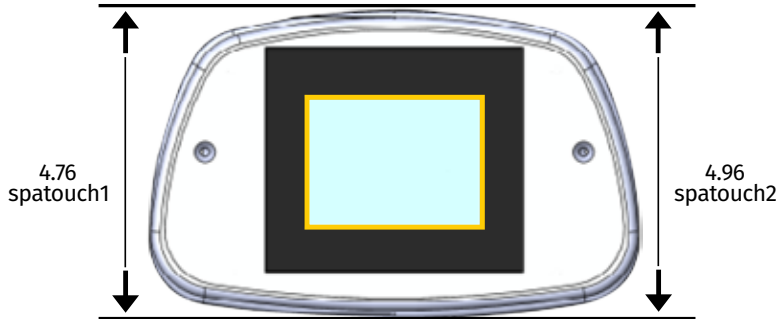
- 4.25" larger screen, making it 40% larger than its predecessor
- Our resistive touchscreen panel looks and feels like a glass display
- The touchscreen panel has the highest touch point density, making it impervious to environmental conditions such as water splashes or contamination
- The touchscreen uses modern technology combined with high quality materials



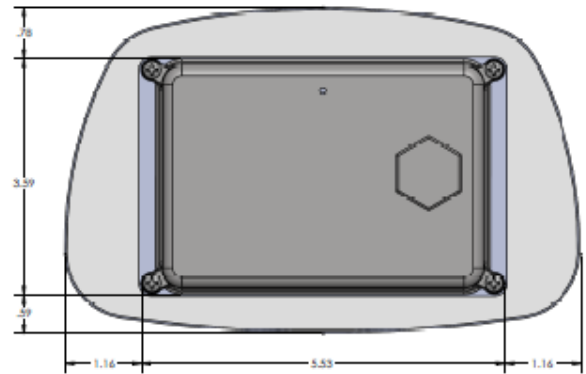
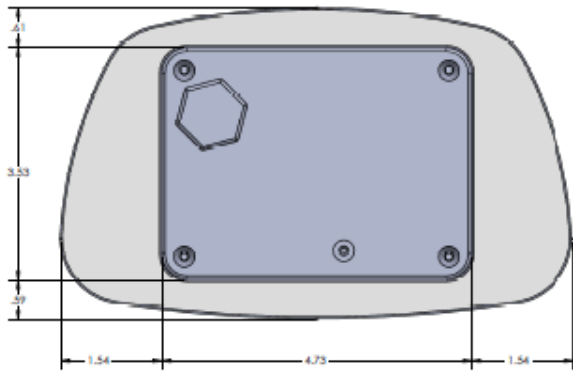
BALBOA
water group

spaTouch²™

NOW AVAILABLE!



The SpaTouch2 is 2" taller than the SpaTouch1
Same Width – 0.2" taller (.5 cm)



Cutout: .8" wider (2.2 cm) | Same height

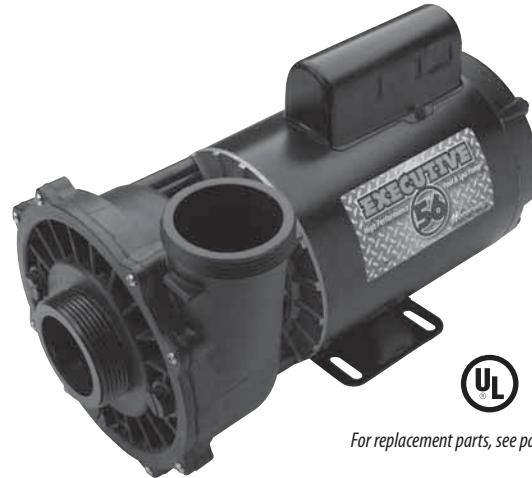
DIFFERENT SHAPES AVAILABLE!





FEATURES:

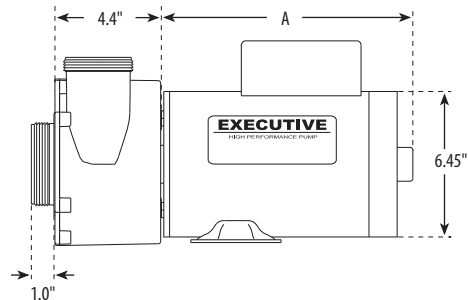
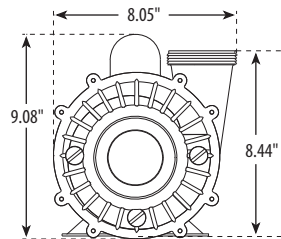
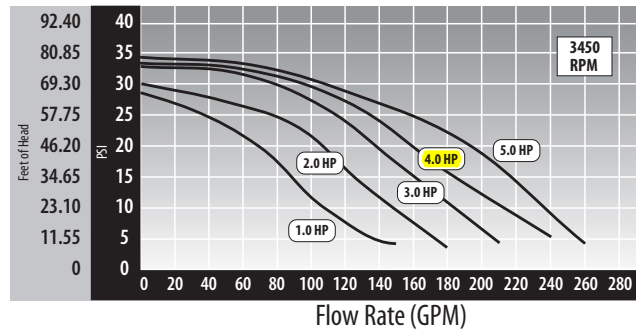
- Executive wet end designed specifically for 56-frame motors
- Two double shielded ball bearings with moisture resistant grease for quieter operation and longer life
- Two speed motors have four sets of insulated windings for increased efficiency
- 56-frame motor for added strength, cooler operating temperature and longer motor life
- Large 2 ½" intake for improved flow performance and reduced noise
- Large 6 ½" diameter wet end for higher head pressure
- Split capacitor, (start and run) for less energy consumption
- Thermally protected to extend life expectancy of motor
- Highly versatile wet end can be rotated every 90°
- Viton seals
- Three year warranty on motor and wet end



For replacement parts, see page 279

Call for available cords and plugs.

PRESSURE VERSUS FLOW RATE



2-Speed Executive 56-Frame Pumps

Part No.	Description	HP	Volts	Amps High Speed	Amps Low Speed	Hz	Dimension "A"	List (US \$)
3720821-1D	2" Intake - 2" Discharge	2	230	8.0	3.0	60	8.875"	605.01
3720821-13	2 ½" Intake - 2" Discharge	2	230	8.0	3.0	60	8.875"	605.01
3721221-1D	2" Intake - 2" Discharge	3	230	10.0	3.4	60	9.875"	646.45
3721221-13	2 ½" Intake - 2" Discharge	3	230	10.0	3.4	60	9.875"	646.45
3721621-1D	2" Intake - 2" Discharge	4	230	12.0	4.4	60	10.375"	704.82
3721621-13	2 ½" Intake - 2" Discharge	4	230	12.0	4.4	60	10.375"	704.82
3722021-1D	2" Intake - 2" Discharge	5	230	16.4	4.8	60	10.375"	800.35
3722021-13	2 ½" Intake - 2" Discharge	5	230	16.4	4.8	60	10.375"	800.35

1-Speed Executive 56-Frame Pumps

Part No.	Description	HP	Volts	Amps	Hz	Dimension "A"	List (US \$)
3710821-1D	2" Intake - 2" Discharge	2	230	8.0	60	8.875"	605.01
3710821-13	2 ½" Intake - 2" Discharge	2	230	8.0	60	8.875"	605.01
3711221-1D	2" Intake - 2" Discharge	3	230	10.0	60	9.875"	646.45
3711221-13	2 ½" Intake - 2" Discharge	3	230	10.0	60	9.875"	646.45
3711621-1D	2" Intake - 2" Discharge	4	230	12.0	60	10.375"	670.61
3711621-13	2 ½" Intake - 2" Discharge	4	230	12.0	60	10.375"	690.21
3712021-1D	2" Intake - 2" Discharge	5	230	16.4	60	10.375"	690.21
3712021-13	2 ½" Intake - 2" Discharge	5	230	16.4	60	10.375"	699.30



O₂zone™ by Balboa is a reliable and flexible system designed to generate ozone for your pool or spa. It has Universal Auto-range Voltage that can operate with any input voltage (110-240 VAC and 50/60 Hz).

Warning! Shock Hazard! No User Serviceable Parts. Do not attempt service of this ozonator. Contact your dealer or service organization for assistance. Follow all owners manual instructions. Installation must be performed by a licensed electrician. Installation must be in compliance with all state, national, and local building & electrical codes. No usable parts inside.



This unit is shipped with the wiring as shown. 110V or 240V can be applied to the black and white wires. To match alignment of the white wire of the ozone generator connector with the controller box connector, the white wire can be moved. Refer to Step 2 under **FOR REPLACEMENT**.

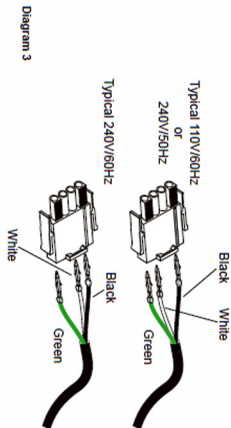


Diagram 3

OEM Installation

The effectiveness of the ozone generator is dependent on the design delivery system per each manufacturer. It is the responsibility of the installer to follow the installation procedures set forth by the manufacturer. Failure to do so will void the warranty. Diagram 2 shows the basic layout recommended for the installation of Banyo's Ozone Generator.

1. Turn off all power.
2. Loop the hose into a "Hartford Loop" and have the upper part of the loops positioned above the water line level as shown. Failure to do so could result in water intrusion, which is not covered by the warranty. Attach the hose to the ozone injector fitting on the spa plumbing. Install the check valve so that the arrow points in the direction of air flow from the generator to the ozone injector (Diagram 2).

Note: If you do not properly install the check valve, the air flow will be blocked from going into the spa/pool and will not perform the ozonation process.

3. Power up the system and briefly run the filtration pump. Place your finger over the end of the hose near the check valve. You should feel a slight suction. If not, check for hose kinks, hose obstructions, and that the check valve is in the proper direction. When suction is obtained, attach the hose from the generator to the barbed output of the ozone generator.
4. Turn off the control system and hook the power cable to the control system marked for Ozone. (Follow the system's wiring diagram for the proper location.)
5. Turn the system power back on and run the pump. Confirm that the light in the Ozone window is ON.

FOR REPLACEMENT (System with AMP connector on the outside of the box)

1. Follow the above steps (1-4).
2. Uncover the controller box. Match the wires' output of the ozone AMP connector mark on the outside of the box with the AMP connector provided with the ozone generator. Refer to Diagram 3.
3. Insert the wire. You will feel it "click" into position when it is seated. A slight tug on the wire is all that's needed to be sure that the terminal is seated.
4. Mate the AMP connector and power up the spa. Make sure that you are in filtration cycle and confirm that the light on the ozone generator window is on.

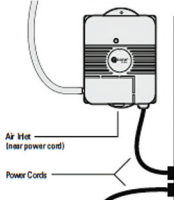


Diagram 1

Both diagrams, Diagrams 1 & 2, show that the ozone generators must be mounted with their inlets facing down. As shown (right), the chip generator outlet will be pointing to the left once installed.

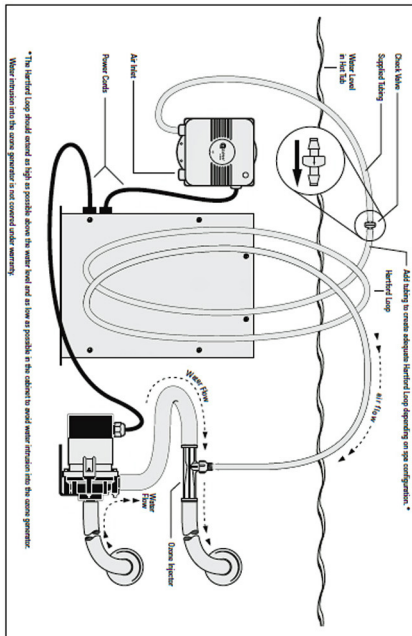


Diagram 2



LiquaLED Controllers

Controls colors, color-changing and sequencing via built-in software program



- Patent Pending control technology
- Compatible with all LiquaLED Cluster Lights, Bullet Lights and Accent Lights
- UL Approved - File Number #E242370
- Serviceable fused input for safety
- Moisture resistant electronics
- Easy to mount anywhere in spa's equipment area Full Spectrum Color Control

LiquaLED Control 100

- Controls and synchronizes all LEDs
- Controls up to 100 points of light plus one cluster
- Controlled by spa pack
- Powered by spa's stereo power supply or external SloanLED power supply
- Replaces large fiber optic systems

LiquaLED Control 40

- Controls up to 40 points of light plus one cluster
- Controlled by spa pack
- No external power supply required
- Cost effective control device

Item Description	LiquaLED Controllers	
	Control 100	Control 40
Part Number	701712-DLO	701678-DLO
Max Points of Lights (not including clusters)	100	40
Required Input Voltage - AC	12 V AC from Spa Pack	
Required Input Voltage - DC	External 12 V DC Supply	No External DC Supply Required
Typical Max Output Current / Power	2 Amps / 24 Watts	1 Amp / 12 Watts
Controller Dimensions	3.25" x 2.75" x .75"	3.25" x 2.75" x .75"
On/Off Control	Spa pack light on/off switch on top-side control panel	





UltraBRITE-Mini Standard Integrated LED Cluster Lamp

Bring high-end features and quality to entry-level spas



- Fully Integrated Solution – No separate controller required
- High-brightness LED cluster
- Reliable moisture-resistant electronic coatings
- On-board selectable color-controller
 - Color Wheel
 - White
 - Cyan
 - Magenta
 - Blue
 - Yellow
 - Green
 - Red
 - White Strobe
- Two physical packaging configurations:



UltraBRITE-Mini with lens



Bi-Pin Connector Style

- Bi-Pin (-P) used for simple incandescent replacement / retrofitting into standard bulb socket



Bayonet Style Mounting

- Bayonet-Style (-SA) installs into standard lens bases (from 2" to 5" in diameter). Includes adapter cable to allow connection via either 1/4" QC terminal or 2-prong MLX plug

Item Description	UltraBRITE-Mini LED Light
Part Numbers	701861-9-P (bi-pin) 701861-9-SA (bayonet)
High-Brightness LEDs per Cluster	9 - 5mm LEDs
Input Voltage	12V AC
Typical Maximum Current	200 mA
Diameter of PCB	1.3"
Fits Lens Sizes (Approximate)	~ 2.0" to 5.0"
Fixture depth	1.75"



SPA WATER MAINTENANCE - START-UP

1. Read the spa owners manual first.
2. Clean the surface with a spa general purpose cleaner or wipe down with a clean wet towel.
3. Begin filling the spa with fresh water. If possible, do not use softened water.
4. When the spa has 2 to 4 inches of water on the bottom, add the recommended amount of a sequestering chemical for that size spa. See the chemical bottle for correct amounts.
5. When the spa is full, run the pump on high speed for 30 minutes without air controls open. This will give the sequestering chemical time to mix well with the water. Allow sequestering chemical 12-24 hours to properly filter in the water before proceeding with any further steps.
6. Using test strips or a test kit, test for total alkalinity, and adjust if necessary to between 80 to 150 ppm using the pH / alkalinity increaser or decreaser 1oz. at a time. Wait 15 minutes, retest, and adjust if necessary. The pump should be running on high speed during this time without air controls open.
7. Using test strips or a test kit, test for pH, and adjust if necessary to within the 7.2 and 7.8 range using the pH / alkalinity increaser or decreaser 1/2oz. at a time. Wait 15 minutes, retest, and adjust if necessary. The pump should be running on high speed during this time, without air controls open.
8. Add the sanitizer of choice, following label directions. If chlorine is used, broadcast the recommended amount across the surface of the water, with the pump running on high speed. Wait 15 minutes, retest, and adjust if necessary to a total chlorine reading of 1 to 3 ppm. If bromine is used, add bromine tablets to the bromine feeder following label directions. With the pump running on high speed, add 2oz. of sodium bromide, and shock the spa with 2oz. of non chlorine shock. It may take several days adjusting the bromine feeder to obtain a total bromine reading of 3 to 5 ppm. A bromine reading may not be obtained on the first day.
9. If any foam develops, add a defoamer at the base of the problem area. Use only enough defoamer to get rid of the foam. This is usually one or two drops Do not pour large amounts of defoamer into water.
10. Wait two days, and begin a three day a week maintenance program.

WATER CHEMISTRY TERMS YOU SHOULD KNOW

Before jumping into the Spa Water Maintenance, here are some terms to help you.

- 1. Parts per million, or ppm:** This is a form of measurement used in most pool or spa chemical readings. Best described as any one million like items of equal size and make up, next to one unlike item, but of equal size. This would be one part per million.
- 2. Average size spa:** What is it? The national spa and pool institute (NSPI) states; 350 to 400 U.S. gallons is average. As a general rule, chemical dosages are the same for any spa between 100 and 500 U.S. gallons. Spas over 500 U.S. gallons the dosage would be double. Under 100 U.S. gallons would be on a case by case basis.
- 3. Total Alkalinity:** This is a measurement of the ability of the water to resist changes in pH. Put another way, it is the water's ability to maintain proper pH. Total alkalinity is measured in parts per million from 0 to 400 plus, with 80 to 150 ppm being the best range for spas. With low alkalinity, the pH will flip, or change back and forth, and be hard to control. With high alkalinity it becomes extremely difficult to change the pH.
- 4. pH or potential hydrogen:** This is a measurement of the active acidity in the water, or it is the measurement of the concentration of active hydrogen ions in the water. The greater the concentration of active hydrogen ions, the lower the pH. pH is not measured in parts per million, but on a scale from 0 to 14, with 7 being the neutral. In spas when ever possible, a measurement between 7.2 and 7.8 is best. Whenever possible, it should be between 7.4 and 7.6. With low pH, the results can be corroded metals, etched and stained plaster stained fiberglass or acrylic, eye / skin irritation, rapid chlorine or bromine loss, and total alkalinity destruction. With high pH, the results can be cloudy water, eye / skin irritation, scale formation and poor chlorine or bromine efficiency.
- 5. Shocking:** This is when you add either extra chlorine (superchlorinate) by raising the chlorine level above 8 ppm, or add a non-chlorine shock (potassium monoperoxysulfate or potassium monopersulfate) to burn off the chloramines or bromamines. A non-chlorine shock acts by releasing oxygen in the water, which serves the same function as chlorine. The advantage to using non-chlorine shock, is you can enter the water within 15 minutes after shocking. Using chlorine, you must wait until the total chlorine reading is below 5 ppm. One thing to remember, a non-chlorine shock will not kill bacteria or disinfect.
- 6. Sequestering:** This can be defined as the ability to form a chemical complex which remains in solution, despite the presence of a precipitating agent (i.e. calcium and metals). Common names for sequestering chemicals are; minquest, stain and scale control, metal-x, spa defender, spa metal gone, (etc.).
- 7. Filtration:** Filters are necessary to remove particles of dust, dirt, algae, etc. that are continuously entering the water. If the spa is not operated long enough each day for the filter to do a proper job, this puts a burden on the chemicals, causing extra expense. Filtration time will depend on the spa size, pump and filter size, and of course, bather load. A spare cartridge should be kept on hand to make it easy to frequently clean the cartridge without the need for a long shut down. This will also allow the cartridge to dry out between usages, which will increase the cartridge life span as much as twice. Replace the cartridge when the pleats begin to deteriorate. Cartridge cleaning should be done a minimum of once a month. More often with a heavy bather load.

WATER CHEMISTRY TERMS YOU SHOULD KNOW

Before jumping into the Spa Water Maintenance, here are some terms to help you.

8. **Sanitizers:** This is what kills the germs and bacteria that enter the water from the environment and the human body.
 - A. Chlorine
 1. Only one type is good for spa use: Sodium dichlor which is a granule, fast dissolving, and pH neutral
 2. Chlorine is an immediate sanitizer.
 - B. Bromine (Note: Bromine use is not recommended with Eco Pur filters.)
 1. Two types of tablets.
 - a. Hydrotech
 - b. Lonza
 2. Bromine is a slow dissolve chemical and may take a few days to develop a reserve or reading in the water.
 9. **Total dissolved solids (TDS):** Materials that have been dissolved by the water. i.e. Like what happens when you put sugar in coffee or tea.
 10. **Useful life of water (in days):** Water should be drained at least once every 180 days. Useful life may vary by usage and bather load.
 11. **Defoamer:** Foaming may be caused by body oils, cosmetics, lotions, surface cleaners, high pH or algeacides as well as other organic materials. Low levels of calcium or sanitizer can also cause foaming. Also, double rinse your bathing suits as they will hold residual soap after being washed.
 12. **Calcium hardness:** Water that is too hard (over 250 ppm) can promote scale formation in components and on spa surface. Water that is too low (below 180 ppm) may also shorten the life of metal components on the spa.
- NOTE:** Always leave spa cover open for 15 minutes after adding chemicals to prevent the off gas from damaging your spa cover, spa pillows and other critical parts.

WATER CHEMISTRY TERMS YOU SHOULD KNOW

Before jumping into the Spa Water Maintenance, here are some terms to help you.

- 1. Parts per million, or ppm:** This is a form of measurement used in most pool or spa chemical readings. Best described as any one million like items of equal size and make up, next to one unlike item, but of equal size. This would be one part per million.
- 2. Average size spa:** What is it? The national spa and pool institute (NSPI) states; 350 to 400 U.S. gallons is average. As a general rule, chemical dosages are the same for any spa between 100 and 500 U.S. gallons. Spas over 500 U.S. gallons the dosage would be double. Under 100 U.S. gallons would be on a case by case basis.
- 3. Total Alkalinity:** This is a measurement of the ability of the water to resist changes in pH. Put another way, it is the water's ability to maintain proper pH. Total alkalinity is measured in parts per million from 0 to 400 plus, with 80 to 150 ppm being the best range for spas. With low alkalinity, the pH will flip, or change back and forth, and be hard to control. With high alkalinity it becomes extremely difficult to change the pH.
- 4. pH or potential hydrogen:** This is a measurement of the active acidity in the water, or it is the measurement of the concentration of active hydrogen ions in the water. The greater the concentration of active hydrogen ions, the lower the pH. pH is not measured in parts per million, but on a scale from 0 to 14, with 7 being the neutral. In spas when ever possible, a measurement between 7.2 and 7.8 is best. Whenever possible, it should be between 7.4 and 7.6. With low pH, the results can be corroded metals, etched and stained plaster stained fiberglass or acrylic, eye / skin irritation, rapid chlorine or bromine loss, and total alkalinity destruction. With high pH, the results can be cloudy water, eye / skin irritation, scale formation and poor chlorine or bromine efficiency.
- 5. Shocking:** This is when you add either extra chlorine (superchlorinate) by raising the chlorine level above 8 ppm, or add a non-chlorine shock (potassium monoperoxysulfate or potassium monopersulfate) to burn off the chloramines or bromamines. A non-chlorine shock acts by releasing oxygen in the water, which serves the same function as chlorine. The advantage to using non-chlorine shock, is you can enter the water within 15 minutes after shocking. Using chlorine, you must wait until the total chlorine reading is below 5 ppm. One thing to remember, a non-chlorine shock will not kill bacteria or disinfect.
- 6. Sequestering:** This can be defined as the ability to form a chemical complex which remains in solution, despite the presence of a precipitating agent (i.e. calcium and metals). Common names for sequestering chemicals are; minquest, stain and scale control, metal-x, spa defender, spa metal gone, (etc.).
- 7. Filtration:** Filters are necessary to remove particles of dust, dirt, algae, etc. that are continuously entering the water. If the spa is not operated long enough each day for the filter to do a proper job, this puts a burden on the chemicals, causing extra expense. Filtration time will depend on the spa size, pump and filter size, and of course, bather load. A spare cartridge should be kept on hand to make it easy to frequently clean the cartridge without the need for a long shut down. This will also allow the cartridge to dry out between usages, which will increase the cartridge life span as much as twice. Replace the cartridge when the pleats begin to deteriorate. Cartridge cleaning should be done a minimum of once a month. More often with a heavy bather load.

WATER CHEMISTRY TERMS YOU SHOULD KNOW

Before jumping into the Spa Water Maintenance, here are some terms to help you.

8. **Sanitizers:** This is what kills the germs and bacteria that enter the water from the environment and the human body.
 - A. Chlorine
 1. Only one type is good for spa use: Sodium dichlor which is a granule, fast dissolving, and pH neutral
 2. Chlorine is an immediate sanitizer.
 - B. Bromine (Note: Bromine use is not recommended with Eco Pur filters.)
 1. Two types of tablets.
 - a. Hydrotech
 - b. Lonza
 2. Bromine is a slow dissolve chemical and may take a few days to develop a reserve or reading in the water.
 9. **Total dissolved solids (TDS):** Materials that have been dissolved by the water. i.e. Like what happens when you put sugar in coffee or tea.
 10. **Useful life of water (in days):** Water should be drained at least once every 180 days. Useful life may vary by usage and bather load.
 11. **Defoamer:** Foaming may be caused by body oils, cosmetics, lotions, surface cleaners, high pH or algeacides as well as other organic materials. Low levels of calcium or sanitizer can also cause foaming. Also, double rinse your bathing suits as they will hold residual soap after being washed.
 12. **Calcium hardness:** Water that is too hard (over 250 ppm) can promote scale formation in components and on spa surface. Water that is too low (below 180 ppm) may also shorten the life of metal components on the spa.
- NOTE:** Always leave spa cover open for 15 minutes after adding chemicals to prevent the off gas from damaging your spa cover, spa pillows and other critical parts.

SPA WATER MAINTENANCE TROUBLE-SHOOTING GUIDE

Problem	Possible Causes	How To Fix It
Chlorine / Bromine Odor	<ul style="list-style-type: none">• Excessive Chlorine or bromine level• Low pH	<ul style="list-style-type: none">• Shock water with non-chlorine shock treatment• Adjust pH if necessary
Water Odor	<ul style="list-style-type: none">• Low levels of sanitizer• pH out of range• Bacteria or algae growth	<ul style="list-style-type: none">• Shock water with non-chlorine shock treatment or adjust sanitizer levels• Adjust pH level if necessary• Adjust sanitizer if necessary
Cloudy Water	<ul style="list-style-type: none">• Dirty filters or inadequate filtration• Water chemistry not balanced• Suspended particles or organic materials• Old water	<ul style="list-style-type: none">• Clean filters and adjust filtration• Adjust chemistry levels• Add spa clarifier (see dealer)• Change spa water
Scum Ring Around Spa	<ul style="list-style-type: none">• Build up of oils, dirt and organic elements	<ul style="list-style-type: none">• Wipe off with a clean towel
Eye / Skin Irritation	<ul style="list-style-type: none">• Unsanitary water• Free chlorine level above 5 ppm• Poor sanitizer / pH levels	<ul style="list-style-type: none">• Shock spa with non-chlorine shock• Allow level to drop below 5 ppm• Adjust according to spa test strip results
Foaming	<ul style="list-style-type: none">• High levels of body oils, lotions, soap, etc.	<ul style="list-style-type: none">• Add small amount of defoamer

RECOMMENDED LEVELS OF CHEMICAL

Chlorine 1.0 - 3.0 ppm

pH 7.2 - 7.8

Total Alkalinity 80 - 150 ppm

Calcium Hardness 180 - 250 ppm

WHY ARE CHEMICALS IMPORTANT IN A SPA

1. Evaporation:

As water evaporates, only pure water evaporates, leaving the salts, minerals, metals, and any unused chemicals behind. Adding water adds more salts, minerals, and metals. In time, the water can become saturated with these dissolved solids and can cause stains or scale to form on the walls of the spa or a scale build up inside the equipment. Colored or cloudy water, and possible corrosion of plumbing and fittings may also occur.

2. Heat:

Heat causes evaporation to happen faster. Heat also causes certain minerals and metals to precipitate out of solution.

3. Air:

Dust and airborne dirt particles are introduced into the spa.

4. Environment:

The environment surrounding the spa is also a consideration. Watch for pollen, grass, sand, dirt, lawn fertilizer, dust storms, insects, dogs, cats, etc.

5. Consider the human next:

In a heated spa, the average adult sweats 3 pints per hour. This person also brings in the spa surface dirt, soap, body oils, deodorant, hair spray, hand and body lotion, perfume and cologne, make up, lipstick, and suntan lotion. To this you can add spit, urine, bacteria and virus germs from open sores or certain body parts. To this let's add spilled drinks, cigarette ash, and various play things. Now multiply this times 4 or 6 people in an average 375 gallon spa and then try to use the water for a few months!

Remember:

The maintenance routines set forth in this manual may need to be adjusted depending on how much the spa is being used.

MAINTENANCE RECOMMENDATIONS

Your spa requires periodic draining and cleaning to ensure a safe, healthy environment. It is recommended that you clean your spa at least every 180 days. Heavy bather load will require cleaning it more often.

TO DRAIN YOUR SPA

- See page 13.

TO CLEAN YOUR SPA SURFACE

- With a soft cloth, wipe down the spa surface with a non-abrasive spa surface cleaner that may be purchased through your local spa dealer. Do not use paper towels. Be sure to rinse residue from spa surface.
- If your spa has developed an oily or chalky residue at the waterline it may require special treatment. Consult your dealer.

TO REFILL YOUR SPA

- Be sure to close the drain valve.
- Fill the spa with water. Be sure water level is above skimmer opening to the minimum safe water level label.
- Refer to your spas corresponding start-up section with any questions.

TO CLEAN YOUR FILTER ELEMENTS (also reference page 73)

The filter in your spa is one of the most important components of your spa. It not only is essential for clean water, but also for extending the life of the spa equipment. Your filter elements must be cleaned regularly (once a month on average) with normal spa use. With heavy use, they will need to be cleaned more often.

- Turn spa off. Never have the spa running when removing your filters as debris can be pulled through into the equipment causing unwarranted damage.
- Remove filter element(s).
- With a garden hose, spray each element under pressure. Periodically, the elements need to be soaked in a filter cleaner compound. Check with your dealer for details on cleaning and/or filter replacement recommendations.
- Replace filter elements.
- Be sure water level is adequate.
- Turn spa on.
- Only clean the ECO PUR filter element with water, do not use chemical cleaners.

CARE OF YOUR SPA PILLOWS

- Your spa pillows need to be rinsed periodically to remove any chemical residue. This should help to eliminate pillows becoming stiff and discolored.
- If spa is not to be used for a period of time, pillows should be removed. Pillow life will be extended.
- Always leave the cover open for 15 minutes in order to prevent off gas from damaging your spa pillows, cover and other critical parts. Signs of off gas damage include but are not limited to pillows peeling and bubbling, cover failing prematurely, plastics failing, etc.

WINTERIZING YOUR SPA

Many people find they enjoy using their spa more in the winter than any other time. Your spa is designed to be used year round in any type of climate.

*However, if you decide you don't want to use your spa in the winter, you must drain it and follow the winterizing steps listed below:

1. Drain your spa completely using the drain valve (see "To Drain Your Spa") or use an inexpensive submersible pump that you can buy from your dealer or your local hardware store.
2. Use a shop vac to get all standing water out of your unit.
3. Remove access panels from equipment area.
4. Loosen all pump unions
5. Remove winterizing plug from the face of the pump(s).
6. Using your shop vac in a blowing mode, insert the hose into the nozzle of each jet and blow the trapped water from the lines into the interior of the spa.
7. After this is completed, use the shop vac to remove any standing water in the spa and in the equipment area.
8. Clean the spa with a soft cloth and a non-abrasive spa surface cleaner.
9. Replace access panels.
10. Cover spa to prevent water from entering the spa.

**Disclaimer: NESPA TILED SPAS does not recommend winterizing your spa. If you choose to do so, any damage that may result is not covered under the spa warranty.*

NESPA ENTERPRISES, Inc. LIMITED WARRANTY

This LIMITED WARRANTY covering NESPA products is extended to the ORIGINAL PURCHASER-USER BY NESPA ENTERPRISES Inc.(NESPA), 2800 Richter Ave. Unit C California 95966.

NESPA products are thoroughly inspected and tested prior to factory shipment. NESPA warrants to the ORIGINAL PURCHASER-USER that NESPA Spas and Swim Spas will be free of defect in workmanship, accessories and parts, provided said accessories and parts were manufactured by NESPA. NESPA, under this LIMITED WARRANTY, warrants only that its Spas and Swim Spas shall be structurally sound, shall retain their shape, and shall retain water for the warranty period. NESPA warrants the adhesion of tile to fiberglass for a period of three (3) years and structural soundness for ten (10) years. NESPA warrants epoxy grout adhesion for a period of three years. If any such defects appear and are reported within the warranty period, NESPA shall repair or replace such defective parts without charge if an inspection proves the claim.

The provisions of the LIMITED WARRANTY shall not apply to tile cracked, split, chipped or damaged after the product has left the factory, nor damage to tile caused by freezing nor to damage, defect, malfunction or failure to conform with the above warranty provisions where the damage, defect, malfunction or failure to conform was caused during shipment or by distributor or by unreasonable use by ORIGINAL PURCHASER-USER including improper water balance and improper sand pack or support.

This LIMITED WARRANTY shall not apply to any plumbing, equipment, or installation of spas and Swim Spas and shall not apply to any alterations made to or upon NESPA products except alterations made by NESPA employees or NESPA authorized representatives.

This LIMITED WARRANTY is expressly in lieu of all other warranties expressed or implied including the warranties of merchantability and fitness for use and all other obligations or liabilities on NESPA'S part, and NESPA neither assumes nor authorizes any other person to assume for NESPA any other liability in connection with the sale of this NESPA product. This LIMITED WARRANTY shall not apply to this NESPA product or any part thereof which has been subject to accident, negligence, alteration, abuse or misuse. NESPA makes no warranty whatsoever with respect to accessories or parts not manufactured by NESPA.

The term "ORIGINAL PURCHASER-USER" as used in this LIMITED WARRANTY shall be deemed to mean that person for whom the NESPA product is originally installed.

The LIMITED WARRANTY provided herein and the obligations and liabilities of NESPA hereunder are exclusive and are in lieu of, and buyer and original PURCHASE-USER hereby waive all other remedies, warranties, guarantees or liabilities, expressed or implied, arising by law or otherwise (including without limitation and obligations of NESPA with respect to fitness, merchantability, and consequential damages) or whether or not occasioned by NESPA'S negligence.

This LIMITED WARRANTY shall not be extended, altered or varied except by a written instrument signed by NESPA and original PURCHASER-USER.

**STANDARD NESPA
IN-GROUND INSTALLATION
INSTRUCTIONS
SET-UP AND EXCAVATION**

Prerequisites: Before installing your Nespa spa. You may be required to acquire a permit from your local State, County, and City building dept and or Health department. (Commercial jobs need Health Dept. Approval). Your spa installation must comply with the most current codes. (**Uniform Swimming Pool, Spas & Hot Tub Code 2006 (USPC 2006)**).

Spa drawings: Request from Nespa a current spa specific construction detail, plan and section, spa plumbing detail.

Delivery Access: Clearly determine the method of getting the spa to jobsite and into the hole. This may require the use of a crane, forklift, hoist, backhoe and/or manpower etc.

- 1) The following instructions are general guidelines and may not apply to your specific jobsite conditions. When excavating for your spa remember to provide for plumbing and light connection clearances. In order to determine how to excavate for your spa or swim spa, measure spas outside dimension (O.D.) and add minimum 3" to all sides. This 3" clearance is to accommodate jet and suction plumbing. This 3" clearance can change or be reduced upon request. Note: skimmer location, this area may have to be larger than 3", if commercial 22".
- 2) **Freeze Climates-** If the spa is placed into a vault (typical of freeze climates) a standard 18" or more of clearance minimum from spa perimeter should be provided. This dead air space is for possible future access to spa plumbing in case of a freeze. Area drain is mandatory. **Ask your local installer** for his experienced opinion. Do not hesitate to call us because we want to be sure that your installation progresses as smoothly as possible. If you have questions call us. (888) 479-4677.
- 2) **Hole depth** is determined by spa's outside height dimension. This height may vary depending if spa has skids or no skids. The spa lip may be finished or non-finished. How is the perimeter deck elevation transitioning to the spa? Focus on the finish surrounding deck elevations, thickness of the finish material on spa upper horizontal lip, equal to lip or under the spa lip. This material can be tile, stone, concrete or brick.
- 3) **Preplumb** the spa before it goes into the hole. If there are needs for electrical, bonding or control conduits run them as well before dropping in hole. Connect bond wire to niche would be best.
- 4) **Spa should sit on level 3 ½" thick reinforced concrete pad. Sweep debris off pad prior to dropping in hole.**
- 5) **Install spa** into the hole on top of concrete pad. Use the Eye bolts provided for crane, forklift etc. rigging. Do not hold onto pipes. Use caution with suction and jet plumbing when lowering into hole. **DO NOT STRESS FITTINGS!** Fill Spa with water and check for leaks prior to backfill.

- 6) **Check site reference** points for proper spa positioning (i.e., squaring to house, garage, etc.).
- 7) **Shim to level spa.** Shim with non-compression able material. Re square to house, or ref. point.
- 8) **Dry pack** with cement the gaps that have been created when shimming spa level.
- 9) **Connect pipes to tees** if spa is preplumb. Installers properly support your new plumbing from stressing spas preplumb fittings. After electrical conduit and bond wire is connected to light niche, water test spa before back filling with sand.
NOTE: All Nespa products are water tested prior to leaving factory.

ELECTRICAL:

- 1) All electrical connections to spa or equipment should comply with the most recent national electrical code (NEC), state and local codes.
- 2) Connect electrical conduit to light niche. This work should be done or reviewed by a licensed electrician.
- 3) To install spa light you will need to include inside the PVC conduit to the light niche a solid #8 coated copper wire. (If you are use brass conduit, internal bond wire is not required.) This bond wire should be pulled with the light cord at the same time. This bond wire needs to be attached to the internal bonding lug of the light niche. An approved encapsulate should be applied to bond wire connection in niche.
- 4) An external #8 copper wire shall be connected to the external bonding lug on the rear of the light niche. This copper wire can then be used for additional bonding requirements (i.e., handrails or any other metallic object within 5' of the spa.

PLUMBING:

- 1) **When plumbing a Nespa it is important to properly size the plumbing. We highly recommend that you follow the pump manufacturer's pipe sizing requirements and Uniform Swimming Pool, Spas & Hot Tub Code 2006 (USPC 2006). This code book is available at www.IAPMO.org or (909) 472 4100.**
- 2) The jet air venturi should be a Hartford loop design adjacent to spa shell and air entry point can be located next to spa or remotely at equipment.
- 3) Fill spa with water and test the system for leaks PRIOR to backfilling with sand.

SAND BACK FILL:

- 1) **With water in spa, back-fill around spa perimeter with dry plaster sand and wet wash with hydraulic attachment to hose. Let set for one hour and hydraulic dry again. Be sure water level in spa is at the highest level. Any questions please call us. (888) 479-4677.**
- 2) **If spa is free standing on elevated deck or a structure, it is important to fill spa with water and load area prior to installing coping or perimeter decking. If spa is installed in a vault situation a area drain is needed.**

NESPA ENTERPRISES, Inc. LIMITED WARRANTY

This LIMITED WARRANTY covering NESPA products is extended to the ORIGINAL PURCHASER-USER BY NESPA ENTERPRISES Inc.(NESPA), 2800 Richter Ave. Unit C California 95966.

NESPA products are thoroughly inspected and tested prior to factory shipment. NESPA warrants to the ORIGINAL PURCHASER-USER that NESPA Spas and Swim Spas will be free of defect in workmanship, accessories and parts, provided said accessories and parts were manufactured by NESPA. NESPA, under this LIMITED WARRANTY, warrants only that its Spas and Swim Spas shall be structurally sound, shall retain their shape, and shall retain water for the warranty period. NESPA warrants the adhesion of tile to fiberglass for a period of three (3) years and structural soundness for ten (10) years. NESPA warrants epoxy grout adhesion for a period of three years. If any such defects appear and are reported within the warranty period, NESPA shall repair or replace such defective parts without charge if an inspection proves the claim.

The provisions of the LIMITED WARRANTY shall not apply to tile cracked, split, chipped or damaged after the product has left the factory, nor damage to tile caused by freezing nor to damage, defect, malfunction or failure to conform with the above warranty provisions where the damage, defect, malfunction or failure to conform was caused during shipment or by distributor or by unreasonable use by ORIGINAL PURCHASER-USER including improper water balance and improper sand pack or support.

This LIMITED WARRANTY shall not apply to any plumbing, equipment, or installation of spas and Swim Spas and shall not apply to any alterations made to or upon NESPA products except alterations made by NESPA employees or NESPA authorized representatives.

This LIMITED WARRANTY is expressly in lieu of all other warranties expressed or implied including the warranties of merchantability and fitness for use and all other obligations or liabilities on NESPA'S part, and NESPA neither assumes nor authorizes any other person to assume for NESPA any other liability in connection with the sale of this NESPA product. This LIMITED WARRANTY shall not apply to this NESPA product or any part thereof which has been subject to accident, negligence, alteration, abuse or misuse. NESPA makes no warranty whatsoever with respect to accessories or parts not manufactured by NESPA.

The term "ORIGINAL PURCHASER-USER" as used in this LIMITED WARRANTY shall be deemed to mean that person for whom the NESPA product is originally installed.

The LIMITED WARRANTY provided herein and the obligations and liabilities of NESPA hereunder are exclusive and are in lieu of, and buyer and original PURCHASE-USER hereby waive all other remedies, warranties, guarantees or liabilities, expressed or implied, arising by law or otherwise (including without limitation and obligations of NESPA with respect to fitness, merchantability, and consequential damages) or whether or not occasioned by NESPA'S negligence.

This LIMITED WARRANTY shall not be extended, altered or varied except by a written instrument signed by NESPA and original PURCHASER-USER.