Tesoro

OPPERATORS MANUAL

THE ULTIMATE LUXURY POOL & HOT TUB EXPIERENCE

SELF-CONTAINED SPAS

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Tesoro

1
SAFETY WARNINGS & DANGER INFORMATION

⚠ NOTE

SAVE THESE IMPORTANT SAFETY INSTRUCTIONS

This manual contains important safety, operating, and installation instructions - read before installing or operating spa.

WARNING/CAUTION TAGS DIAGRAM

⚠WARNING

DURING PREGNANCY, SOAKING IN HOT WATER MAY CAUSE DAMAGE TO THE FETUS. LIMIT USE TO 10 MINUTES AT A TIME.

PREVENT DROWNING

SPA HEAT SPEEDS UP EFFECTS OF ALCOHOL, DRUGS, OR MEDICINE, AND CAN CAUSE UNCONSCIOUSNESS. IMMEDIATELY LEAVE SPA IF UNCOMFORTABLE OR SLEEPY.

PREVENT CHILD DROWNING

WATER ATTRACTS CHILDREN. ALWAYS ATTACH A SPA COVER AFTER EACH USE.

⚠CAUTION

Please avoid using any spa chemicals that contain Hydrogen Peroxide. Hydrogen Peroxide based spa chemicals have been found to react adversely with the materials used to produce these components. We recommend the use of Chlorine and Bromine based products only. Any structural and/or cosmetic jet failure linked to the use of Hydrogen Peroxide based products will not be covered under your warranty.

Please consult your Dealer for approved chemical options.

Merci de ne pas utiliser de produits chimiques pour spas contenant du Peroxide d'Hydrogène. Les produits pour spas à base de Peroxide d'Hydrogène produisent une réaction chimique qui va détériorer les jets. Nous recommandons l'utilisation de produits à base de Chlore ou de Brome seulement. Aucun jet détérioré avec du Peroxide d'Hydrogène ne pourrait être couvert par la garantie.

Merci de consulter votre revendeur pour obtenir des conseils sur les produits chimiques compatibles.

⚠ATTENTION

INSTALL FILTERS BEFORE FILLING SPA!

1. Remove filters from plastic bag.
2. Carefully thread filters into fittings.
3. DO NOT OVERTIGHTEN. A snug fit is all that is required.

AVANT DE METTRE DE L'EAU :

1. Enlever le plastique sur les cartouches de filtration.
2. Visser les cartouches dans l'emplacement.
3. NE PAS SERRER TROP FORT, il suffit d'ajuster les cartouches.

⚠ATTENTION

KEEP FROM HEAT

FAILURE TO DO SO WILL RESULT IN VOID OF WARRANTY.

⚠CAUTION

RISK OF ELECTRICAL SHOCK
Replace components only with identical components

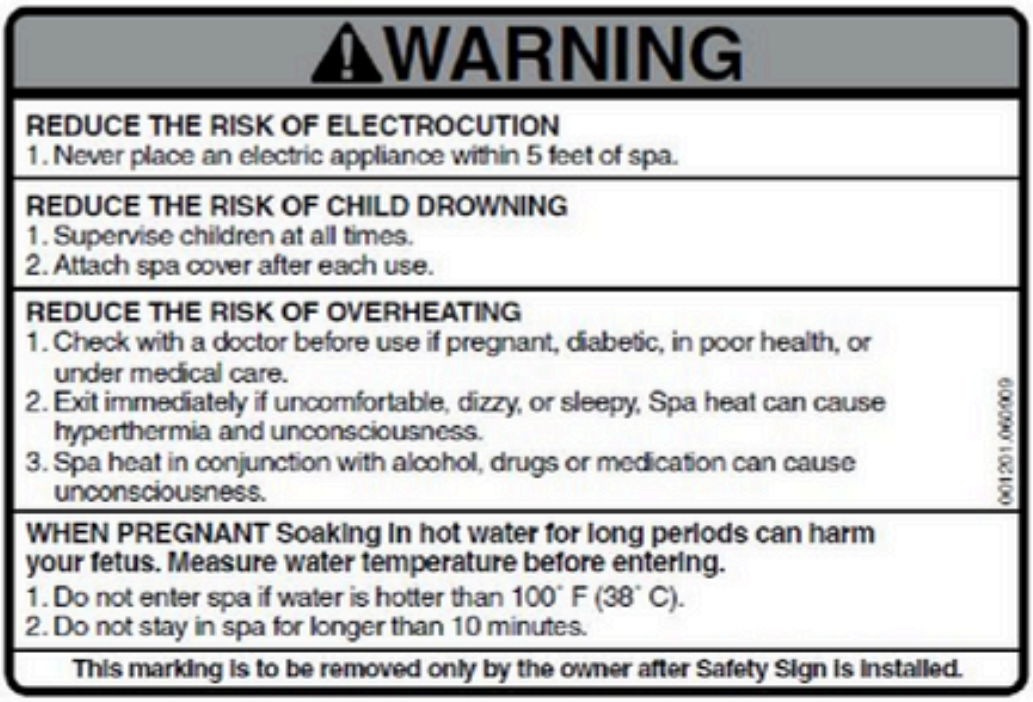
⚠WARNING

PREVENT ELECTROCUTION
Do not connect any auxiliary components (for example, cable, additional speakers, headphones, additional audio/video components, etc.) to the system.

⚠CAUTION

RISK OF ELECTRICAL SHOCK
Do not leave the compartment door open

WARNING/CAUTION TAGS DIAGRAM



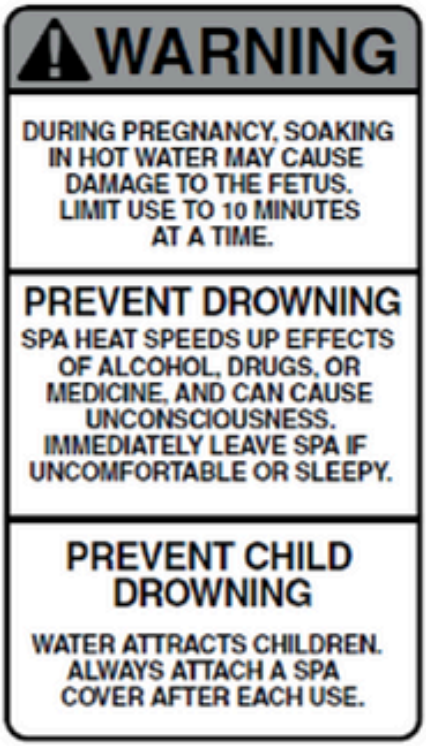
SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

Included with your new spa is a safety sign. The sign is for you and your guest's protection and is suitable for outdoor use in wet locations. The sign should be placed in a location visible to all users of the spa.

Please take time to point out the physical location of the safety sign and the importance of the safety precautions displayed on the safety sign to all of your guests. Remember, your safety and the safety of anyone who enjoys the use of your spa is our utmost concern.

The sign should be mounted with screws or another type of permanent fastener. Additional or replacement signs can be obtained from your dealer or direct from our factory.



IMPORTANT SAFETY INSTRUCTIONS

⚠WARNING!

When installing and using this electrical equipment, basic safety precautions should 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) **DANGER-RISK OF CHILD DROWNING.**
Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, ensure that children cannot use the spa unless they are supervised at all times.

NOTE: A wire connector is provided on this unit to connect a wire of a minimum No. 4 AWG minimum 75°C copper conductor between this unit and any metal equipment, metal enclosures of electrical equipment, metal water pipe, or conduct within 5 feet (1.52 m) of the unit.

3) **DANGER - RISK OF ELECTRIC SHOCK.**
Install spa at least five (5) feet (1.52 m) from all metal surfaces. A spa may be installed within five (5) feet (1.52 m) of metal surfaces if, in accordance with the National Electrical Code / IEC, each metal surface is permanently connected by a minimum No. 4 AWG (6. mm) minimum 75°C copper conductor attached to the wire connector on the terminal box. A grounding lug is provided for this purpose.

4) **DANGER - RISK OF INJURY.** 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.

NOTE: Never operate the spa if the suction fittings are broken or missing. Never replace a suction fitting with one rated less than the flow rate marked on the original suction fitting.

IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS

5) **DANGER** To reduce the risk of injury to persons, do not remove the suction grate. Suction through drains and skimmers is powerful when the jets in the spa are in use. Damaged covers can be hazardous to small children and adults with long hair. Should any part of the body be drawn into these fittings, turn off the spa immediately. As a precaution, long hair should not be allowed to float in the spa.

6) **WARNING** Install the spa so that water can be easily drained out of the compartment containing electrical components so as not to damage equipment. Also, when installing spa, allow at least 2 feet of clearance around the perimeter of the spa to provide enough room to access for servicing. Contact your local dealer for their specific requirements.

7) **WARNING-TO REDUCE THE RISK OF INJURY:**

- REMINDER - Never allow anyone to dive into a spa. Always enter feet first.
- Always enter and exit a spa slowly.
- Do not use the spa alone.
- Before entering the spa, always measure the water temperature with an accurate thermometer. Tolerance of water temperature regulating devices can vary as much as plus/minus 5° F (3° C).
- Persons suffering from obesity or with a medical history of heart disease, diabetes, high or low blood pressure or circulatory system problems should consult a physician before using a spa.

IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS

WARNING-TO REDUCE THE RISK OF INJURY: (CONT.)

- Since excessive water temperatures have a high potential for causing fetal damage during early months of pregnancy, pregnant or possibly pregnant women should limit spa water temperatures to 100° F (38° C).
- Excessive water temperature can be dangerous. The water in the spa 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 extended use (exceeding 10 minutes) and for young children. Long exposures at higher temperatures can result in hyperthermia.
- The use of alcohol, drugs or medication before or during spa use may lead to unconsciousness with the possibility of drowning.
- 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.
- Children's body temperature can increase more rapidly than adults in the same water with elevated temperatures (above 99° F). Children should spend less time in water above body temperature than adults.

IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS

WARNING - TO REDUCE THE RISK OF INJURY: (CONT.)

⚠ WARNING!

HYPERTHERMIA

Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6° F.

THE SYMPTONS OF HYPERTHERMIA INCLUDE:

- Dizziness
- Fainting
- Drowsiness
- Lethargy
- Increase in internal body temperature

THE EFFECTS OF HYPERTHERMIA INCLUDE:

- Unawareness of impending hazard
- Failure to perceive heat
- Failure to recognize the need to exit spa
- Physical inability to exit spa
- Fetal damage in pregnant women
- Unconsciousness resulting in potential of drowning

IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS

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

- The use of alcohol, drugs, or medication before or during spa use may lead to unconsciousness with the possibility of drowning.
- 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.

9) **REMINDER -** A safe temperature for swimming or aquatic exercise is around 80˚ (27º C).

NOTE - People with infections or sores should not use the spa. Warm and hot water temperatures may allow the growth of infectious bacteria if not properly disinfected.

10) **DANGER - RISK OF ELECTRIC SHOCK.**
Do not permit any electric appliance, such as a light, telephone, radio or television within five (5) feet (1.52 m) of the spa. Never operate any electrical appliances from inside the spa or while wet.

11) **WARNING - RISK OF SUFFOCATION.**
If this spa is equipped with a heater, it is intended for outdoor use only, unless proper ventilation can be provided for an indoor installation.

12) **CAUTION - RISK OF ELECTRIC SHOCK.**
Do not leave the Audio compartment open.

IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS

13) **CAUTION - RISK OF ELECTRIC SHOCK.**
Replace components only with identical components.

14) **WARNING - PREVENT ELECTROCUTION.**
Do not connect any auxiliary components (for example, additional speaker, headphones, additional audio/video components etc.) to the system. These units are not provided with an outdoor antenna.

Do not service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to your qualified spa tech.

If the power supply/supply cord(s) are damaged, if water is entering the speaker, Audio compartment, or any other component in the electrical equipment compartment area, the protective shield is showing signs of deterioration, or there are signs of other potentially hazardous damage to the unit, turn off the circuit breaker from the wall and contact or refer to your service technician.

The unit should be subject to periodic routine maintenance once every quarter to make sure that the unit is operating properly.

15) **DANGER - RISK OF ELECTRIC SHOCK.**
Do not permit any electric appliance, such as a light, telephone, radio or television within five (5) (1.52 m) feet of the spa.

16) A green colored terminal or a terminal marked G, GR. Ground, Grounding or the symbol shown in Figure 14.1 of UL1563 is located inside the supply terminal box or compartment. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply service panel with a continuous copper wire equivalent in size to the circuit conductors supplying this equipment.

IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS

DANGER-RISK OF ELECTRIC SHOCK. CONT.

17) Two lugs marked "Bonding Lugs" are provided on the external surface or on the inside of the supply terminal box or compartment. To reduce the risk of electric shock, connect the local common bonding grid in the area of the spa to these terminals with an insulated or bare copper conductor not smaller than No. 4 AWG.

18) All field-installed metal components such as rails, ladders, drains or other similar hardware with 3m of the spa shall be bonded to the equipment grounding bus with copper conductors not smaller then No. 4 AWG.

CAUTION - Test the ground fault circuit interrupter before each use of the spa.

CAUTION - Read the instruction manual.

CAUTION - Adequate drainage must be provided if the equipment is to be installed in a pit, or equivalent.

WARNING - Water temperature in excess of 100.4°f (38°c) may be injurious to your health.

WARNING - Disconnect the electric power before servicing.

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

WARNING: Children should not use spas or hot tubs without adult supervision.

WARNING: Do not use spas or hot tubs unless all suction guards are installed to prevent body and hair entrapment.

WARNING: People using medications and/or having an adverse medical history should consult a physician before using a spa or hot tub.

WARNING: People with infectious diseases should not use a spa or hot tub.

WARNING: To avoid injury, exercise care when entering or exiting the spa or hot tub.

WARNING: Do not use drugs or alcohol before or during the use of a spa or hot tub to avoid unconsciousness and possible drowning.

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

WARNING: Pregnant or possibly pregnant women should consult a physician before using a spa or hot tub.

WARNING: Water temperature in excess of 100ºF (38ºC) may be injurious to your health.

WARNING: Before entering the spa or hot tub measure the water temperature with an accurate thermometer.

WARNING: Do not use a spa or hot tub immediately following strenuous exercise.

WARNING: Prolonged immersion in a spa or hot tub may be injurious to your health.

WARNING: Do not permit electric appliances (such as a light, telephone, radio, or television) within 1.5 M of this spa or hot tub.

CAUTION: Maintain water chemistry in accordance with manufacturer's instruction.

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS

Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6°F (37°C). The symptoms of hyperthermia include drowsiness, lethargy, and an increase in the internal temperature of the body. The effects of hyperthermia include

(a) unawareness of impending hazard
(b) failure to perceive heat
(c) failure to recognize the need to exit spa
(d) physical inability to exit spa
(e) fetal damage in pregnant women
(f) unconsciousness and danger of drowning

WARNING: THE USE OF ALCOHOL OR DRUGS CAN GREATLY INCREASE THE RISK OF FATAL HYPERTHERMIA IN HOT TUBS AND SPAS.

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2
MAINTENANCE & WATER CHEMISTRY

WATER CHEMISTRY

The preferred freeChlorine range in hot tubs is 2 to 4 ppm. Super chlorination and shocking (i.e. maintenance practice that uses oxidization to break down water soluble bather waste) temporarily increases hot tub levels as high as 10 ppm and can accelerate corrosion of hot tub materials. High levels of Chlorination can be minimized or eliminated through careful water management.

Cleaning stainless steel = Over chlorination, inadequate air replacement, and improper cleaning increase the aggressiveness of the hot tub environment. Most corrosion problems can be avoided through proper stainless steel and finish specification, control of the hot tub environment, and maintenance cleaning. Cleaning procedures as simple as regular hosing down or wiping down surfaces with fresh water are effective in removing chloride-bearing contaminants and preventing staining.

When chlorines accumulate on stainless surface, superficial brown corrosion staining can appear. This mild corrosion will not impair the structural integrity of the stainless steel. Surfaces can be cleaned with appropriate Tesoro stainless-steel cleaners. Be careful, because some stainless-steel cleaners may damage the metal or contribute to corrosion, so it is important to determine the ingredients. Avoid products containing hydrochloric acid, chloride compounds, oil and or wax, which can cause corrosion or increase chloramine adherence. Steel wool and steel brushes not only scratch the surface, but they can also cause irreparable damage by contaminating the surface. A clean, soft, lint free cloth or sponge should be used to apply cleaning agents.

Very light staining may be removed with a water dampened cloth or with household vinegar or ammonia cleaning solutions (e.g. window and surface cleaners.) More severe staining can be removed with mild abrasive household cleaners that contain 200 mesh or finer calcium carbonate. Dilute oxalic, citric, or nitric acid solutions can effectively remove staining and are sometimes sold as stainless-steel rust removers.

All our Tesoro branded spas and pools have been outfitted with a Hydroxyl sanitation system, they are very safe and effective way of treating hot tub water while maintaining your water chemistry with the support of minimal chlorine usage. Such treatments also prolong the life of the stainless steel and are not corrosive.

Note: Muriatic acid (hydrochloric acid)should not be used to clean concrete, tile near the stainless tell. As it can cause rapid corrosion. Should hydrochloric acid encounter the stainless steel, it must be washed off immediately and neutralized. Cleaning products containing even small amounts of hydrochloric acid should be avoided.

INTRODUCTION: Swimming Pools are amongst the most demanding built structures in today's environment. Stainless steel has successfully been used in swimming pools for decades; however stainless steel can be impacted if not properly cared for.

Spa water is much different than a swimming pool. The main difference is temperature. Spa water is most often set between 102- and 104-degrees Fahrenheit, while a pool stands typically at 82 degrees, which also means that there's far more opportunity for bacteria growth in a spa. When not properly cared for, spa water can be responsible for common ailments like rashes and urinary tract infections. It can also cause cloudy water and damage the spa surface and equipment.

PH: Some consider this the most important component of water balance. It measures how acidic or basic your water is. If it is not kept in check, you run the risk of damaging your equipment, i.e. heating elements, pump seals, and the internal works on gas fired heaters. Listed are the most common problems associated with both high or low pH levels.

- pH: 7.2 - 7.4
- Alkalinity: 60 - 120 ppm
- Cyanuric Acid: 20 - 40 ppm
- Calcium Hardness: 200 - 800 ppm
- Total Dissolved Solids (TDS): Less than 1,500 ppm
- Phosphates: Less than 200 ppb
- Pump run time: 24/7 or 23/7 for a DE Iter
- Run pump: 2,200 - 2,400 RPM

IMPORTANT NOTE: Before adding any chemicals to adjust your pH levels, the total alkalinity must be balanced first.

TOTAL ALKALINITY: The total alkalinity is the buffer of pH, if it is not balanced correctly, the pH will
not give you a correct reading. Total alkalinity is the ability to control pH. The difference between pH and total alkalinity.

pH is basically the thermometer on your furnace's thermostat. The thermometer measures the exact room temperature. If it's a little cooler than you like, you turn the thermostat up. You have just displayed the ability to control the temperature. Total alkalinity is like the thermostat, in that it gives you the ability to control pH. This is why you test and adjust the total alkalinity before even touching your pH test kit. To keep total alkalinity readings inside the acceptable range of 60 to 120 PPM. If you suspect your pH level to be a little high, then try for a higher reading of 150 PPM when testing the total alkalinity. pH-lowering chemicals will lower the total alkalinity as well. If your total alkalinity reading is below 60 PPM, then you will use Spa up. If you got a reading above 120 PPM, then Spa down is what you will use. Again, to achieve these readings you will need a test kit prescribed by your local health authority.

SANITIZERS: Bacteria and viruses like to grow in any kind of water especially hot water. Sanitizers are used to effectively disinfect and keep water smelling fresh. The two most popular ones are chlorine and bromine. You can test these by using a test kit or test strips. Proper reading for chlorine is 1.5 - 3.0 PPM and 3.0 - 5.0 PPM for bromine.

SPA SHOCK: Shock treatments that eliminate odors and reduce irritating contaminants for fresh, clear water. Remember because of the high temperatures and heavy bather loads, spas require higher sanitizer levels, as well as heavier oxidizer doses to eliminate bather waste and maintain clear, sparkling water.

Shock As Needed
Takes 5 minutes, perform monthly.
• Option 1: Cal-Hypo granules
• Option 2: Liquid chlorine
• Option 3: Non-chlorine shock (not recommended for algae)
Algae Control
Takes 5 minutes, perform weekly to monthly (depending on season and pool or in ground spa usage).
• Use a proactive, non-foaming algae treatment.

1. If needed, at first sign of algae:
• Brush algae off walls
• Adjust pH
• Shock
• Add algaecide

2. In 24 hours after shock:
• Backwash your filter
• Adjust the pH
• Use a proactive non-foaming algae treatment

IMPORTANT NOTE: Before adding any chemicals to adjust your pH levels, the total alkalinity must be balanced first.

CALCIUM HARDNESS: Sometimes referred to as “Total hardness", calcium hardness is a measurement of minerals in your water including calcium and magnesium. You do want your water to have some level of hardness. If the water does not have enough calcium, the water will draw from other minerals, including copper, aluminum and iron, (e.g., heating elements, pump seals, and internal parts on gas fired heaters). This will result in equipment corrosion. If there is too much hardness, you will see scale formation on the spa's interior and the water will take on a cloudy appearance. It is recommended that you fill your spa with water from a softener instead of tap water. In many cases you will find a low calcium reading that can be adjusted by using Calcium Booster. To make any adjustments to calcium hardness you will need a test kit or test strips

SPA CLEANING AND MAINTENANCE: For purposes of cleaning, a nylon scrub sponge with or without a mild abrasive cleaner may be used. Several cleaning agents are not to be used with stainless steel and should be approved by Tesoro before usage. The overall mechanical system should be inspected regularly which includes the pumps, filters and sanitation system. It is suggested to also clean the skimmer basket after the circulation pumps have been running regularly to assure water is filtered and sanitized properly.

CAUTIONS: Do not enter the spa if the temperature is reading above 104 degrees F. Secure spa area against unauthorized access in compliance with all safety codes. Keep all breakable objects, carbon steel tools, fasteners and similar objects out of the spa area.

TROUBLESHOOTING STAINS: IF there is an indication that the spa water contains metals (iron, copper, etc.), or is high in minerals it is suggested to use a sequestering agent to help prevent stains. Shock treatment is occasionally required alter heavy bather loads; however, pool shock treatments and poor water management can cause stainless steel corrosion.

RUST: The chromium in stainless steel when exposed to oxygen in the atmosphere forms a thin
invisible layer caked chromium oxide. This invisible layer covering the entire surface gives stainless steel its ability to resist stains and rust. If this layer is damaged rust is formed on the surface at the point of that damage. Iron and other minerals in water can migrate onto any pool surface including the stainless steel, ceramics and grout and cause surface discoloration, which translates into rust. Staining can also be caused by debris left behind by the surrounding sub trades or contractors that are working with mild steel.

SOLUTION: Prior to filling the spa, make sure all metal debris is removed from the vessel. ANY metals related to carbon steel, noncapable metal or dust can become ingrained in the stainless steel material. Avoiding raw stainless steel with tools and equipment be avoided. Depending on the location of the vessel, water should always be tested and free of iron.

SUGGESTIONS FOR ADVERSE WATER CONDITIONS “HEAVY METALS”: Metals are present in your water when filling your spa. It is possible that metals are in the water to begin with as it comes out of
your water source. Furthermore, construction or building around your pool or spa, screws, nails or other debris may have become in contact with the vessel. If the above-mentioned metal particles are not completely removed during cleaning of the pool or spa prior to filling with water, or if your water feed is not free of metals, overtime the metal will start precipitating out (turning into a solid form). This can appear to the customer that the pool or spa is rusting. Test the vessel for metal with copper test strips or send a sample to a qualified test department Sequestering agents are effective for treating the metals. There are also metal removers.

Do not use Muriatic acid at any time in stainless steel pool, spa or cold plunge

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3
DELIVERY & SETUP INFORMATION

DELIVERY INFORMATION

- Ark Custom Pool/Tesoro shall assess conditions set forth and gathered by the certified professionals. The existing or proposed mechanical building will be evaluated and critical dimensions and elevations will be gathered. Hot tub/pool hydraulic positioning will be finalized based on the necessary information gathered. A planning sheet shall be filled out by the architect or customer with the assistance of our project development team and submitted to our design team.

- Approved manufacturing or engineered drawings will also require a sign off from the customer and will be transmitted electronically using CAD, PDF, or TIF to the architect, health department, customer and any other authoritative departments.
- Potential hot tub/pool site will require clearances by local zoning department
- Prior to commencement of hot tub/pool manufacturing, the public health or building authorities having jurisdiction require all plans, specifications and supportive documentation be legible and authenticated before issuance of building permits. Most public health and or building authorities require scaled drawings for the following:

- Hot tub and or pool plan view.
- Swimming pool longitudinal section.
- Transverse section where there are diving boards.
- Equipment room, plumbing and electrical with each item identified and pipe sizes specified.

DELIVERY, STORAGE AND HANDLING:

- Packing and Shipping – Deliver hot tubs and pools to site in unopened packaging with labels intact. Protect finished surfaces with covers and plastic. Do not damage or remove prior to commissioning.
- Storage - Adequately store vessels in storage compounds which protect against UV, material damage and theft. Prime contractor shall facilitate compounds stated herein.
- Handling - Comply with manufacturer's instructions. Hot tubs or pools shall not be handled in any way which may cause damage.

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4

MAINTAINING YOUR HYDROXYL

Clear Comfort

FRONT VIEW: CCW25 PORTABLE SPA & SWIM SPA SYSTEM

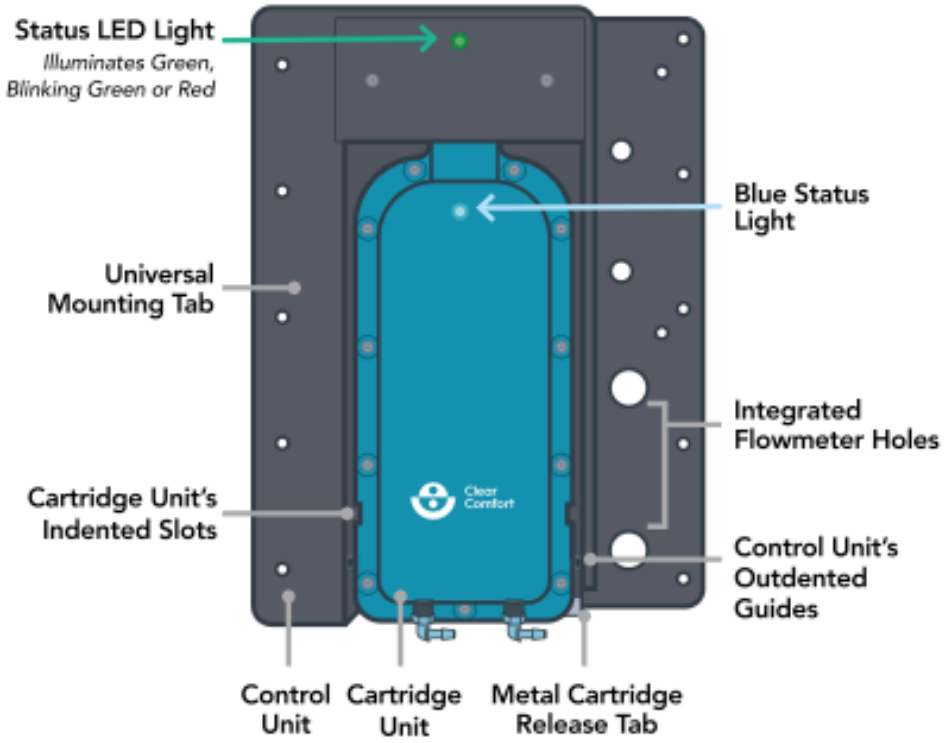


Figure 1: CCW25 System Functions

STATUS LIGHT FUNCTIONALITY

Control Unit Light

Green LED Light: Normal operation.

Blinking Green LED Light: Order new Cartridge.
To order your Cartridge Unit, please visit: clearcomfort.com/cartridge

Red LED Light: Replace Cartridge.

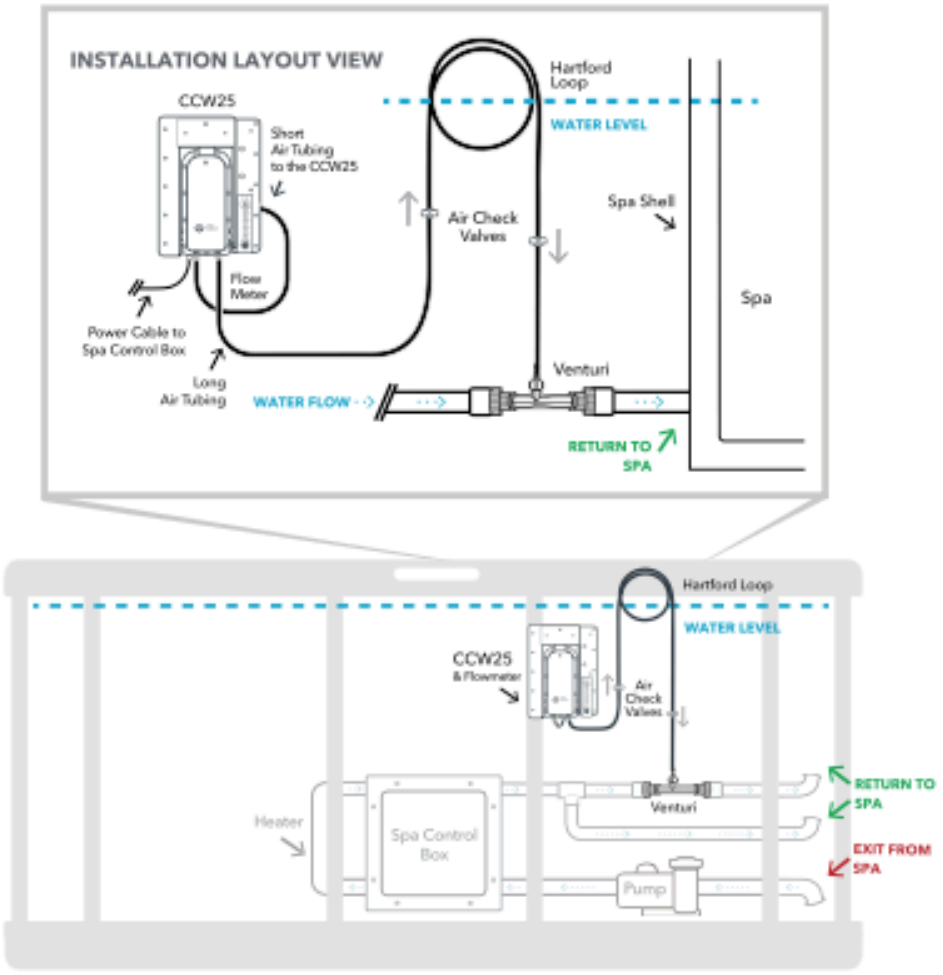
Cartridge Unit Light

Blue Light: Cartridge is receiving power.

REPLACEMENT FILTERS AND PARTS ARE AVAILABLE FOR PURCHASE THROUGH OUR WEBSITE OR EMAIL INFO@TESOROSPA.COM

CCW25 SPA & SWIM SPA INSTALLATION
FULL SYSTEM DIAGRAM: CCW25 INSTALL KIT

IMPORTANT NOTE
We recommend having a professional install your Clear Comfort system. If you need help finding a local installer or have install questions, please contact our live support team at **clearcomfort.com/help**



**Air Pump is recommended if the spa can't achieve at least 0.5 LPM of flow through the Venturi.*

Figure 2: Full System Diagram With CCW25 Install Kit

If you have no suction through the existing Venturi injector, please contact Clear Comfort Customer Support.

SYSTEM MAINTENANCE: CARTRIDGE EXCHANGE

HOW TO EXCHANGE YOUR CARTRIDGE

To keep the Clear Comfort system working its best, the Cartridge Unit must be replaced annually. No other system maintenance is required.

If the Status LED Light is Blinking Green, your Cartridge will expire soon and it's time to order a new replacement Cartridge.

SCAN TO WATCH TUTORIAL VIDEO

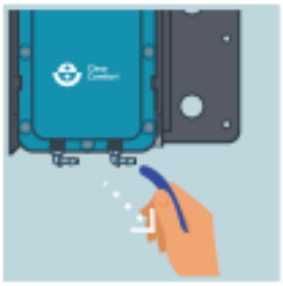
If the Status LED Light is Red, your Cartridge has **expired & must be exchanged immediately** to protect your water.

To start your exchange and order your new Cartridge replacement, please visit: clearcomfort.com/cartridge

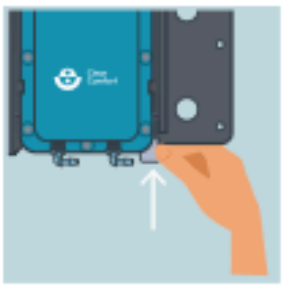
IMPORTANT NOTE: For proper recycling, please return your old Cartridge with the provided label and packaging.

1. Turn OFF and disconnect power to the spa.

   NOTE: Never attempt to service unit while it is wet. Ensure all LEDs on the system are OFF.



2. Disconnect the Air Tubing from the bottom of the Cartridge Unit.



3. Press the Metal Release Tab to release the Cartridge Unit from the Control Unit.

SYSTEM MAINTENANCE: CARTRIDGE EXCHANGE

Clear Comfort

4. Pull the Cartridge Unit down until its top Indented Slots align with the Control Unit's Outdented Guides and remove the Cartridge Unit by lifting it toward you.

   NOTE: To see the labeled CCW25's system functions, see page 6.

5. To attach the new Cartridge Unit align its top Indented Slots with the Control Unit's Outdented Guides and insert the Cartridge Unit.

   IMPORTANT: *Save and use the return label and packaging provided with your new Cartridge Unit to send your old Cartridge to Clear Comfort for proper recycling.*

6. Push the Cartridge Unit up until the Metal Release Tab clicks back into place.

   Tired of Reading?
   Scan the QR code to watch our tutorial video, or visit:
   clearcomfort.com/video-ccw25-cartridge

SCAN TO WATCH TUTORIAL VIDEO

7. Reconnect the Air Tubing to the Cartridge Unit's two (2) barbed fittings.

   NOTE: Connect the Short Air Tubing to the left barbed fitting and the Long Air Tubing to the right barbed fitting.

8. Reconnect the spa's power and turn it ON.

   NOTE: After the Control Unit Status LED Light's startup sequence, it will illuminate Green. Then, the Cartridge Unit's Blue Status Light will illuminate. For light functionality, see page 7.

9. For sustainability purposes, return your old Cartridge with the shipping label and packaging that was provided with your new replacement Cartridge.

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FILTER MAINTENANCE

PRE-OPERATION INSTRUCTIONS

TURN OFF PUMP AND OPEN AIR RELIEF VALVE BEFORE REMOVING FILTER TOP

- Turn off Pump, if inlet and outlet are used close them. If drain plugs are used open them to drain all the water from the housing.
- Remove filter cartridge, clean using a garden hose.
- For cleaning oils, suntan lotions, etc. soak cartridge in warm water and detergent solution.
- To remove calcium deposits soak cartridge in commercially available cartridge cleaner.
- DO NOT USE MURIATIC ACID

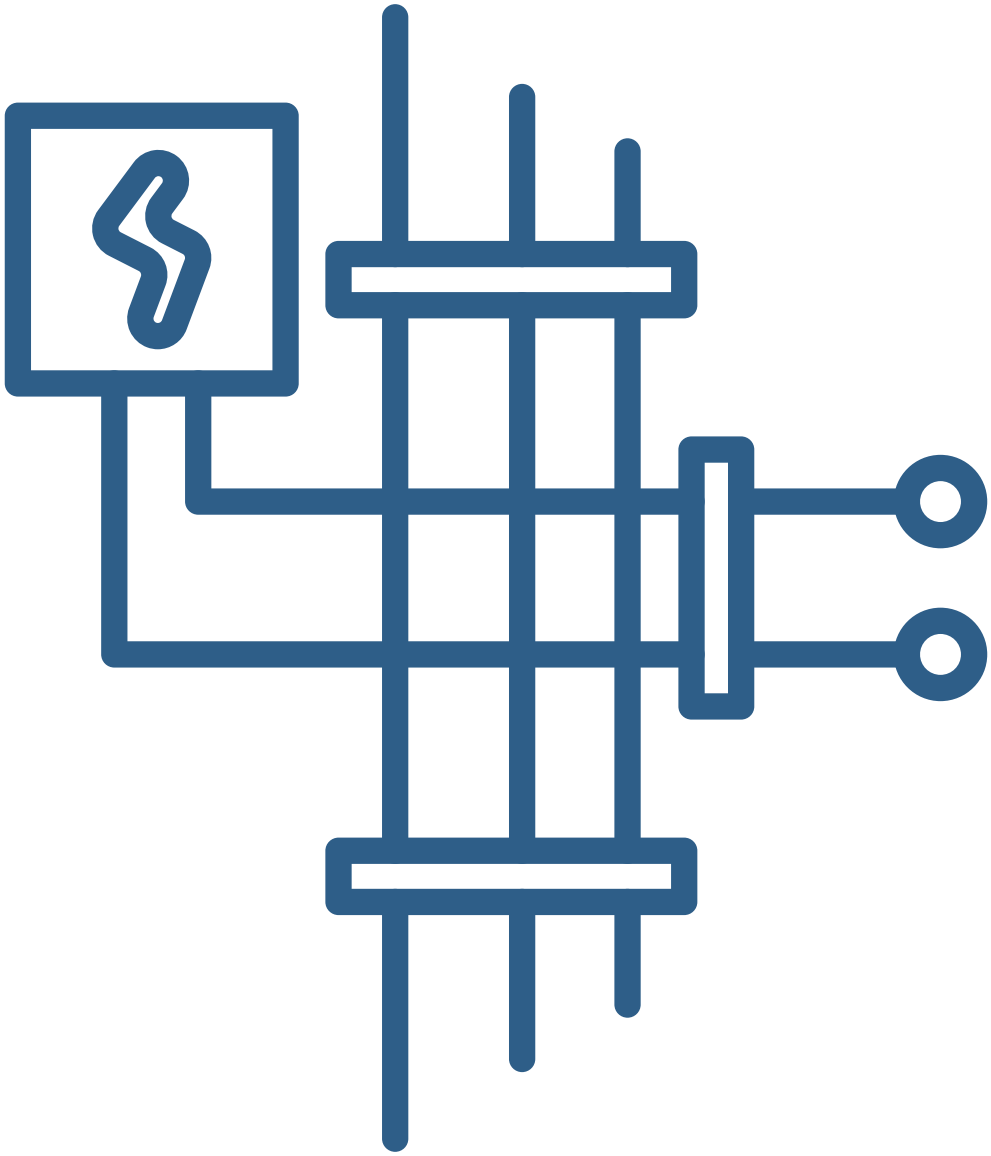
With bypass valve installed, flow may be exceeded but the filtration rate will not. With plug installed 100% of water will be filtered.

Replacement Filter 817-2500 Waterway Spa Filter Cartridge
Waterway 502-5010

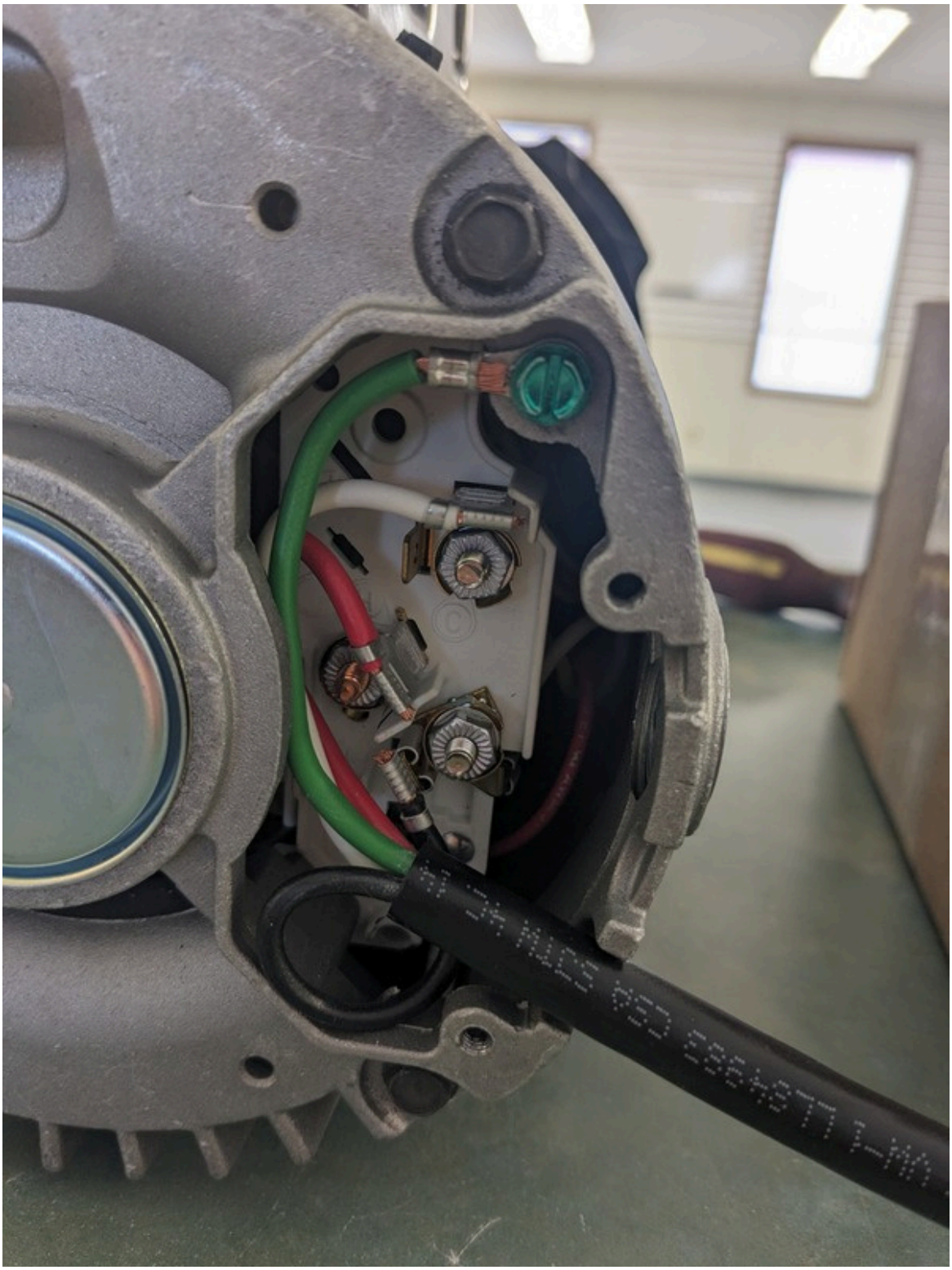
FILTER MAINTENANCE

Tesoro

6
WIRING INFORMATION & QUICK START



WIRING DIAGRAM



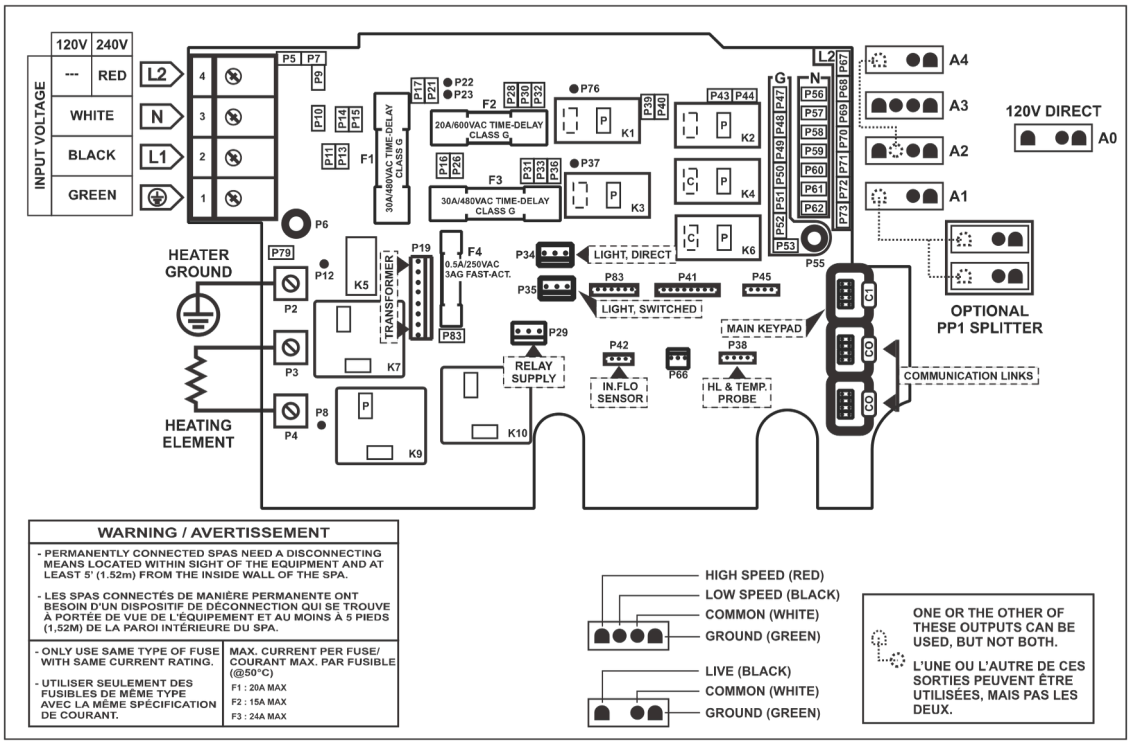
Connections

Connecting high voltage accessories: all models

Two options are available with Y Series spa packs for connecting high voltage accessories: 0.250" quick-connect terminals, or AMP connectors conform to industry standards.

Connecting high voltage accessories: North American model in.ye

For the connection to the 0.250 inch terminals, the high voltage accessories must be provided with female quick connect terminals, straight and non-insulated for all types of connections, including the ground. Accessories of 120 V or 240 V may be connected to the corresponding terminals of the printed circuit of the in.ye. Refer to the following tables for correct connections. Note that all female terminals must be correctly and completely seated on the printed circuit terminals for proper current ratings.



Direct output 1
(A0 / Floating connector) (in.ye-5 only)

Voltage	120 V	240 V
Green / ground	P47	P47
Black / line	P32	P32
White / common	P56	P67

Pump 1 (A3)

Voltage	120 V	240 V
Green / ground	P49	P49
Black / low speed	K2-P	K2-P
Red / high speed	K4-P	K4-P
White / common	P58	P69

Pump 2 (A2)
(in.ye-5 only)

Voltage	120 V	240 V
Green / ground	P50	P50
Black / low speed	K6-P	K6-P
Red / high speed	K3-P	K3-P
White / common	P59	P70

Pump 3 (A4)
(in.ye-5 only)

Voltage	120 V	240 V
Green / ground	P48	P48
Black / line	K6-P	K6-P
White / common	P57	P68

Circulation pump* (A1)

Voltage	120 V	240 V
Green / ground	P51	P51
Black / line	K1-P	K1-P
White / common	P60	P71

Pump 2 (A2)
(in.ye-3 only)

Voltage	120 V	240 V
Green / ground	P50	P50
Black / low speed	K2-P	K2-P
White / common	P59	P70

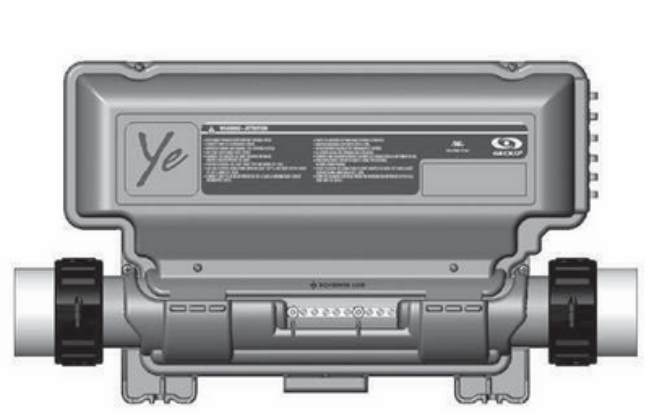
Light (12 V AC, 1A Max.)

Always on	P34
Relay	P35

** Ozonator and circulation pump can be combined on the same output via the optional splitter PP1.*

This table shows typical connections. OEMs may have a different connection scheme.

Quick Start Card



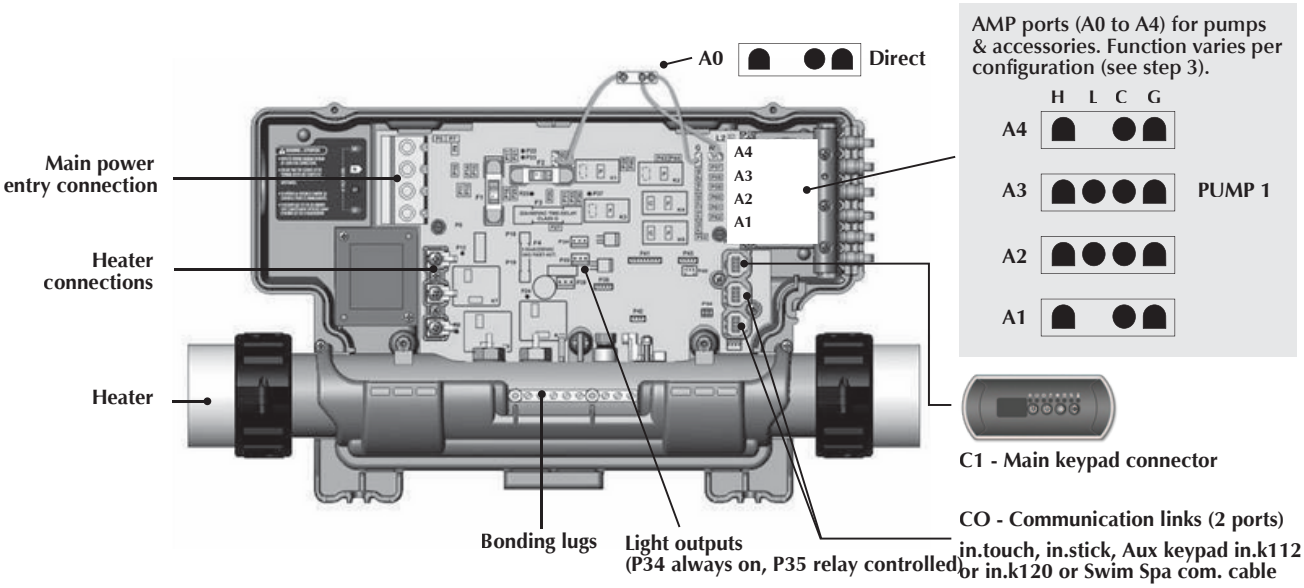
in.ye-5™

whateverthespa, this is your control system

NorthAmerican version

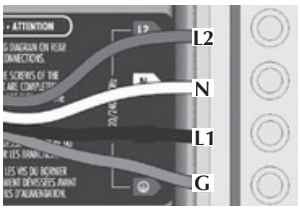
ThisQuick StartCardisintendedforusersoftheNorthAmerican version of the in.ye.

1- Connect all outputs & keypads



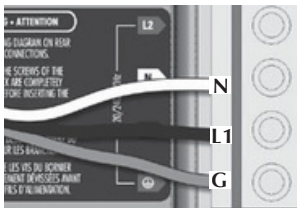
2- Connect the main power

2.a- Electrical wiring



For 240 V (4 wires)

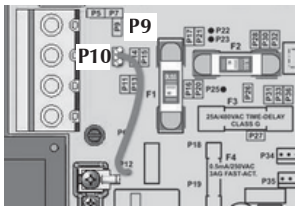
Connect wiring of the electrical service box GFCI. Neutral wire is mandatory.



For 120 V (*3 wires)

*** If connected to a 3 wire system, any 240 V components will not work.**

2.b- Heater & pump/accessories voltage

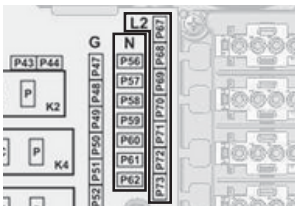


Heater voltage

Verify BROWN common wire connection to tab:

P9 - 240 V (default)

P10 - 120 V



Pumps & accessories voltage

Verify each WHITE common wire connection to tab:

N - 120 V (default)

L2 - 240 V pump/acc.

WARNING

All connections must be made by a qualified electrician in accordance with the national electrical code and any state, provincial or local electrical code in effect at the time of the installation. This product must always be connected to circuit protected by a Ground Fault Circuit Interrupter (GFCI).

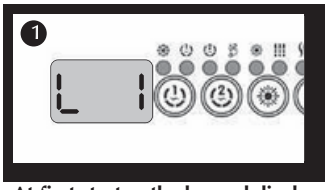
3- Select spa configuration

Information between ( ) indicates which AMP connector to use. See Step 1 for connector position. Software #200, rev. 003

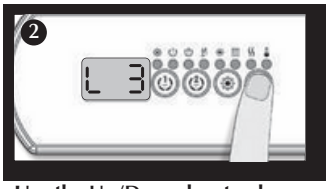
Config. #	Pump	Pump 2	Pump 3	Pump 4	Pump 5	BlowerCirc. Pump (CP)	Ozone1	Filter Cycle (Daily)	Heater Pump
1	1						(A1)	2 x 2 hours with P1L	Pump 1
2	2 sp (A3)					(A1)	(A4) (A1)	2 x 6 hours with CP 2 x 2 hours with P1L	CP Pump 1
3	2 sp (A3)	1 sp (A2)					(A4)	2 x 6 hours with CP	CP
4	2 sp (A3)	1 sp (A2)				(A1)	(A1)	2 x 2 hours with P1L	Pump 1
5	2 sp (A3)	1 sp (A2)				(A4)	(A2)	2 x 6 hours with CP	CP
6	2 sp (A3)	1 sp (A2)				(A4)	(A1)	2 x 2 hours with P1L	Pump 1
7	2 sp (A3)	1 sp (A2)				(A4)		2 x 6 hours with CP	CP
8	2 sp (A3)	2 sp (A2)				(A4)	(A1)	2 x 2 hours with P1L	Pump 1
9	2 sp (A3)	2 sp (A2)				(A4)	(A1)	2 x 6 hours with CP	CP
10	2 sp (A3)	2 sp (A2)						2 x 2 hours with P1L	Pump 1
11	2 sp (A3)	2 sp (A2)				(A1)		2 purges , CP always on	CP
12	2 sp (A3)	2 sp (A2)				(A1)	(A0)2	2 x 2 hours with P1L	Pump 1
13	2 sp (A3)	2 sp (A2)	1sp (A4)			(A1)	(A1)	2 x 6 hours with CP	CP
14	2 sp (A3)	2 sp (A2)	1sp (A4)			(A1)		2 x 2 hours with P1L	Pump 1
15	2 sp (A3)	1 sp (A2)	1sp (A4)			(A1)		2 purges , CP always on	CP
16	2 sp (A3)	1 sp (A2)	1sp (A4)			(A1)	(A0)2	2 x 2 hours with P1L	Pump 1
17	2 sp (A3)	1 sp (A2)	1sp (A1)			(A1)		2 x 6 hours with CP	CP
18	2 sp (A3)	1 sp (A2)				(A1)	(A4)	2 x 6 hours with CP	CP
19	2 sp (A3)	1 sp (A2)				(A1)	(A4)	2 x 6 hours with CP	CP
20	2 sp (A3)	1 sp (A2)				(A1)	(P43 tab)3	2 purges, CP always on	CP
21	2 sp (A3)	1 sp (A2)	1 sp (A4)	1 sp (A1)		(A0)2	(P43 tab)3	2 purges, CP always on	CP
22	2 sp (A3)	1 sp (A2)	1 sp (A4)	1 sp (A1)	1 sp (P43 tab)3	(A0)2			
Swim Spa	2 sp (A3)	1 sp (A2)	1 sp (A4)						
51 (Master)	1 sp (A3)	1 sp (A2)				(A4)	(A1)	2 x 6 hours with CP	CP
51 (Slave)	2 sp (A3)		1 sp (A3)	1 sp (A2)		(A4)			
52 (Master)	2 sp (A3)	1 sp (A2)					(A1)	2 x 2 hours with P1L	Pump 1
52 (Slave)	1 sp (A3)		1 sp (A3)	1 sp (A2)		(A4)			
53 (Master)	1 sp (A3)	1 sp (A2)				(A4)	(A1)	2 x 6 hours with CP	CP
53 (Slave)	1 sp (A3)		1 sp (A3)	1 sp (A2)	1 sp (A1)	(A4)			
54 (Master)	2 sp (A3)	1 sp (A2)					(A1)	2 x 2 hours with P1L	Pump 1
54 (Slave)	1 sp (A3)		1 sp (A3)	1 sp (A2)	1 sp (A1)	(A4)			

Note 1: When the Ozonator is not controlled by a relay, it can be tied to Pump 1 Low speed or Circ. Pump using cable AMP 9920-401369.
Note 2: Circ. pump is connected to a Direct fused outlet. Pump will always be on and may overheat if oversized pump is used.
Note 3: This accessory does not have its own AMP connector. Rewire A0 if not used or order extra AMP connector 9920-401346 (Black wire to P43 tab on the board, Green to any G tabs and white to any N tabs for 120 V accessory or any L2 tabs for 240 V).

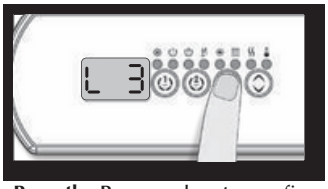
4- Enter selection



At first startup the keypad display will show L 1 or LL 1.



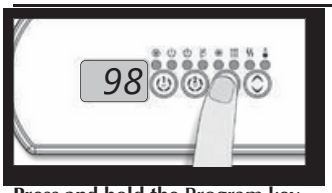
Use the Up/Down key to choose the new low level configuration number (consult the chart above).



Press the Program key to confirm the selection.

Note: To re-enter the low level selection menu, hold the Pump 1 key for 30 seconds.
Note: If the keypad in use does not have the Program key use the Filter or Light key instead.

5- Select breaker



Press and hold the Program key for 20 seconds until you access the breaker setting menu.

Use the Up/Down key to select the breaker value. The value can be modified from 10 to 48 A.

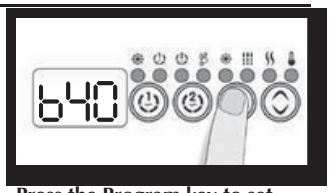
Default breaker value is 48 A.

Power management will make sure never to exceed this rating.

Breaker setting for GFCI used.

GFCI	b
60 A	48 A
50 A	40 A
40 A	32 A
30 A	24 A
20 A	16 A
15 A	12 A

T he values displayed by the system correspond to 80% of the maximum amperage capacity of the GFCI.



Press the Program key to set breaker rating.
Note: If the keypad in use does not have the Program key use the Filter or Light key instead.

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GECKO®

9919-101192-D
Rev. 02-2014

Tesoro

7
START UP GUIDE

Start up guide

and basic configuration

Y series and in.xe

GECKO®

Warning

WARNINGS:

Before installing or connecting the unit, please read the following&#65533;

* FOR UNITS FOR USE IN OTHER THAN SINGLE-FAMILY DWELLINGS, A CLEARLY LABELED EMERGENCY SWITCH SHALL BE PROVIDED AS PART OF THE INSTALLATION&#65533; THE SWITCH SHALL BE READILY ACCESSIBLE TO THE OCCUPANTS AND SHALL BE INSTALLED AT LEAST 5' (1&#65533;52 M) AWAY, ADJACENT TO, AND WITHIN SIGHT OF THE UNIT&#65533;

* ANY DAMAGED CABLE MUST BE IMMEDIATELY REPLACED BY QUALIFIED PERSONNEL&#65533;
* TURN POWER OFF BEFORE SERVICING OR MODIFYING ANY CABLE CONNECTIONS IN THIS UNIT&#65533;
* TO PREVENT ELECTRIC SHOCK HAZARD AND/OR WATER DAMAGE TO THIS CONTROL,

ALL UNUSED BUSHING CONDUITS MUST BE PLUGGED WITH THE ATTACHED NIPPLE&#65533;

* THIS CONTROLLER MUST NOT BE INSTALLED IN PROXIMITY OF HIGHLY FLAMMABLE MATERIALS&#65533; * LOW SUPPLY VOLTAGE OR IMPROPER WIRING MAY CAUSE DAMAGE TO THIS CONTROL SYSTEM&#65533;
READ AND FOLLOW ALL WIRING INSTRUCTIONS WHEN CONNECTING TO POWER SUPPLY&#65533;

* THIS PACK CONTAINS NO USER SERVICEABLE PARTS&#65533; CONTACT AN AUTHORIZED SERVICE CENTER FOR SERVICE&#65533;

* ALL CONNECTIONS MUST BE MADE BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ANY STATE, PROVINCIAL OR LOCAL ELECTRICAL CODE IN EFFECT AT THE TIME OF THE INSTALLATION&#65533;

* PRODUCT MUST BE DISPOSED OF SEPARATELY IN ACCORDANCE WITH LOCAL WASTE DISPOSAL LEGISLATION&#65533;
* THIS APPLIANCE IS NOT INTENDED FOR USE BY PERSONS (INCLUDING CHILDREN) WITH REDUCED PHYSICAL,

SENSORY OR MENTAL CAPABILITIES, OR LACK OF EXPERIENCE AND KNOWLEDGE, UNLESS THEY HAVE BEEN GIVEN SUPERVISION OR INSTRUCTION CONCERNING USE OF THE APPLIANCE BY A PERSON RESPONSIBLE FOR THEIR SAFETY&#65533;

* CHILDREN SHOULD BE SUPERVISED TO ENSURE THAT THEY DO NOT PLAY WITH THE APPLIANCE&#65533;
* MEANS FOR DISCONNECTION MUST BE INCORPORATED IN THE FIXED WIRING IN ACCORDANCE WITH

THE WIRING RULES&#65533;

* CAUTION: IN ORDER TO AVOID A HAZARD DUE TO INADVERTENT RESETTING OF THE THERMAL CUT-OUT, THIS APPLIANCE MUST NOT BE SUPPLIED THROUGH AN EXTERNAL SWITCHING DEVICE, SUCH AS A TIMER, OR CONNECTED TO A CIRCUIT THAT IS REGULARLY SWITCHED ON AND OFF BY THE UTILITY&#65533;

* PARTS CONTAINING LIVE PARTS, EXCEPT PARTS SUPPLIED WITH SAFETY EXTRA-LOW VOLTAGE NOT EXCEEDING 12 V, MUST BE INACCESSIBLE TO A PERSON IN THE BATH OR SPA&#65533;

* PARTS INCORPORATING ELECTRICAL COMPONENTS, EXCEPT REMOTE CONTROL DEVICES, MUST BE LOCATED OR FIXED SO THAT THEY CANNOT FALL INTO THE BATH OR SPA&#65533;

* PARTS ARE TO BE INSTALLED IN THE CORRECT ZONE AND EQUIPOTENTIAL BONDING CARRIED-OUT IN ACCORDANCE WITH THE WIRING RULES&#65533;

*CLEARANCE AND MINIMUM DISTANCE BETWEEN THE VARIOUS PARTS OF THE APPLIANCE AND THE SURROUNDING STRUCTURE ARE NOT SPECIFIED AS LONG AS THEY ARE SUFFICIENT SO THAT THE AMBIENT TEMPERATURE AROUND THE CONTROLLER DOES NOT EXCEED 60°C

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IMPORTANT Please read the following before starting the device.

Verify that all accessories are linked to the ground lug and connected to the to the control system.

A minimum flow of 68 LPM (18 GPM) is required. Make sure that all valves are open in the spa plumbing and that the water flow is sufficient between the main pump and the water heater.

Turn on the breaker.

in.flo dry-fire protection

At start up, the in•flo's detector verifies the water flow according to the following sequence:

The Pump 1 or the circulation pump runs for a period of 2 to 5 minutes•

The display will show "- - -" during the flow verification• After this time, the system confirms if flow is adequate or not•

If the flow is sufficient, the temperature of the water is displayed on the keypad screen• When the water has reached the consigned temperature plus 0•45°C (0•8°F), the water heater turns off•

Display sequence at start up (every parameter is displayed for 2 seconds)

Lamp test

All segments and LEDs light up•

Software number

Software revision

Low-level selected

Low-level selected from the low-level menu•

Power up and breaker setting

It is important to specify the current rating of the GFCI/RCD used to ensure a safe and efficient current management (and reduce nuissance GFCI/RCD trippings)�

Press and hold the Prog� button until you access the breaker setting menu� (the programming menu will appear first)�
If your control system is equipped with the phase configuration menu, it will appear before the breaker setting menu�
Note: if the keypad does not have the Prog. Key, use the Light key.

Choose the number of phases supplying your spa (1 to 3)� Use the Up or Down keys to select the number of phases and press on the Prog� key to confirm your selection�

in.yj

Selecting number of phases

U	Menu not available
L	1 or 2
CE	

in.ye & in.yt

Selecting number of phases

UL	Menu not available
CE	1, 2 or 3
UL Swim*	1 or 2
CE Swim*	1, 2 or 3

*For more information see the Swim spa system Techbook.

in.xe

Selecting numberof phases

UL	Menu not available
CE	1 or 2
UL Swim*	1 or 2
CE Swim*	1, 2 or 3

*For more information see the Swim spa system Techbook.

The values displayed by the system correspond to 80% of the maximum amperage capacity of the GFCI�

Use the Up or Down keys to choose the desired value�

The value can typically be modified from 10 to 48 A�
Press on the Prog� key to set the breaker rating�

The tables below indicate the typical value of b for different GFCI/RCD ratings�
Choose the one that corresponds to your breaker�
Note: Every OEM has its own pre-established configurations.

in.yj

GFCI/RCD	b
50A	40A*
40A	32A
30A	24A
20A	16A
16A	12A
15A	8A

* Only available on in.yj-3.

in.ye & in.yt

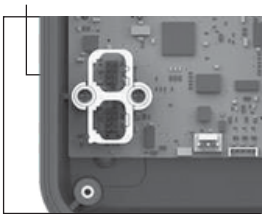
GFCI/RCD	b
60A	48A
50A	40A
40A	32A
30A	24A
20A	16A

in.xe

GFCI/RCD	b
60A	48A
50A	40A
40A	32A
30A	24A
20A	16A

Programming the control system with in.stik

Communication port



in.yj

Follow these simple steps to upload new pre-determined low-level configurations to the control system�

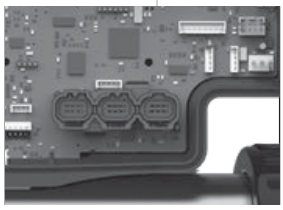
Cut the power�

For the Y series control systems remove the lid to access the in�link low voltage connectors situated inside the system�
Connect the in�stik to the communication port (see in�yj, in�ye-V3, in�ye and in�yt image above)�

For in�xe control systems, connect the in�stik to the front side communication port (see in�xe image above)�

Finish off by starting up the control system�

Communication port



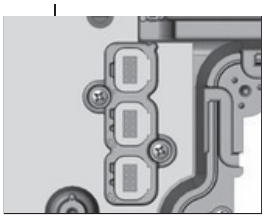
in.ye-V3

When starting up, the control system will download the different low-level configurations from the in�stik's memory�
The low-level selection menu will then appear�

The keypad will display L xx� "xx" corresponds to the number of the first low-level configuration downloaded into the system's internal memory�

Use the Up/Down keys to select the desired low-level configuration�

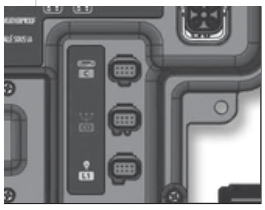
Communication ports



in.ye & in.yt

Press on the Prog� key to confirm the chosen configuration�
Note: if the keypad does not have the Prog. Key, use the Light key.

Communication port



in.xe

If, at start up, the keypad displays a flashing "L xx", all low-level configurations have been downloaded but none has been selected�

If you have an error message, please refer to the Troubleshooting Guide�

Note: Once you have finished programming, do not forget to cut the power, remove the in.stik and close the cover of the control system.

Programming the control system with the keypad

Although every control system of the Y series and in◆xe are factory configured, in certain cases, during maintenance or replacement of the equipment, it may be necessary to select a new pre-determined low-level configuration◆

Complete the next few steps to get to the low-level configuration selection menu◆

Press and hold the Pump 1 key for 30 seconds◆

The keypad will display L xx◆ “xx” corresponds to the number of the low-level configuration presently used by the system◆

Use the Up/Down keys to select the new low-level configuration◆

Press on the Prog◆ key to confirm the chosen configuration◆

After 25 seconds, if you have not pressed the Prog◆ key, the system will exit the menu without saving any changes made to the settings◆

Note: if the keypad does not have the Prog. Key, use the Light key.

Field programming options for control systems

If none of the pre-programmed low-level configurations in the control system suits your spa model, it is possible to have a personalised system configuration by entering manually the setting parameters (see the corresponding table for your spa's control system)

To get to this menu, press on the Prog (or Light) key for 30 seconds Use the Up/Down keys to choose settings
Press on the Prog (or Light) key to go to the next parameter
The available parameters depend on the model

Field programming is only available on certain keypad models

Please note that for in xe controls, depending of your software revision, you may need to refer to tables 2 and 3 used with older versions
Table 1 is used with the most recent versions of the software The first parameter will indicates which table to refer to

(1-- = Table 1 or 2) et2 1_ = Table 3)

Definitions Table

Parameter	Description	Parameter	Description
--	Output not used	CP	Circulation pump
1H	Pump 1 high speed (or P1 if only one speed)	03	Ozone generator
1L	Pump 1 low speed	L2	Light 120V/240V
2H	Pump 2 high speed (or P2 if only one speed)	H	Heater
2L	Pump 2 low speed	Fn *1	Fan
3H	Pump 3 high speed (or P3 if only one speed)	On	Always on output (simulates a direct)
3L	Pump 3 low speed	Pr *2	Protective relay
4H	Pump 4 high speed (or P4 if only one speed)	H2 *1	Secondary heater
4L	Pump 4 low speed	FA *3	Fountain
P5	Pump 5 (always single-speed)	AU *3	Auxiliary
BL	Blower		

*1 Available for in.ye and in.yt only.
*2 Available for in.yj only.
*3 Available for in.yj, in.ye and in.yt only.

Table 1 – in.yj, in.ye, in.yt and in.xe

Parameter	Screen	Options	Description
Output 1	1--	--,1H,1L,2H,2L,3H,3L,4H, 4L,P5,BL, CP,O3,L2,H,FN,ON,PR,H2,FA,AU	Accessory connected to the relay of output 1
Output 2	2--	--,1H,1L,2H,2L,3H,3L,4H, 4L,P5,BL, CP,O3,L2,H,FN,ON,PR,H2,FA,AU	Accessory connected to the relay of output 2
Output 3	3--	--,1H,1L,2H,2L,3H,3L,4H, 4L,P5,BL, CP,O3,L2,H,FN,ON,PR,H2,FA,AU	Accessory connected to the relay of output 3

Table 1 (continued) – in.yj, in.ye, in.yt and in.xe

Parameter	Screen	Options	Description
Output 4	4.--	--,1H,1L,2H,2L,3H,3L,4H, 4L,P5,BL, CP,O3,L2,H,FN,ON,PR,H2,FA,AU	Accessory connected to the relay of output 4 *available for in.ye,in.ytandin.xe
Output 5	5.--	--,1H,1L,2H,2L,3H,3L,4H, 4L,P5,BL, CP,O3,L2,H,FN,ON,PR,H2,FA,AU	Accessory connected to the relay of output 5 *available for in.ye,in.ytandin.xe
Output 6	6.--	--,1H,1L,2H,2L,3H,3L,4H, 4L,P5,BL, CP,O3,L2,H,FN,ON,PR,H2,FA,AU	Accessory connected to the relay of output 6 *available for in.ye-V3andin.yt
Output 7	7.	--,1H,1L,2H,2L,3H,3L,4H, 4L,P5,BL, CP,O3,L2,H,FN,ON,PR,H2,FA,AU	Accessory connected to the relay of output 7 *available for in.yt
Output 8	8.	--,1H,1L,2H,2L,3H,3L,4H, 4L,P5,BL, CP,O3,L2,H,FN,ON,PR,H2,FA,AU	Accessory connected to the relay of output 8
Output 9	9.--	--,1H,1L,2H,2L,3H,3L,4H, 4L,P5,BL, CP,O3,L2,H,FN,ON,PR,H2,FA,AU	Accessory connected to the relay of output 9 *available for in.yt
Output 10	A.--	--,1H,1L,2H,2L,3H,3L,4H, 4L,P5,BL, CP,O3,L2,H,FN,ON,PR,H2,FA,AU	Accessory connected to the relay of output 10 *available for in.yt
Output 11	b.--	--,1H,1L,2H,2L,3H,3L,4H, 4L,P5,BL, CP,O3,L2,H,FN,ON,PR,H2,FA,AU	Accessory connected to the relay of output 11 *available for in.yt
Output 12	C.--	--,1H,1L,2H,2L,3H,3L,4H, 4L,P5,BL, CP,O3,L2,H,FN,ON,PR,H2,FA,AU	Accessory connected to the relay of output 12 *available for in.yt
Direct output 1	d.--	--,CP	Accessory connected to the direct output 1 *available for in.yt
Direct output 2	E.--	--,CP	Accessory connected to the direct output 2 *available for in.yt
Heater	H.--	--,H,H2	Accessory connected to the heater relay
CP usage	Cu.-	CP standard = 0 CP always on = 1	Usage of the circulation pump
Ozonator usage	ou.-	Ozonator with filtration = 0 Ozonator always on = 1	Usage of the ozone generator
Ozonator pump	oP.-	Circulation pump = 0 Pump 1 = 1	Pump associated with the ozone generator
Ozonator type	o.-	Standard (UV) = 0 Timed (Corona) = 1	Ozone generator type
Heater pump	HP.-	Circulation pump = 0 Pump 1 = 1	Pump associated with the heater
Filter config&#65533;	FL.-	Purge only = 0 With circ&#65533; Pump = 1 With Pump 1 low speed = 2 With Pump 1 low speed and 2 different durations = 3	Configuration of the filtration cycle
Temp&#65533; units	Un.-	°F = 0 °C = 1	Displayed temperature unit
Clock format	CL.-	No time displayed = 0 AM/PM mode = 1 24H mode = 2	Clock display mode
Cool down	C.--	30 to 240 seconds	Cool down of the heating element in seconds
Output 1 current	1.--	0 to 15 amps 0 to 20 amps (in.xe only)	Current of accessory connected to output 1
Output 2 current	2.--	0 to 15 amps	Current of accessory connected to output 2
Output 3 current	3.--	0 to 15 amps	Current of accessory connected to output 3

Table 1 (continued) – in.yj, in.ye, in.yt and in.xe

Parameter	Screen	Options	Description
Output 4 current	4. --	0 to 15 amps	Current of accessory connected to output 4 *available on in.ye,in.ytandin.xe
Output 5 current	5. --	0 to 15 amps	Current of accessory connected to output 5 *available on in.ye,in.ytandin.xe Current of accessory connected to output 6 *available for in.ye-V3andin.yt Current of accessory connected to output 7 *available on in.yt Current of accessory connected to output 8 *available on in.yt Current of accessory connected to output 9 *available on in.yt Current of accessory connected to output 10 *available on in.yt Current of accessory connected to output 11 *available on in.yt
Output 6 current	6. --	0 to 15 amps	
Output 7 current	7. --	0 to 15 amps	
Output 8 current	8. --	0 to 15 amps	
Output 9 current	9. --	0 to 20 amps	
Output 10 current	A. --	0 to 15 amps	
Output 11 current	b. --	0 to 15 amps	
Output 12 current	C. --	0 to 15 amps	
Direct 1 current	d. --	0 to 5 amps	
Direct 2 current	E. --	0 to 5 amps	
Heater current	H. --	0 to 17 amps 0 to 23 amps (in.ye,in.ytandin.xe only)	Current of accessory connected to output 12 Current of the heater *available on in.yt
CE configuration	CE_	UL = 0 CE/AUS/NZ = 1	Current of accessory connected to direct output 1 or 2
Number of phases	P. --	in.yj 1 (UL) 1 or 2 (CE) in.ye and in.yt Standard 1 (UL) 1, 2 or 3(CE) Swim Spa 1 or 2 (UL) 1, 2 or 3(CE) in.xe Standard 1 (UL) 1 or 2 (CE) Swim Spa 1 or 2 (UL) 1, 2 or 3(CE)	Number of phases of the heater Selection of number of phases (in.yj) UL CE Menu not available *available from 2yt Selection of number of phases (in.ye and in.yt) UL Menu not available CE 1, 2 or 3 UL Swim 1 or 2 CE Swim 1, 2 or 3 Selection of number of phases (in.xe) UL Menu not available CE 1 or 2 UL Swim 1 or 2 CE Swim 1, 2 or 3
Input current	b. --	in.yj 10 to 40A(UL and CE) 10 to 20A(CE) in.ye and in.yt Standard 10 to 48A single phase (UL and CE) 10 to 20A dual phase (CE) 10 to 16A triple phase (CE) Swim Spa 10 to 48A single phase (UL and CE) 10 to 48A dual phase (UL and CE) 10 to 20A triple phase (CE) in.xe Standard 10 to 48A single phase (UL) 10 to 40A single phase (CE) 10 to 20A dual phase (CE) Swim Spa 10 to 48A single phase (UL) 10 to 40A single phase (CE) 10 to 48A dual phase (UL) 10 to 40A dual phase (CE) 10 to 20A triple phase (CE)	Available household current Maximum input current (in.yj) 1 phase 2 phases 3 phases UL 40 na na CE 40 20 na Maximum input current (in.ye et in.yt) 1 phase 2 phases 3 phases UL CE 4 na na UL 8 20 16 Swim CE 4 48 na Swim 8 48 20 4 8 4 8 Maximum input current (in.xe) 1 phase 2 phases 3 phases UL CE 4 na na UL 8 20 na Swim CE 4 48 na Swim 0 40 20 4 8 4 0

Table 3 - in.xe (older versions only)

Parameter	Screen	Options	Description
Pump 1 config|	P 1_	Single speed = 1 Double speed = 2 *Pump 1 and Pump 3 = 3	Pump 1 configuration *Offeredoncertainmodels only|
Pump 2 config|	P2_	Not installed = 0 Single speed = 1 Double speed = 2	Pump 2 configuration
Blower config|	bL_	Not installed = 0 Installed = 1	Blower configuration
Circ| Pump config|	CP_	Not installed = 0 Installed = 1 Activated = 2	Circulation pump configuration
Ozonator config|	oC_	Not installed = 0 Installed = 1 Activated = 2	Ozone generator configuration
Ozonator pump	oP_	Circulation pump = 0 Pump 1 = 1	Pump associated with the ozone generator
Ozonator type	o_	Standard = 0 Timed = 1	Ozone generator type
Heater pump	HP_	Circulation pump = 0 Pump 1 = 1	Pump associated with the heater
Filter config|	FL_	Purge only = 0 With circ| Pump = 1 With Pump 1 low speed = 2	Configuration of the filtration cycle
Temp| units	Un_	°F = 0 °C = 1	Displayed temperature unit
Clock format	CL_	No time displayed = 0 AM/PM mode = 1 Mode 24H = 2	Clock display mode
Pump 1 high speed Current	1__	1 to 20 amps (10)	Current of pump 1 high speed
Pump 1 low speed Current	2__	1 to 15 amps (4)	Current of pump 1 low speed
Pump 2 high speed Current	3__	1 to 15 amps (10)	Current of pump 2 high speed
Pompe 2 low speed Current	4__	1 to 15 amps (4)	Current of pump 2 low speed
Blower current	5__	1 to 10 amps (5)	Current of blower
Circ| Pump current	6__	1 to 5 amps (2)	Current of circulation pump
Direct current	7__	0 to 5 amps (1)	Current of the direct output
Heater current	8__	4 to 17 amps (17)	Heater current
Minimum input current	9__	10 to 20 amps	Minimum input current (breaker size)
Input current	b__	15 to 48 (on UL/CSA systems) (48) 15 to 32 (on CE systems) (32)	Available household current (Maximum input current)

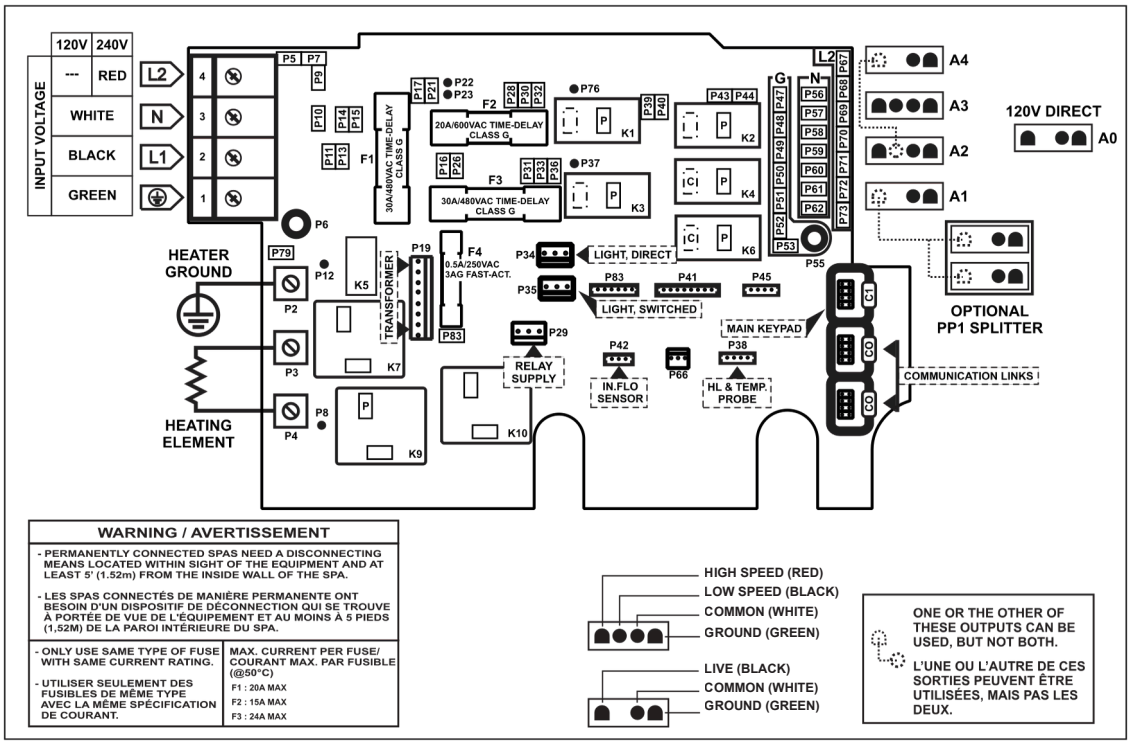
* Offered on certain models only.

Connecting high voltage accessories: all models

Two options are available with Y Series spa packs for connecting high voltage accessories: 0�250” quick-connect terminals, or AMP connectors conform to industry standards�

Connecting high voltage accessories: North American model in.ye

For the connection to the 0�250 inch terminals, the high voltage accessories must be provided with female quick connect terminals, straight and non-insulated for all types of connections, including the ground� Accessories of 120 V or 240 V may be connected to the corresponding terminals of the printed circuit of the in�ye� Refer to the following tables for correct connections� Note that all female terminals must be correctly and completely seated on the printed circuit terminals for proper current ratings�



Direct output 1
(A0 / Floating connector) (in.ye-5 only)

Voltage	120 V	240 V
Green / ground	P4	P4
Black / line	7	7
White / common	P3	P3
	2	2
	P5	P6
	6	7

Pump 1 (A3)

Voltage	120 V	240 V
Green / ground	P49	P49
Black / low speed	K2-P	K2-P
Red / high speed	K4-P	K4-P
White / common	P58	P69

Circulation pump* (A1)

Voltage	120 V	240 V
Green / ground	P51	P51
Black / line	K1-P	K1-P
White / common	P60	P71

Pump 2 (A2)
(in.ye-5 only)

Voltage	120 V	240 V
Green / ground	P50	P50
Black / low speed	K6-P	K6-P
Red / high speed	K3-P	K3-P
White / common	P59	P70

Pump 2 (A2)
(in.ye-3 only)

Voltage	120 V	240 V
Green / ground	P50	P50
Black / low speed	K2-P	K2-P
White / common	P59	P70

Pump 3 (A4)
(in.ye-5 only)

Voltage	120 V	240 V
Green / ground	P48	P48
Black / line	K6-P	K6-P
White / common	P57	P68

Light (12 V AC, 1A Max.)

Always on	P3
Relay	4
	P3
	5

** Ozonator and circulation pump can be combined on the same output via the optional splitter PP1�*

This table shows typical connections� OEMs may have a different connection scheme�

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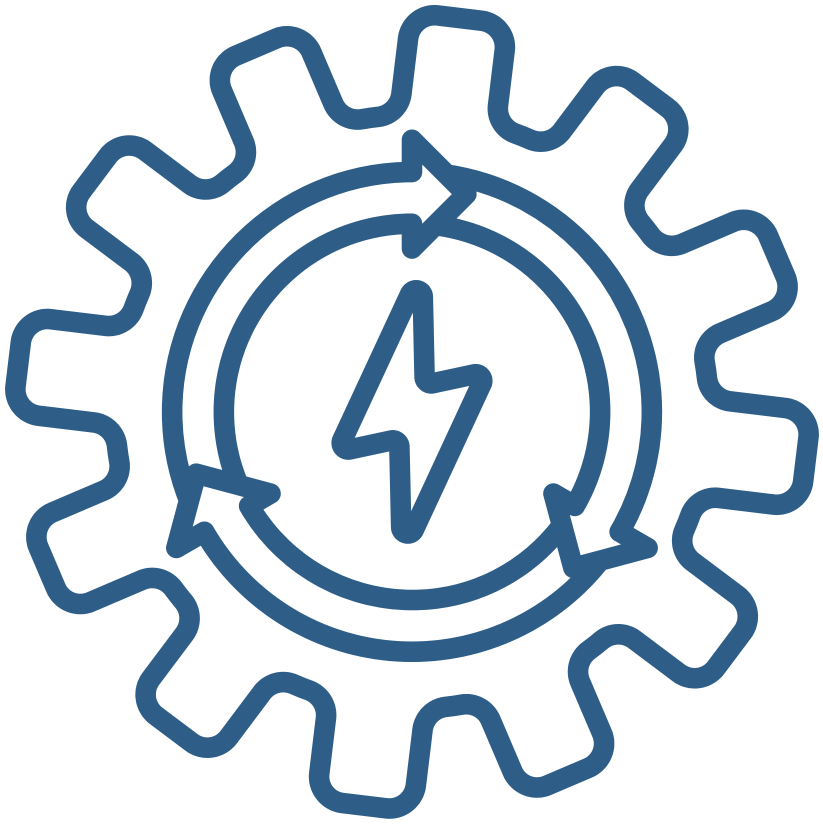
8
ELECTRICAL & MECHANICAL INFORMATION



ELECTRICAL

Electrical requirements shall meet the requirements of the most recent edition of the CSA/CED (Canadian Electrical Code), and as adopted by the authority having jurisdiction. In addition to the CSA/CED current codes, reference guidelines set forth in Division 26 - (Electrical). For underwater lighting, reference Division 26 – (Electrical) and section 26 55 29 and or the manufacturer's specifications. The certified electrician on behalf of the general contractor and or pool ownership shall ensure bonding for any reinforcement, anchors, hot tub/pool walls, bracing, underwater lights and niches and all metals throughout the entire project conforms to the electrical drawings set forth by the project appointed electrical engineer.

DECKING

The hot tub or pool deck equipment, which may also include the necessary maintenance, safety, and rescue equipment, will be specified by the architect or aquatic designer and may be supplied the pool manufacturer, hot tub/pool contractor, or general contractor as outlined in the bid package. The installation of this equipment will be within the scope of work of the pool contractor, general contractor or pool ownership with special attention to ensure that the safety equipment is located as indicated on the plans with no obstructions placed between the water's edge and the equipment.

MECHANICAL FACILITY

- All pumps, filters, equipment, and appurtenances shall be approved by NSF under standard 50forusewithpotablewater.InadditiontotheNSFstandards,referenceDivision22-Plumbing andsection 2210 00.
- Piping shall comply with ANSI/ NSF 14, Plastic piping components and related materials orcriteria acceptableto theauthority havingjurisdiction.
- All piping placement shall be done in a professional manner with appropriate slabs,housekeepingpads andhangers formaximum protection.
- All piping shall be adequately supported against sagging, misalignment, or movement due tohydraulic shock,and awayfrom withapproved devicesas identifiedon drawings.
- Plastic pipe shall be process piping and shall be at least Type 1, grade 1 (ASTM D1784) schedule80/40 PVC and shall comply with ANSI/NSF 14 "plastics piping components and related materials" or criteria acceptableto theauthority havingjurisdiction.
- Solventcementing forall PVCpiping shallbe executedin strictaccordance withASTM D2855
- Electrical connections and gas hook ups shall be carried out by licensed professional inaccordance withthe prevailingcode

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10 WARRANTY INFORMATION

WARRANTY

On all stainless steel hot tub , pool & spas, component or sub systems manufactured sold by TESORO, and on all modifications of such items solely by TESORO, TESORO wan· ants to the original purchaser that such equipment, components, subsystems and modifications will be free of defects in material and workmanship for a period of twenty-five (25) year from the date of completion thereof by TESORO. The 316 Stainless steel alloy will not corrode through parent metal for (25) years. This warranty extends only to the original purchaser of such items, and only the original installation thereof. Upon receipt of written notification by TESORO of the existence of any defect within such one (1) year period, as purchasers sole and exclusive remedy TESORO agrees to repair or replace, at its sole option, the defective item. TESORO may require purchaser to return the defective item to TESORO for repair or replacement, or in an instance where the return of an item to TESORO is impractical, TESORO may, at its sole option, elect to travel to purchaser' location for such repair or replacement, or pay a reasonable repair allowance to purchaser, or to use independent contractor to complete the repairs or replacement. If any amounts remain unpaid on equipment, components or subsystems old or modified by TESORO and covered by this warranty for more than thirty (30) days beyond the time such amounts are due, the term of this warranty shall reduce automatically to a period of one hundred twenty (120) day after delivery thereof. TESORO makes no warranty of any kind or nature against any and all defects arising out of material or workmanship not provided, furnished or modified by TESORO, including but not limited to any component , equipment, motors, pumps parts of other goods which may be incorporated into or supplied with goods old by TESORO, and as to such items TESORO conveys to the purchaser the warranty if any, of TESORO's supplier or the original manufacturer of such items, to the extent such warranty is transferable. Further TESORO makes no warranty of any kind or nature against all defects arising from abnormal use, misuse or abuse of an item: or use in violation of TESORO's or the manufacturer' manuals and/or instructions: or repair or other servicing by anyone other than TESORO or a TESORO authorized repair facility; or defects in components or parts of items, expressly warranted by other manufacturers. TESORO may modify the terms at any time by providing reasonable notice to purchaser.

All remedies and the measure of damages are limited to the foregoing warranty, and all other actual, incidental, consequential and special damages, including, but not limited to, damage or loss of other property or equipment, loss of :profits or revenue loss of use, cost of capital, cost of substitute equipment, or claims by purchaser’s customers, employees or other parties for damages are specifically excluded, even if Tesoro has been advised of the possibility of such damages. Tesoro makes no other warranties, express or implied, arising bylaw, usage or trade, or otherwise, including but not limited to, implied warranties of merchantability and fitness for a particular purpose