



# Fusion soft

## Installation and Operation Manual



THIS SYSTEM INCLUDES A START-UP CARTRIDGE  
REQUIRES A NATURE<sup>2</sup> MINERAL CARTRIDGE AFTER START-UP PERIOD  
(not included, see page 26 for more information)

Compatible with



### WARNING

**FOR YOUR SAFETY** - This product must be installed and serviced by a contractor who is licensed and qualified in pool equipment by the jurisdiction in which the product will be installed where such state or local requirements exist. In the event no such state or local requirement exists, the maintainer must be a professional with sufficient experience in pool equipment installation and maintenance so that all of the instructions in this manual can be followed exactly. Before installing this product, read and follow all warning notices and instructions that accompany this product. Failure to follow warning notices and instructions may result in property damage, personal injury, or death. Improper installation and/or operation will void the warranty.

Improper installation and/or operation can create unwanted electrical hazard which can cause serious injury, property damage, or death.





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## Section 1. Important Safety Instructions

### READ AND FOLLOW ALL INSTRUCTIONS

All electrical work must be performed by a licensed electrician and conform to all national, state, and local codes. When installing this equipment, basic safety precautions should always be followed, including the following:

**⚠ WARNING**

**EQUIPMENT UNDER PRESSURE:** Always turn pump off prior to installing or changing any Nature<sup>2</sup> vessel or cartridge or chlorine cell. Your pump/filter system is operated under pressure and the pressure must be released before you begin work. Please see your pump/filter owner's manual for further instructions.

**⚠ DANGER**

To reduce the risk of injury, do not remove the suction fittings of your spa or hot tub. Never operate a spa or hot tub if the suction fittings are broken or missing. Never replace a suction fitting with one rated less than the flow rate marked on the equipment assembly.

**⚠ WARNING**

When mixing acid with water, **ALWAYS ADD ACID TO WATER. NEVER ADD WATER TO ACID.**

**⚠ WARNING**

To reduce the risk of electric shock, fire or injury, service should only be attempted by a qualified pool service professional.

**⚠ WARNING**

**PREVENT CHILD DROWNING:** Do not let anyone, especially small children, sit, step, lean or climb on any equipment installed as part of your pool's operational system. Locate the components of your operational system at least three (3) feet (1 m) from the pool so children cannot use the equipment to access the pool and be injured or drown.

**⚠ WARNING**

**To Reduce the Risk of Injury -**

- The water in a 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 young children and when spa use exceeds 10 minutes.
- Since excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy, pregnant or possibly pregnant women should limit spa water temperatures to 100°F (38°C).
- Before entering a spa or hot tub, the user should measure the water temperature with an accurate thermometer since the tolerance of water temperature-regulating devices varies.
- The use of alcohol, drugs, or medication before or during spa or hot tub use may lead to unconsciousness with the possibility of drowning.
- Obese persons and persons with a history of heart disease, low or high blood pressure, circulatory system problems, or diabetes should consult a physician before using a spa.
- Persons using medication should consult a physician before using a spa or hot tub since some medication may induce drowsiness while other medication may affect heart rate, blood pressure, and circulation.

**⚠ WARNING**

- People with infectious diseases should not use a spa or hot tub.
- To avoid injury, exercise care when entering or exiting the spa or hot tub.
- Do not use drugs or alcohol before or during the use of a spa or hot tub to avoid unconsciousness and possible drowning.
- Pregnant or possibly pregnant women should consult a physician before using a spa or hot tub.
- Water temperature in excess of 100°F (38°C) may be injurious to your health.
- Before entering a spa or hot tub measure the water temperature with an accurate thermometer.
- Do not use a spa or hot tub immediately following strenuous exercise.
- Prolonged immersion in a spa or hot tub may be injurious to your health.
- Do not permit any electric appliance (such as a light, telephone, radio, or television) within five (5) feet (1.52 m) of a spa or hot tub.
- The use of alcohol, drugs or medication can greatly increase the risk of fatal hyperthermia in hot tubs and spas.
- Water temperature in excess of 100°F (38°C) may be hazardous to your health.

**⚠ WARNING**

Prolonged immersion in hot water may induce hyperthermia. Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6°F (37°C). The symptoms of hyperthermia include dizziness, fainting, drowsiness, lethargy, and an increase in the internal temperature of the body. The effects of hyperthermia include:

- Unawareness of impending danger;
- Failure to perceive heat;
- Failure to recognize the need to exit spa;
- Physical inability to exit spa;
- Fetal damage in pregnant women; and/or
- Unconsciousness resulting in a danger of drowning.

**⚠ CAUTION**

It is important to note that certain materials used in and around swimming pools and spas may not be compatible with chemicals commonly used to purify pool and spa water (e.g. acids, chlorine, salt, stabilizers, etc.).

As such, Zodiac Pool Systems, Inc. does not warrant or guarantee that the chlorinated water generated by the Nature<sup>2</sup> Fusion will not damage or destroy certain types of plants, decking, coping and other materials in and around your pool and/or spa. Before selecting materials to be used in and around your pool and/or spa, please discuss all options with your contractor to assess the compatibility of such materials and chemicals.

Some helpful considerations may include:

- Choosing plants that can withstand splash out of pool water containing chlorine and/or salt and other water purification chemicals.
- All metal components used in and around a pool should be of a high grade, quality stainless steel.
- Careful selection of masonry products. The porosity and hardness of natural stones varies greatly. Therefore we recommend you consult with your builder or stone contractor on the best choice for stone materials around your pool or spa.
- Sealing all masonry products. Professionals in the stone industry specify that even natural stone, especially when used outdoors, be sealed to prevent weathering, staining, and premature degradation. Consult with your stone or deck contractor for the proper sealer for the masonry products you have selected to use around your pool or spa.
- For optimal results, sealers should be reapplied on a regular basis. Reapply the protective sealer on a schedule per the manufacturer's instructions.

**SAVE THESE INSTRUCTIONS**

## Section 2. System Description

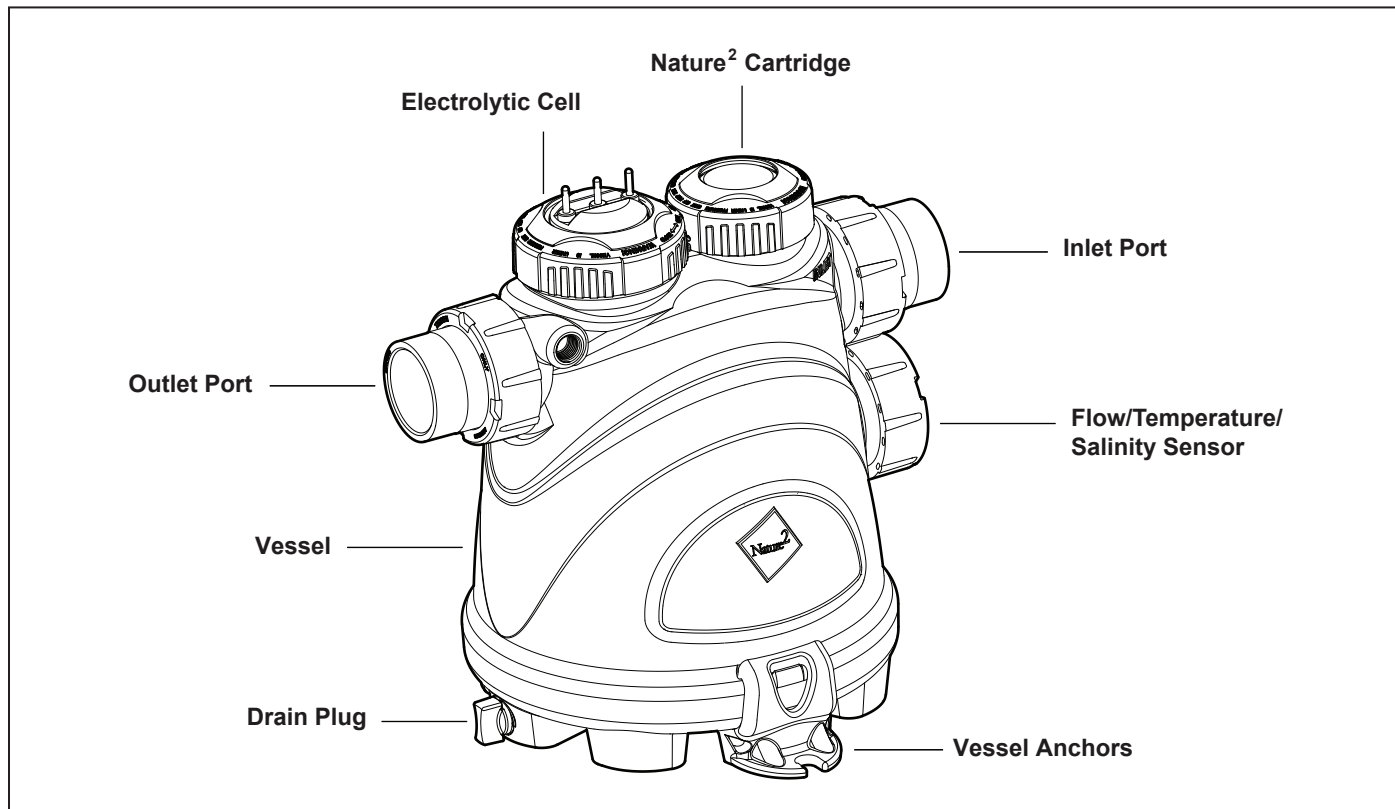


Figure 1. Nature<sup>2</sup> Fusion Soft Components

### 2.1 Product Description

The Nature<sup>2</sup> Fusion Soft is an all-in-one, sanitizing system that includes mineral sanitization and saltwater chlorination technologies in one housing, that can be interfaced with a centralized pool control system.

The Nature<sup>2</sup> Fusion Soft uses a dual approach to sanitizing pool water. The first process is Zodiac's patented Nature<sup>2</sup> technology which delivers controlled trace amounts of beneficial minerals to help reduce bacteria and maintain algae free pool. The mineral cartridge reduces the amount of chlorine your pool requires, which dramatically improves the water quality and extends the life of the electrolytic cell. The second process is known as electrolysis which produces chlorine from a low concentration of salt added to the pool water. Chlorine kills bacteria, oxidizes organic material, and kills algae then reverts back to salt. The Nature<sup>2</sup> Fusion Soft then reuses the salt to repeat the process again.

### 2.2 Nature<sup>2</sup> Fusion Soft Components

The Nature<sup>2</sup> Fusion Soft system is comprised of the following components:

#### **Nature<sup>2</sup> FUSIONM Power Pack (for stand alone systems, sold separately)**

- The Nature<sup>2</sup> FUSIONM power pack converts AC power into low voltage DC current which is required by the cell to perform the electrolysis.
- The LCD display offers monitoring of chlorine production, cell modes, salinity level, temperature, water flow and diagnostics.
- The power pack is connected with the pool circulation pump electrical source so that the electrolytic cell can only operate when the pool pump is on. The flow portion of the flow/temp/salinity sensor is a backup device only.



### AquaLink<sup>®</sup> RS PureLink™ Power Center (For centralized pool control system, sold separately)

- The PureLink system is an all-in-one saltwater chlorinator control system power center for use with AquaLink RS PDA, All Button, Pool Link, or OneTouch™ controllers.
- The AquaLink RS PureLink power center converts AC power into low voltage DC current which is required by the cell to perform the electrolysis.
- The LCD display offers monitoring of chlorine production, cell modes, salinity level, temperature, water flow and diagnostics.
- The chlorine generator electronics are connected with the pool circulation pump electrical source so that the electrolytic cell only operates when the pool pump is on. The flow portion of the flow/temp/salinity sensor is a backup device only.

### Nature<sup>2</sup> Fusion Sanitizing Vessel

- The sanitizing vessel uses a combination of an electrolytic cell and a mineral cartridge. The electrolytic cell contains bipolar electrodes which perform the electrolysis and produce chlorine when energized with DC current. Chlorine is generated as pool water containing salt passes through the cell. The chlorine production can be varied by either adjusting the Chlorine Production Level on the power center or by varying the number of hours the Nature<sup>2</sup> Fusion Soft is on each day. ***The Nature<sup>2</sup> Fusion Soft automatically cleans the electrodes once every three (3) hours by reversing polarity. This does not interrupt the production of chlorine.*** The mineral cartridge delivers controlled trace amount of silve and copper that works in conjunction with the chlorine to maintain an algae-free pool.

### Flow/Temperature/Salinity/Sensor

- The flow portion of the flow/temp/salinity sensor helps detect if there is adequate water flow through the vessel.
- The salinity portion of the flow/temp/salinity sensor detects the level of salt in the pool water. This salt level is displayed in grams per liter (GPL)\* on the liquid crystal display (LCD) whenever the salinity button is pressed. This eliminates the need for manual pool water salinity testing.
- Pool temperature is displayed by pressing the temperature button.

\*1 gram per liter (GPL) = 1000 ppm (parts per million)

## 2.3 Product Specifications

	Nature <sup>2</sup> Fusion Soft 700	Nature <sup>2</sup> Fusion Soft 1400
<b>Capacity</b>	Up to 12,000 gal. (45,000 L)	Up to 40,000 gal. (151,000 L)
<b>Replacement Nature<sup>2</sup> cartridge</b> (sold separately) <b>Important:</b> The proper replacement cartridge model is indicated on the label of the vessel	DuoClear <sup>®</sup> 25 or Nature <sup>2</sup> Fusion 25 #W28000 (single) #W26000 (4-pack)	DuoClear 45 or Nature <sup>2</sup> Fusion 45 #W28002 (single) #W26002 (4-pack)
<b>Maximum operating pressure</b>	50 psi	50 psi
<b>Minimum flow rate</b>	30 gpm (114 lpm)	30 gpm (114 lpm)
<b>Maximum flow rate</b>	120 gpm (455 lpm)	120 gpm (455 lpm)
<b>Salt Level Requirement *</b>	3,000 - 3,500 ppm	3,000 - 3,500 ppm
<b>Recommeded Salt Level *</b>	3,000 ppm	3,000 ppm
<b>Vessel Dimensions</b>	16.5" L x 16" H x 14.5" D (42 cm x 40 cm x 37 cm)	
<b>Power Pack Dimensions</b>	14.5" L x 10" H x 6.5" D (37 cm x 25 cm x 17 cm)	
<b>Vessel Weight</b>	10.6 lbs (4.8 kg)	11 lbs (5 kg)
<b>Power Pack Weight</b>	25 lbs (11.3 kg)	25 lbs (11.3 kg)

\* Do not exceed 3,500 ppm





## 2.4 Electrical Specifications

**Circuit Protection** If only the Nature<sup>2</sup> Fusion Soft is connected to the circuit breaker, use a 5 AMP fuse. If more devices are connected to the circuit breaker use a 20 AMP fuse at the electrical panel.

	Nature <sup>2</sup> Fusion Soft 700 Connected to FUSIONM	Nature <sup>2</sup> Fusion Soft 1400 Connected to FUSIONM
<b>Input</b>	120 VAC, 50/60 Hz, 1.5 AMPS 240 VAC, 50/60 Hz, 0.75 AMPS	120 VAC, 50/60 Hz, 2.5 AMPS 240 VAC, 50/60 Hz, 1.25 AMPS
<b>Output</b>	22-30 VDC @ 3 AMPS maximum	22-30 VDC @ 6 AMPS maximum
<b>Chlorine</b>	0.625 lb / day (283 gm / day)	1.25 lb / day (567 gm / day)
<b>External Control Option</b>	ORP/External Control Connector AquaLink® RS485 Connector	ORP/External Control Connector AquaLink RS485 Connector

### CAUTION

**The FUSIONM saltwater chlorinator electronics are factory wired for 240 VAC service.** If the available electrical service is 120 VAC, then the power supply wiring must be changed to operate on 120 VAC as shown in Figures 11 and 13.

The chlorinator electronics are powered from the LOAD SIDE of the pool circulation pump relay; therefore, if the available electrical service is 120 VAC, then the pump must also be wired for 120 VAC.



## Section 3. Installation Instructions

### WARNING

**FOR YOUR SAFETY:** This product must be installed and serviced by a professional pool/spa service technician as described on the front cover of this manual. The procedures in this manual must be followed exactly. Failure to follow warning notices and instructions may result in property damage, serious injury, or death. Improper installation and/or operation will void the warranty.

### WARNING

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

- RISK OF ELECTRIC SHOCK WHICH CAN RESULT IN SERIOUS INJURY OR DEATH. Before attempting installation or service, ensure that all power to the device is disconnected/turned off at the circuit breaker.
- Grounding is required. The unit should be installed by a qualified service representative and should be properly grounded and bonded. (See Section 3.8, Grounding and Bonding).
- Install to permit access for servicing.
- Read Section 1, Safety Information. **Before attempting any electrical wiring, be sure to read and follow Safety Instructions. Wiring should only be attempted by a qualified professional.**

### 3.1 Materials and Tools

**NOTE** Salt not included. See Section 4, Pool Water Preparation.

Installation Materials Furnished Needed	
<p><b>Nature<sup>2</sup> Fusion Soft</b></p> <ul style="list-style-type: none"> <li>Vessel with 2"-2½" (5 - 6.3 cm) Universal Unions</li> <li>Sensor with 16 ft (4.88 m) Cable and O-ring</li> <li>Universal Union Nut (to secure sensor)</li> <li>16 ft (4.88 m) DC Power Cord</li> <li>Installation and Operation with Warranty Information</li> </ul> <p><b>FUSIONM or APUREM Power Pack (Sold separately)</b></p> <ul style="list-style-type: none"> <li>Power Pack Housing with User Interface Control</li> <li>Two (2) Wire Nuts</li> <li>Installation Template</li> </ul>	<p><b>PureLink™ with Power Center (Optional - Sold separately)</b></p> <ul style="list-style-type: none"> <li>AquaLink® RS PureLink power center (Standard or Breaker)</li> <li>Two (2) Wire Nuts</li> <li>Installation Template</li> </ul> <p><b>Tools Needed for Installation</b></p> <ul style="list-style-type: none"> <li>Tape Measure</li> <li>Phillips &amp; Flathead Screwdrivers</li> <li>Pliers</li> <li>Hacksaw</li> <li>Voltmeter to determine line voltage of AC wiring to power supply</li> <li>Electric Drill Motor and 1/4" (0.6 cm) masonry drill bit for mounting power supply on block or stucco wall</li> <li>An NSF® approved All Purpose Cleaner Primer</li> <li>An NSF approved All Purpose Cement (such as Weld-On 794, 793)</li> </ul>

### 3.2 Installation Requirements

Decide where to install the Nature<sup>2</sup> Fusion Soft.

- The vessel must be installed on a 17" (43 cm) length of pipe.
- The vessel must be installed on the existing pad or a concrete slab to support the weight.
- The vessel must be installed as the last piece of equipment in the circulation plumbing system just before the pool with the Nature<sup>2</sup> side as the inlet and the salt chlorinator side as the outlet. The inlet and outlet are clearly marked on the vessel.

- The vessel must be installed downstream from the heater or heater damage will occur.
- If the vessel is installed below the pool water level, it must be installed with a check valve. The check valve will isolate the vessel and prevent pool draining during installation, cell change or cartridge change.
- If plumbing size is greater than 2" (5 cm) diameter or if flow rates are greater than 120 gpm (455 lpm), the vessel must be installed in a bypass configuration (see Section 3.5).
- If the vessel is used with water feature line system, it must be installed in a split-return configuration or vessel damage may occur (see Section 3.6).
- Never install the Nature<sup>2</sup> Fusion directly into copper plumbing as pipe damage may occur. If brass or bronze backwash valves, or other sensitive metallic components are installed, consult your dealer for recommendations on your particular system.

### 3.3 Anchoring the Vessel to the Equipment Pad

In some areas, for example Florida, building codes require that all appliances be securely fastened to the equipment pad in order to withstand high wind pressures created by hurricanes. Please follow all local codes and standards.

**NOTE** Anchor screws and washers for securing the filter to the equipment pad are not included with the filter. Zodiac Pool Systems, Inc. ("Zodiac") recommends that a 2¼" X ¼" (5.7 cm X 0.6 cm) long stainless steel Tapcon® concrete screw and stainless steel flat washer are used to mount each of the two (2) anchor holes in the base to the equipment pad. The Tapcon concrete screw meets Florida building code requirements.

1. Manually snap on the two (2) clip-type anchor brackets onto the side feet of the vessel as shown in Figure 2. Make sure these anchor brackets are attached firmly to the feet of the vessel.
2. Place the vessel on the pad and mark the each hole of the anchor brackets on the concrete pad.
3. Drill a 5/32" (0.5 cm) hole in the concrete at each of the two (2) holes of the anchor brackets. The correct size concrete drill bit should be obtained when the concrete screws are purchased.
4. Install the Tapcon screws and washers through each of the two (2) holes to secure the vessel to the equipment pad. Do not over-torque the screws.

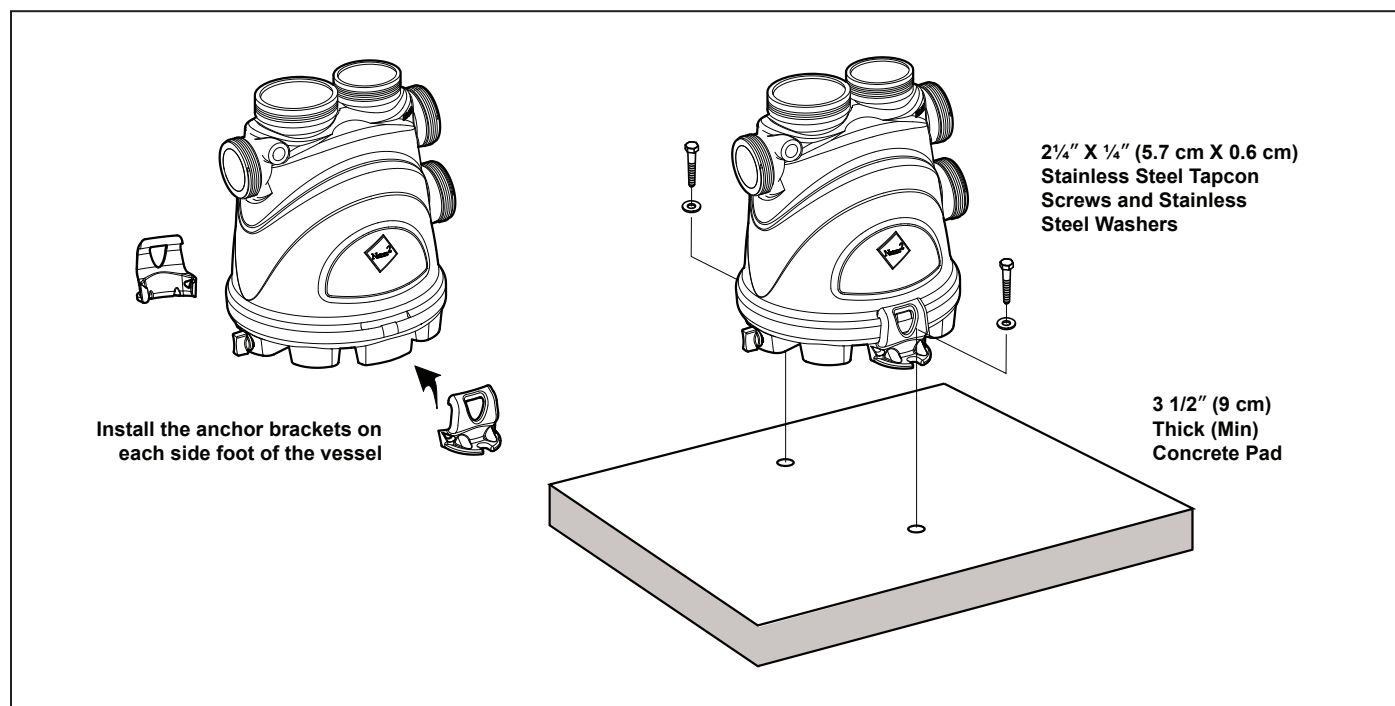


Figure 2. Anchor Bracket Installation



### 3.4 Installation of the Vessel

1. Make sure the pool pump is turned off.
2. Remove the temporary cap on the cartridge side of the vessel, and install the Nature<sup>2</sup> start-up cartridge included in the box. Do not throw out the cap. It will be used for winterization of the system.
3. Locate a suitable section of pipe to install the vessel, approximately 17" (43 cm) long, that conforms to the installation requirements outlined in Section 3.2.
4. Cut out a 13<sup>7</sup>/<sub>8</sub>" (35 cm) section of the 2" (5 cm) pipe to insert the vessel (see Figure 3).
5. Connect the outlet from the filter or heater to the vessel inlet port with the appropriate Schedule 40 PVC pipe; secure the connection with a pipe glue that is compatible with PVC.

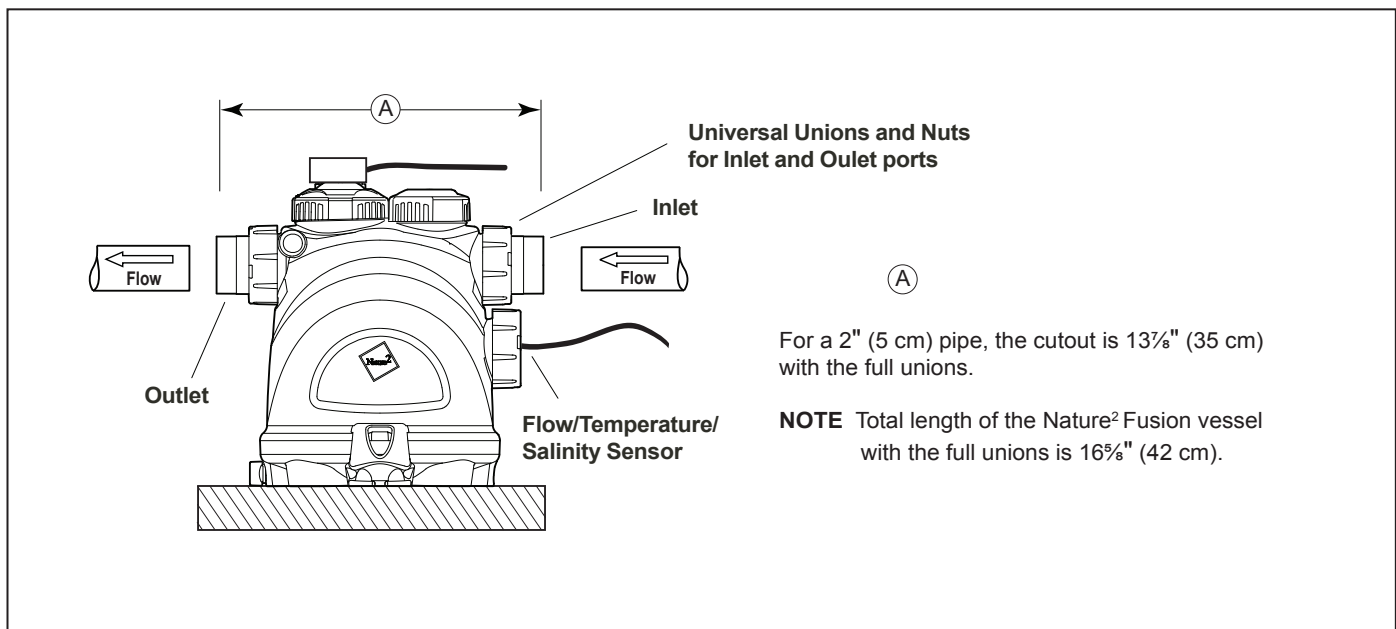
**NOTE** Reducer bushings can be used to accommodate 1.5" (3.8 cm) plumbing with no effect on the operation of the Nature<sup>2</sup> Fusion Soft.

6. Connect the vessel outlet port to the pool return line with the same type of PVC pipe and secure the connection with pipe glue. Allow sufficient time for the glue to dry.
7. Hand tighten all unions, sensors, and collars.

#### **⚠ CAUTION**

Be careful not to get finger caught between inlet union and plug when tightening as this may cause an injury.

8. Start the pump and check for leaks.



**Figure 3. Pipe Cutout**

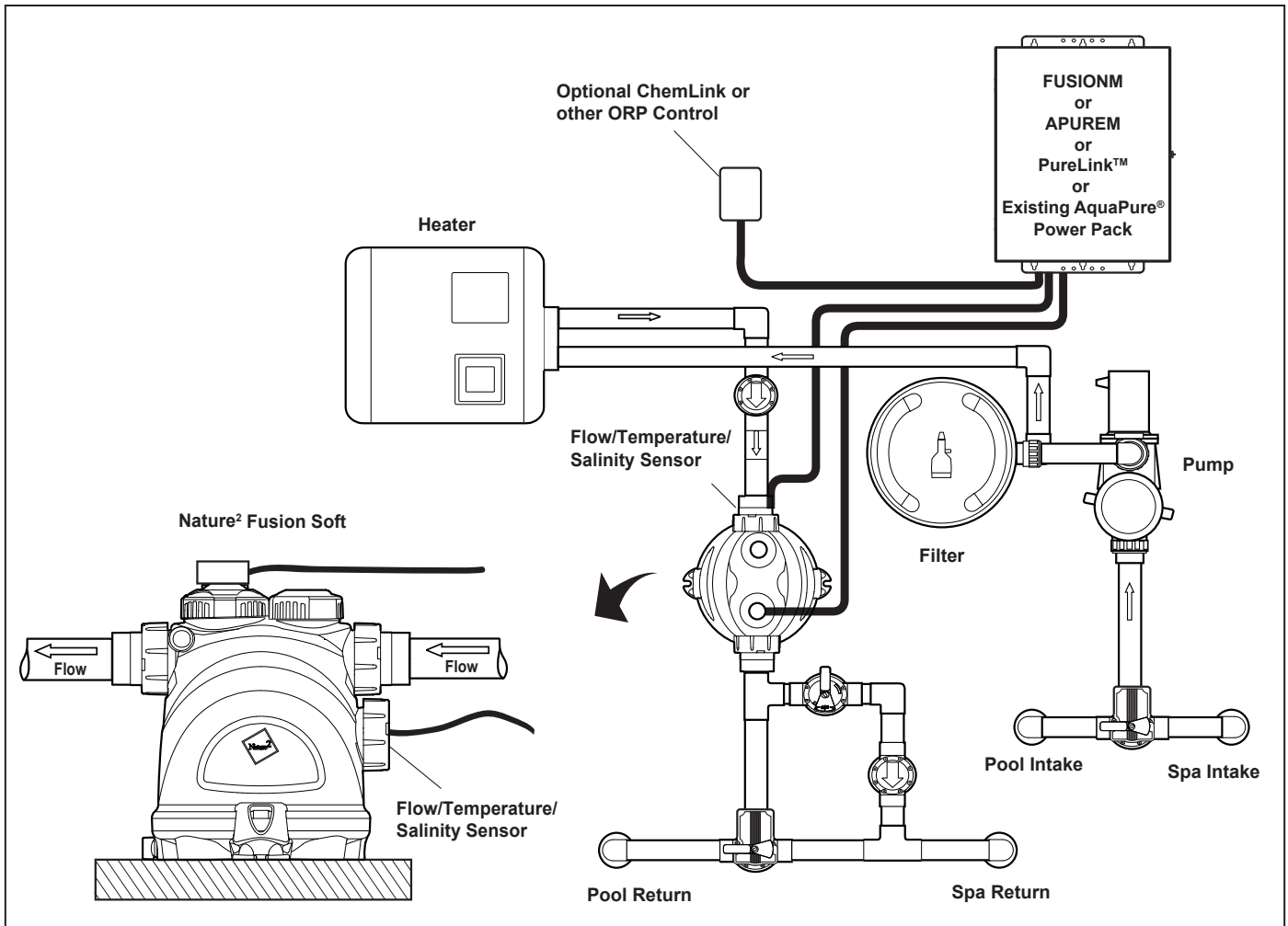
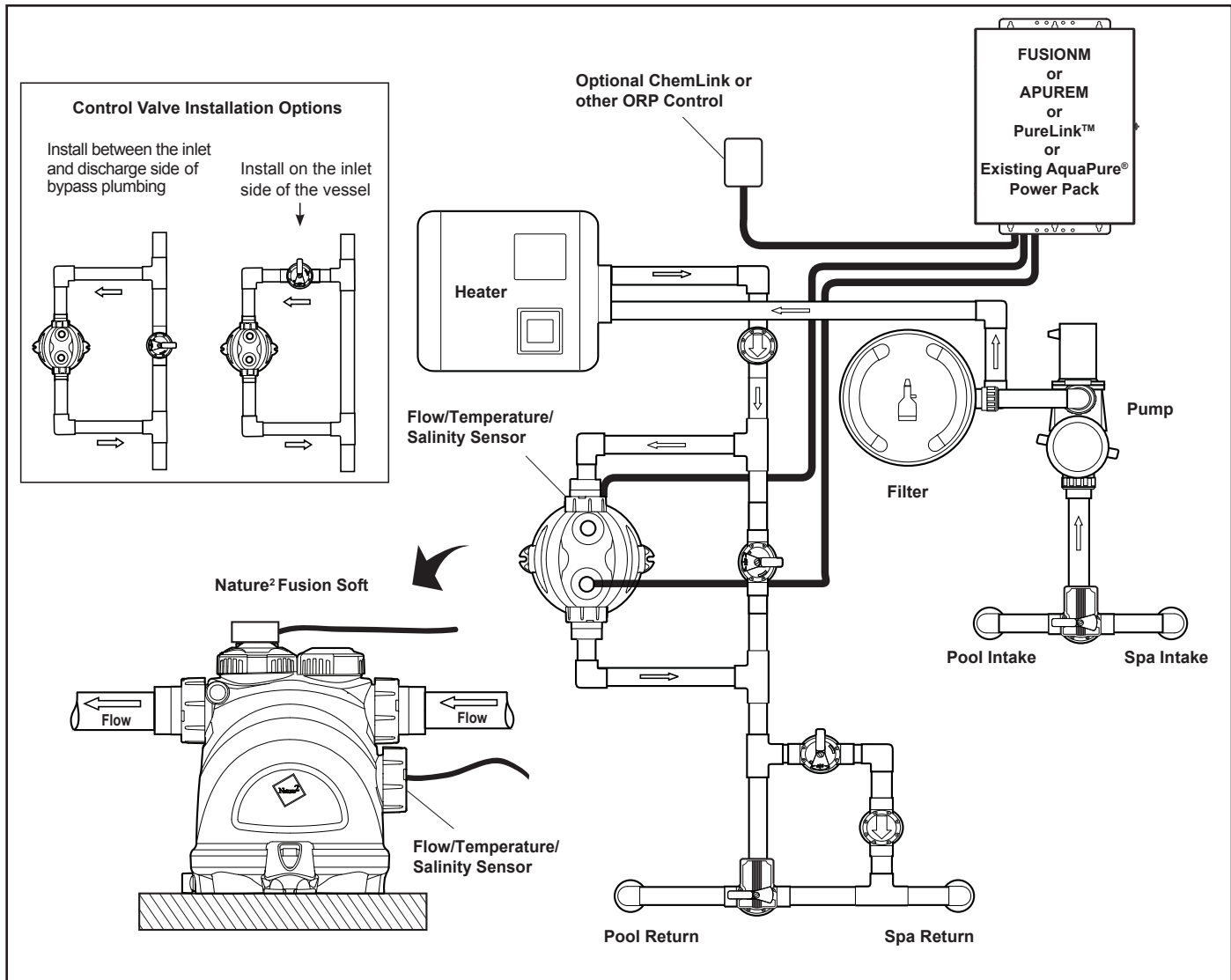


Figure 4. Example of Nature<sup>2</sup> Fusion Soft Installation With Options

### 3.5 Bypass Installation

If plumbing size is greater than 2" (5 cm) diameter or if flow rates are greater than 120 gpm (450 lmp), the vessel MUST be plumbed on by-pass (see Figure 5). It is recommended that 2" (5 cm) PVC Schedule 40 pipe is used to plumb the by-pass line. A control valve must be installed to regulate the flow through the vessel. It can be installed on the inlet side of the vessel or between the inlet and discharge side of the bypass piping.

1. Make sure the pool pump is turned off.
2. Remove the temporary cap on the cartridge side of the vessel, and install the Nature<sup>2</sup> start-up cartridge included in the box. Do not throw out the cap. It will be used for winterization of the system.
3. Locate a suitable section of pipe in the by-pass line to install the vessel, approximately 17" (43 cm) long, that conforms to the installation requirements outlined in Section 3.2.
4. Cut out a 13<sup>7</sup>/<sub>8</sub>" (35 cm) section of the 2" (5 cm) pipe to insert the vessel (see Figure 3).
5. Install tees in the return line to allow water to be diverted to the Nature<sup>2</sup> Fusion Soft vessel.
6. Connect the bypass line from the first tee to the inlet of the vessel and from the outlet of the vessel to the second tee.



**Figure 5. Example of Bypass Installation**

7. Install a control valve in the return line between the first and second tee or prior to the vessel inlet on the bypass line to control the water flow through the bypass.
8. Hand tighten all unions, sensors, and collars.

**⚠ CAUTION**

Be careful not to get finger caught between inlet union and plug when tightening as this may cause an injury.

9. Fully open any closed valves, including the control valve, and start the pump diverting water through the new bypass.
10. Check the vessel and system for leaks.
11. Adjust control valve so that flow rate through the vessel is between a minimum of 30 gpm (114 lpm) and a maximum of 120 gpm (455 lpm).

### 3.6 Split-Return Installation

If the vessel is used with a water feature line system, it must be installed in a split-return configuration or vessel damage may occur.

1. Make sure the pool pump is turned off.
2. Remove the temporary cap on the cartridge side of the vessel, and install the Nature<sup>2</sup> start-up cartridge included in the box. Do not throw out the cap. It will be used for winterization of the system.
3. Locate a suitable section of pipe to install the vessel that conforms to the installation requirements outlined in Section 3.2.
4. Install a 3-way valve in the return line to allow water to be diverted/restricted to the Nature<sup>2</sup> Fusion Soft and water feature line.
5. Fully open any closed valves, including the 3-way, to allow unrestricted flow to the Nature<sup>2</sup> Fusion Soft and water feature line.
6. Hand tighten all unions, sensors, and collars.

**⚠ CAUTION**

Be careful not to get finger caught between inlet union and plug when tightening as this may cause an injury.

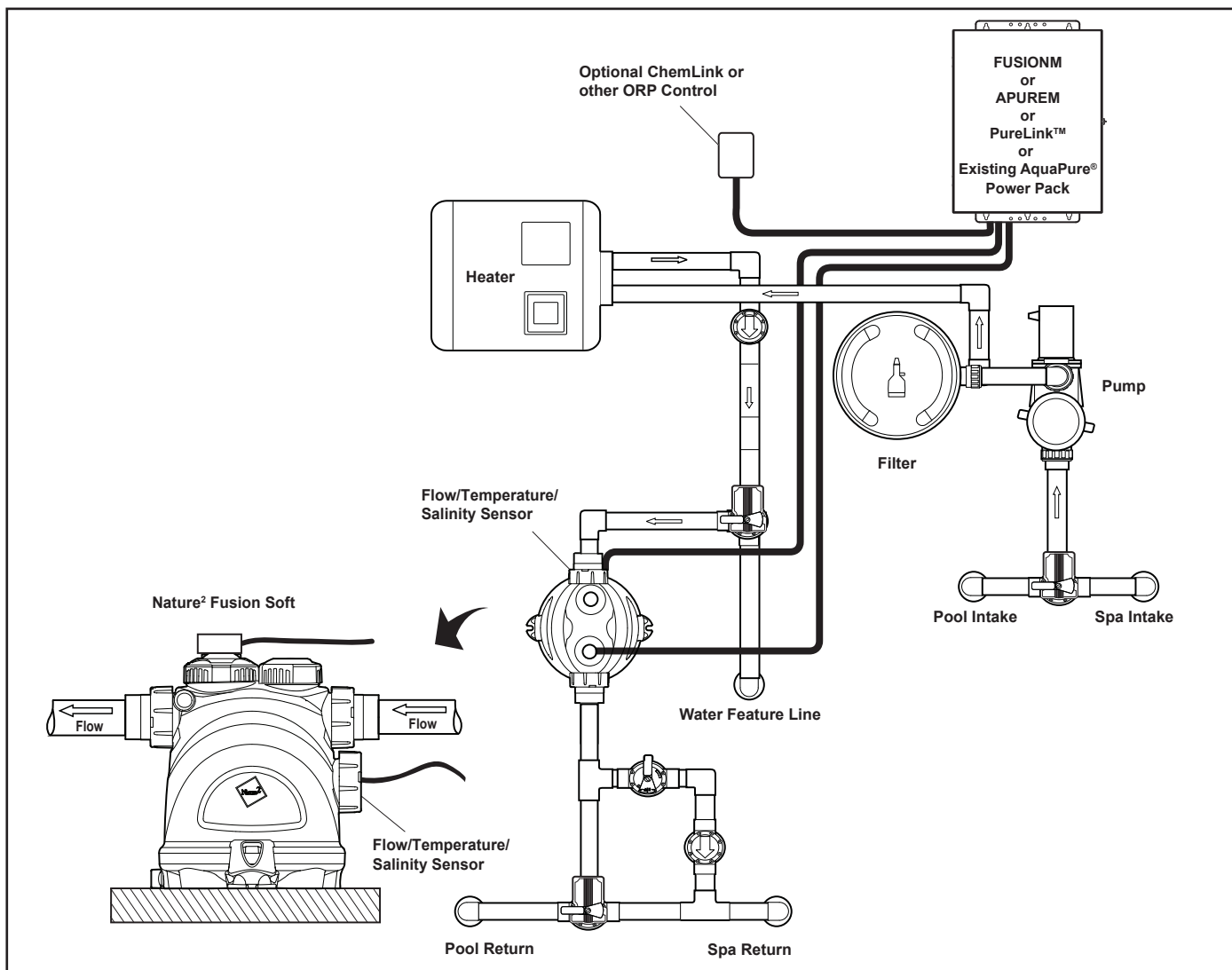


Figure 6. Nature<sup>2</sup> Fusion Soft Split-Return Installation



7. Start the pump and allow water to pass through the newly plumbed system. Check for any leaks.
8. Make sure the flow rate to the Nature<sup>2</sup> Fusion Soft does not drop below 30 gpm (114 lmp).

### 3.7 Installing the FUSIONM or AquaLink® RS PureLink™

#### ⚠ CAUTION

The power center is required to have the appropriate means of disconnection, circuit isolation, and/or branch circuit protection installed *upstream* of the power center.

**NOTE** The control/power center should be located at or near the equipment pad.

1. Locate the control/power center at least five (5) feet or more away from pool/spa and five (5) feet off the ground. All national, state, and local codes are applicable.
2. The control/power center comes with two (2) full length, heavy duty mounting brackets *fastened* to the back of the power center during shipping. Remove the four (4) screws that are holding the two (2) brackets and the cardboard shipping cover in place (see Figure 7). Remove and discard the cardboard.
3. Using the top mounting bracket as a guide, mark three (3) holes on the mounting surface where the power center will be installed. Drill the holes in the mounting surface.

**NOTE** The three (3) mounting holes are 4" (10 cm) apart center to center.

**NOTE** Use heavy-weight screws. The power center with all available components installed weighs approximately 30 pounds.

4. Reinstall the mounting brackets to the top and bottom of the back of the control/power center using the four (4) screws that were removed in *Step 2*. Ensure that the brackets are rotated from the original shipping position.
5. Hang the power pack on the surface using the three (3) holes drilled in *Step 3*. With the control/power center in place, mark three (3) holes for the bottom bracket mounting.

**NOTE** As with the top brackets, the bottom bracket requires three (3) mounting holes. The three (3) mounting holes are 4" (10 cm) apart center to center.

6. Drill the holes and install the screws.

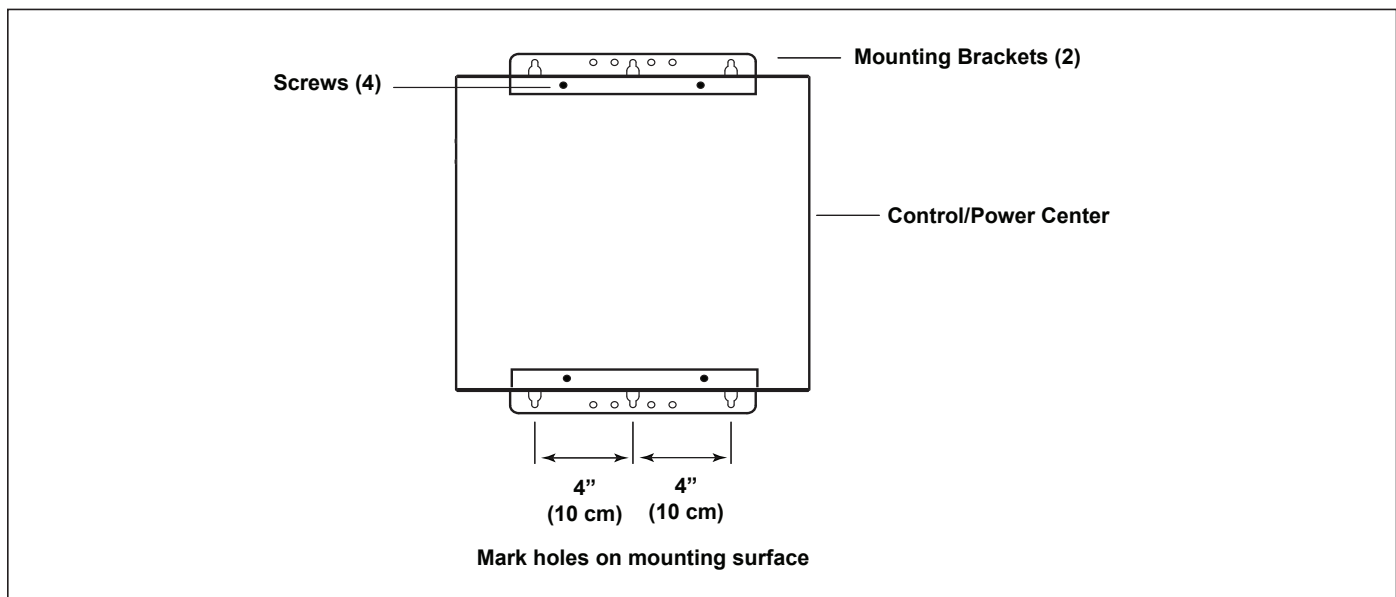


Figure 7. Power Pack Installation



7. Level the control/power center and tighten all screws, ensuring that the control/power center is securely fastened to the mounting surface.
8. Check source voltage. (All units are factory wired for 240 VAC). ***In order to use on 120 VAC, the internal factory wiring of the power center must be changed. (see Figures 11 and 13).***

### 3.8 Grounding and Bonding

A solid, copper # 8 awg (8.4 mm<sup>2</sup>) wire is *recommended* for connecting the control/power center to a permanent earth ground connection that is acceptable to the local inspection authority. Refer to your local codes for the acceptable grounding wire gauge.

The National Electric Code (NEC) requires pool equipment to be bonded to each other. Check your local codes to determine if the NEC and/or other local installation codes are enforced by the Authority Having Jurisdiction (AHJ). A solid, copper # 8 AWG (8.4 mm<sup>2</sup>) wire is recommended, per the NEC, for bonding the power pack to a permanent bonding connection that is acceptable to the local AHJ. Refer to your locally enforced codes for the acceptable bonding wire gauge. Attach the bonding point located on the bottom of the chassis backplate to a common earth bonding point. Do not use the power pack as the common bonding point. Each piece of non-related pool equipment requiring a ground should also be bonded to the common, approved earth bonding point. Never ground a pool pump to the chassis backplate.

### 3.9 Model Re-Configuration

The Nature<sup>2</sup> Fusion Soft power interface board is configured as a Nature<sup>2</sup> Fusion Soft 1400 model by factory default.

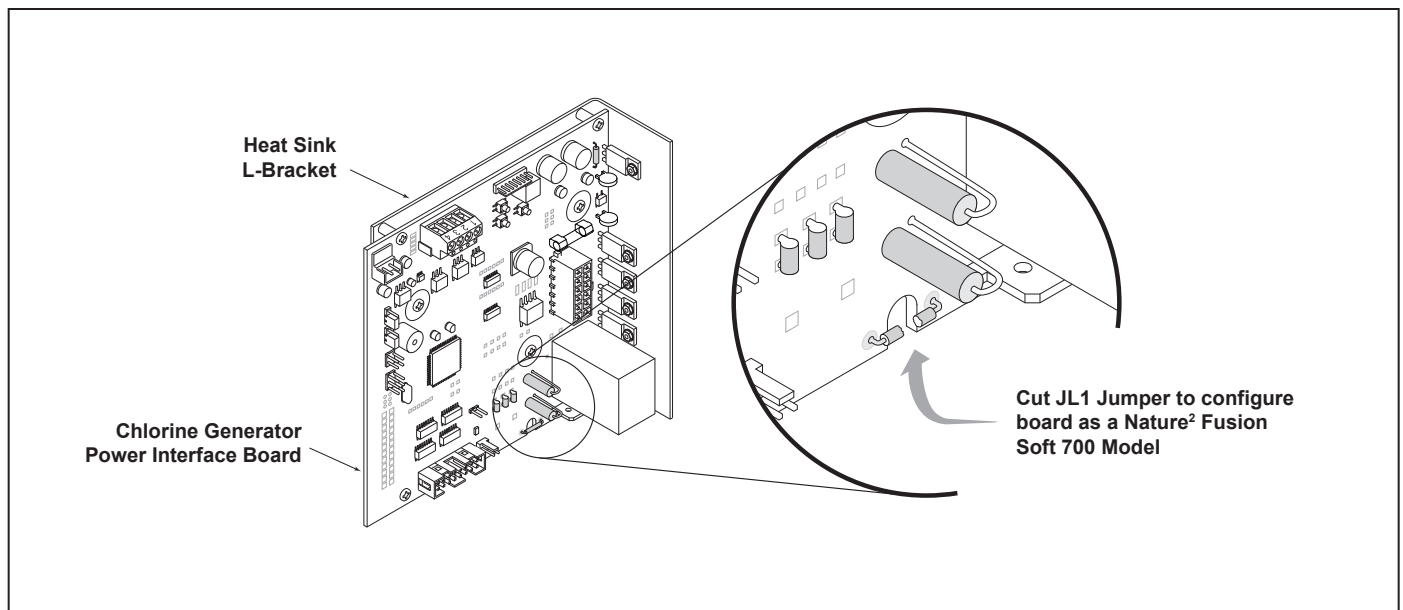
**IMPORTANT**

If installing a Nature<sup>2</sup> Fusion Soft 700 model the power interface board **MUST** be re-configured.

To configure the board as a Nature<sup>2</sup> Fusion Soft 700 model, use cutting pliers to cut the JL1 jumper as shown in Figure 8.

**⚠ CAUTION**

If the power interface board is not re-configured, the life of your Nature<sup>2</sup> Fusion Soft will be shortened.



**Figure 8. Chlorine Generator Power Interface Board**

### 3.10 Installation of the Chlorine Generator Device User Interface on an AquaLink® RS or PDA Bezel

1. On the chlorine generator user interface board, connect one end of the ribbon cable to the 16-pin J1 connector as shown in Figure 9.
2. Connect the other end of the ribbon cable to the power interface 16-pin J1 connector.
3. Attach the chlorine generator user interface board to the bezel using the four (4) screws provided.

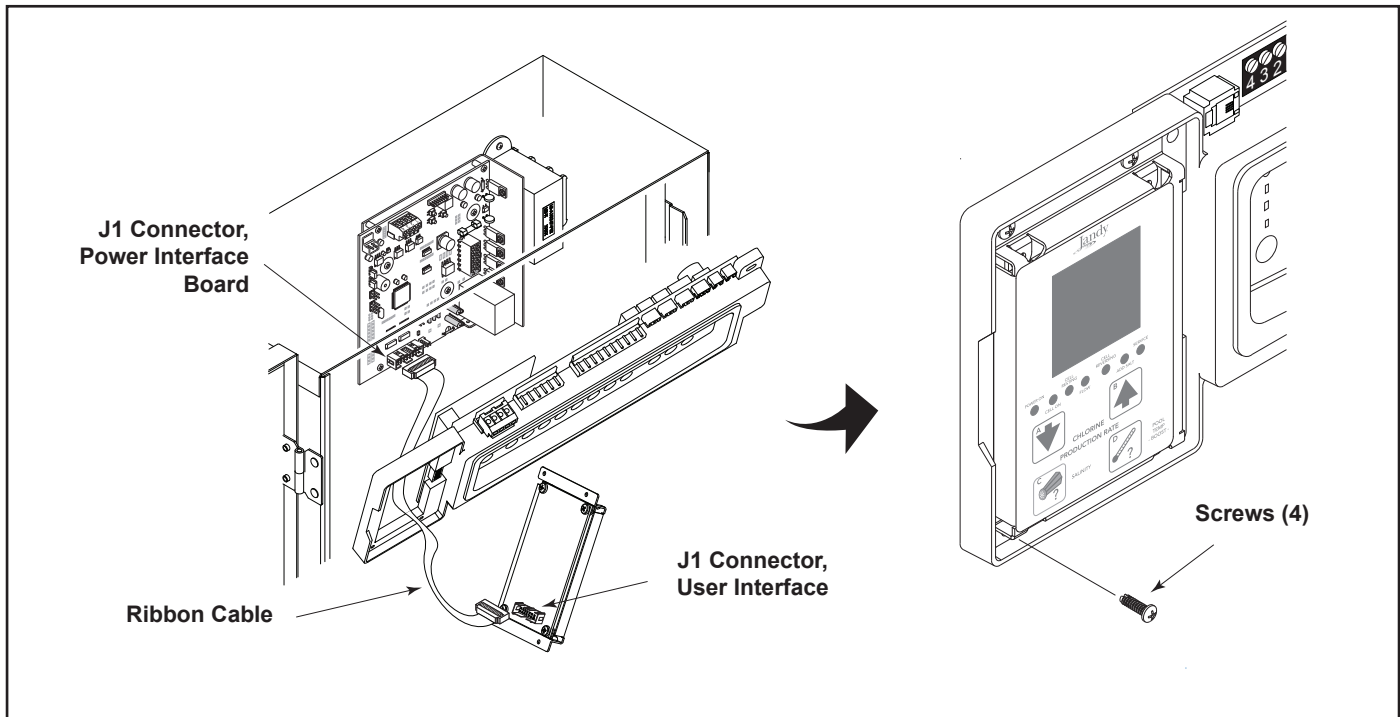


Figure 9. Installation of the User Interface

### 3.11 Connecting the Nature<sup>2</sup> Fusion Soft Vessel and Flow/Temperature/Salinity Sensor

#### ⚠ WARNING

**ATTENTION INSTALLER:** If the flow/temp/salinity sensor is not installed properly, it may allow the vessel to operate without water flow. This would cause a buildup of flammable gases resulting in FIRE or EXPLOSION.

- Mount as shown in Figure 10. This will result in the most reliable operation.
- **IMPORTANT!** Anytime the flow/temp/salinity sensor is connected or disconnected and reconnected, the AC power to the unit must be turned off and back on (Cycle Power). If power is not cycled, unreliable operation of the flow/temp/salinity sensor will result.

1. Be sure pool pump is turned off.
2. Install the flow/temp/salinity sensor into the vessel (see Figure 10).
3. Install the strain relief provided with the vessel kit into the low voltage knock out at the power pack. Feed the connector end of the flow/temp/salinity sensor cable through the DC cord strain relief fitting. **Be certain the connector is clean and dry**, then plug the cable into the connector on the power center printed circuit board as shown in Figures 11, 12 and 13. **(Do not pull flow/temp/salinity sensor cable too tight, allow some slack).**
4. Plug the DC cord into the cell stud terminals protruding from the cell top at the Nature<sup>2</sup> Fusion Soft vessel. The DC cord can be plugged into the cell in either direction.
5. Connect the DC cord to the power center. Feed the DC cord through the same strain relief fitting as the flow/temp/salinity sensor at the power pack. Plug the DC cord into the two (2) spade connectors of the wiring harness located in the low voltage raceway of the control/power center, see Figures 11, 12 and 13. This wiring harness establishes the connection between the cell and the power interface board.

#### ⚠ CAUTION

To avoid risk of damage to the equipment and possible injury, it is important to make sure the DC cable connector is fully seated on the cell electrolytic stud terminals.

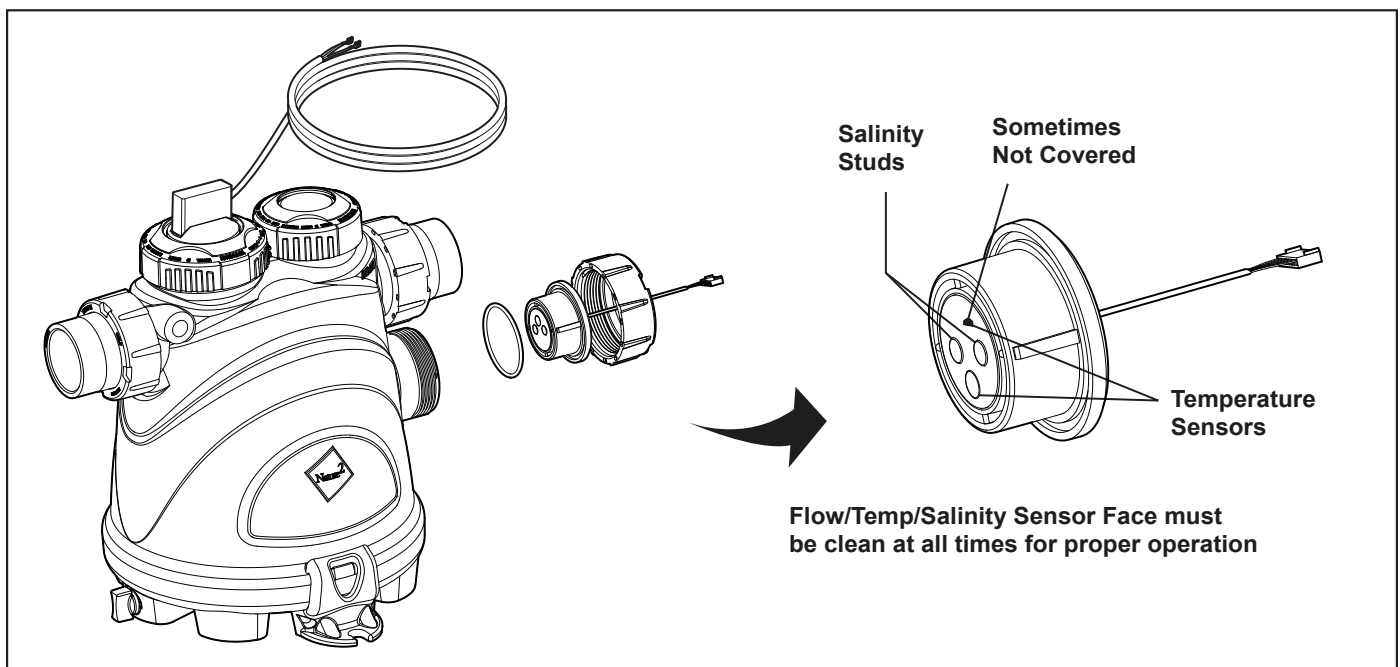


Figure 10. Vessel Installation and Flow/Temp/Salinity Sensor



- Tighten strain relief fitting screws for the flow/temp/salinity sensor and the DC cord. **Do not pull flow/temp/salinity sensor cable or DC cord too tight. Allow some slack cable inside of power pack enclosure.**

**CAUTION**

Do not over-tighten the strain relief fitting. Over-tightening can cause damage to the flow/temp/salinity sensor cable.

- Prior to reattaching the front cover, check the wiring. Be sure the flow/temp/salinity sensor is plugged in. The DC cord should be plugged in. Also, check the AC wiring.
- If the ribbon cable connecting the user interface to the power interface board was disconnected during installation then reconnect before reattaching cover (see Figures 11, 12 and 13).

**⚠ WARNING**

Do not operate the electrolytic cell without water circulation. A buildup of flammable gases will result in FIRE or EXPLOSION.

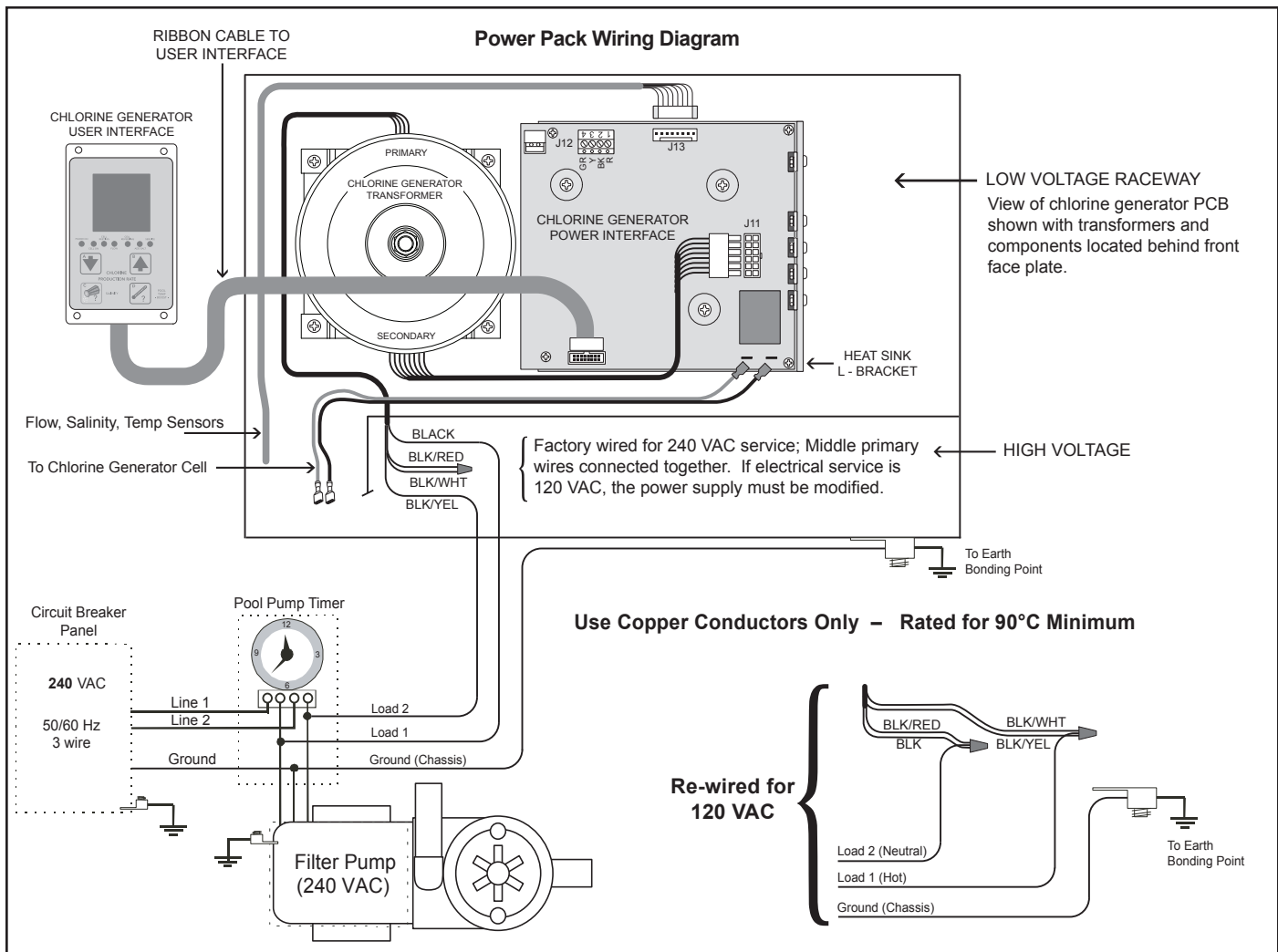


Figure 11. Wiring Diagram for the Power Pack

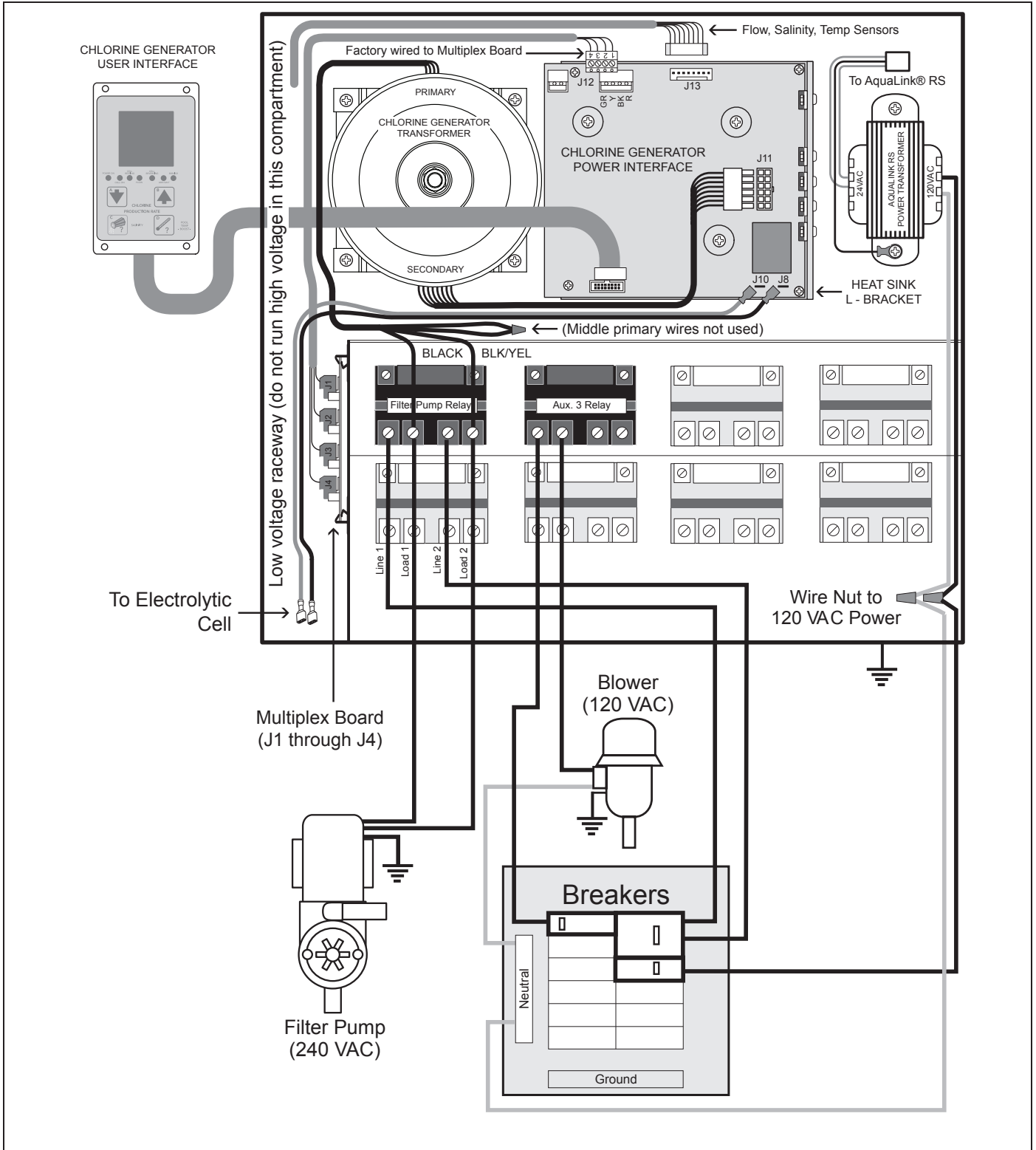


Figure 12. 240 VAC Wiring Diagram for the AquaLink® RS PureLink™ System

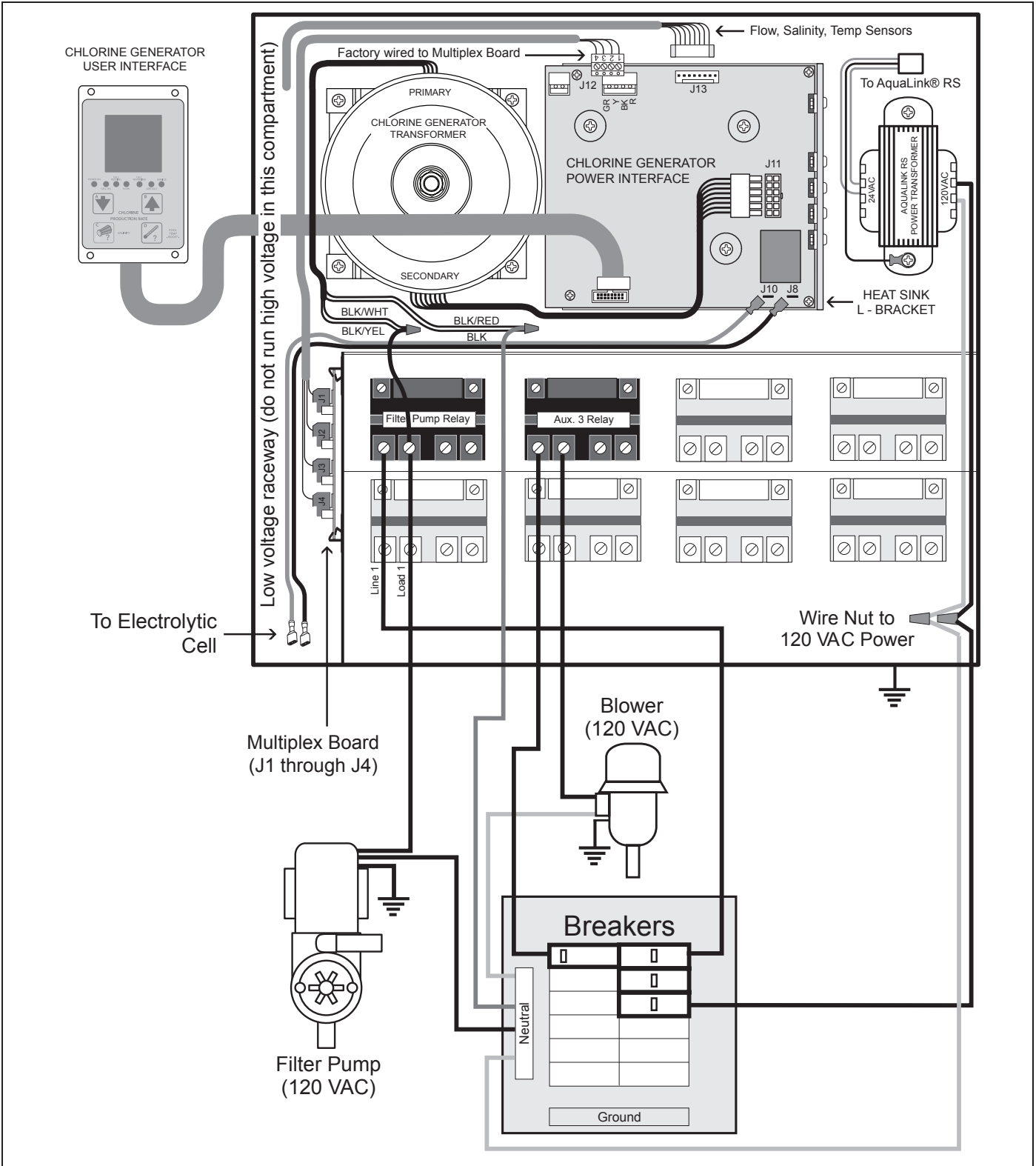


Figure 13. 120 VAC Wiring Diagram for the AquaLink® RS PureLink™ System

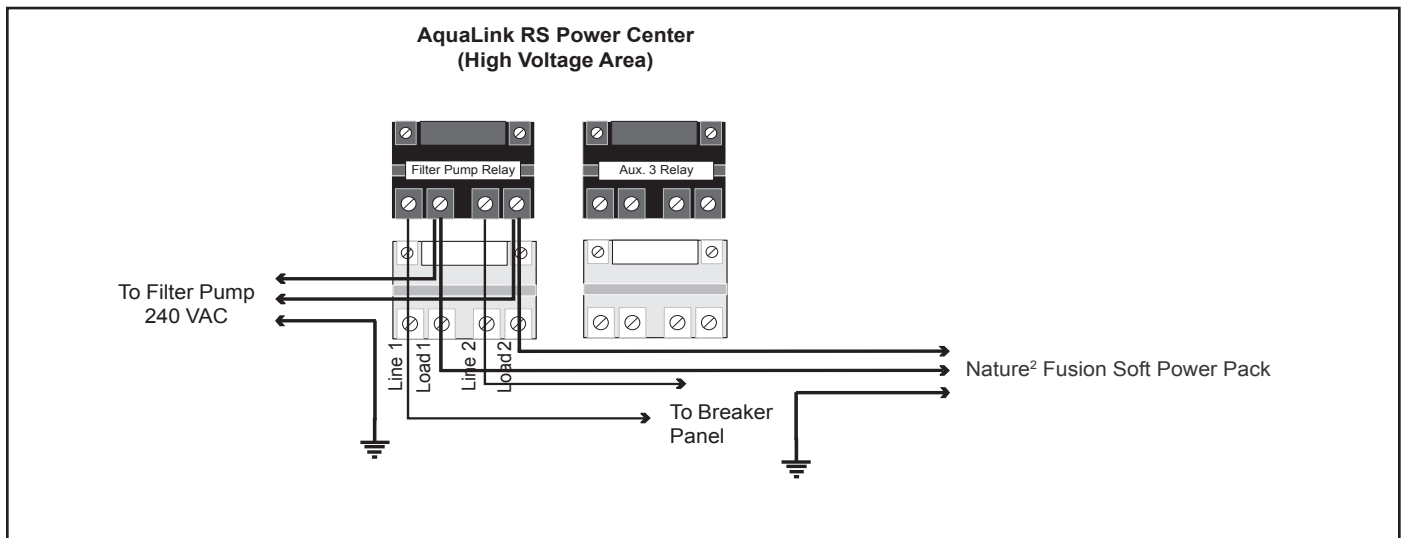
### 3.12 Connection to the AquaLink<sup>®</sup> RS Control System

The Jandy<sup>®</sup> AquaLink RS is a multi-function pool controller that can fully control the function of the Nature<sup>2</sup> Fusion Soft chlorine generator. The chlorine generator user interface will display “JA” when any of its buttons are pressed while the AquaLink RS is in control. Adjustment of the chlorine production rate or Boost mode can be controlled from the main menu of the AquaLink RS controller (All Button, OneTouch™, or PDA). Boost mode can also be activated from the chlorine generator user interface while the AquaLink RS is online. Refer to the *AquaLink RS Operation Manual* (or *AquaLink RS PDA Operation Manual*) for more information. The chlorine generator’s user interface will display temperature, salinity, service codes, and LED indicators as normal.

**NOTE** The Nature<sup>2</sup> Fusion Soft and PureLink™ electronics will communicate with AquaLink RS using firmware versions JJ or later.

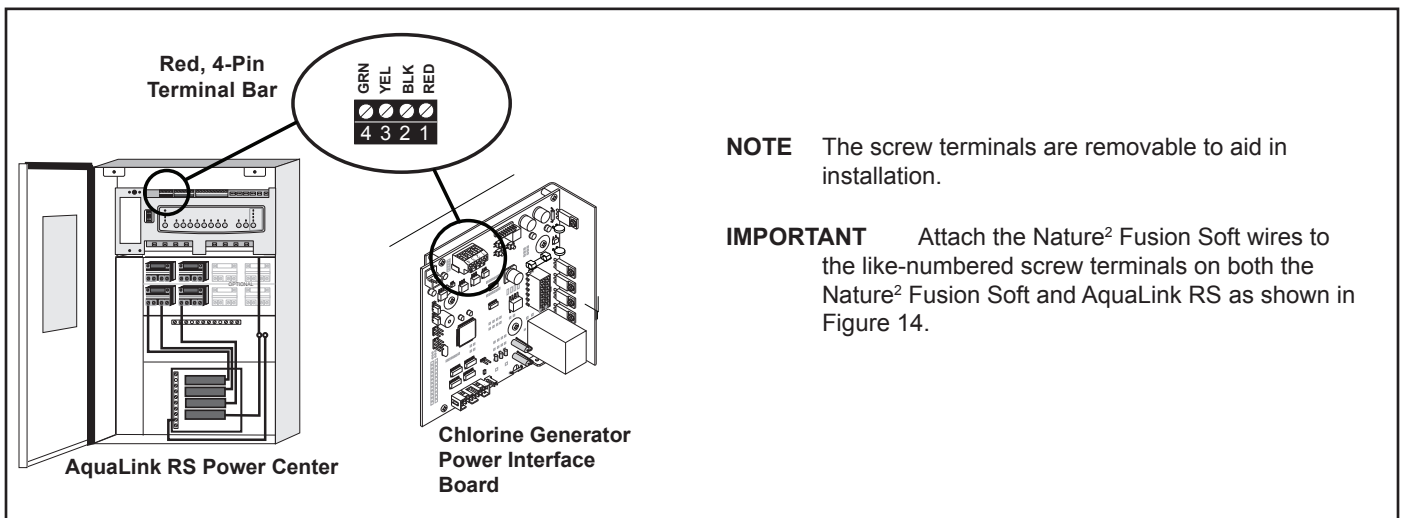
#### 3.12.1 Wiring Nature<sup>2</sup> Fusion Soft Power Pack to a Jandy AquaLink RS

In the AquaLink RS power center enclosure, wire the Nature<sup>2</sup> Fusion Soft power pack input power *directly* to the LOAD SIDE of the filter pump relay (see Figure 14).



**Figure 14. Power connection between AquaLink RS enclosure and Nature<sup>2</sup> Fusion Soft enclosure.**

The Jandy AquaLink RS and Nature<sup>2</sup> Fusion Soft use a four (4) wire connection to communicate and can be wired up to 500 feet (150 m) apart. Any outdoor rated four (4) conductor cable, minimum 22 AWG, can be used. Locate the appropriate screw terminals on the circuit board according to Figure 15. Wire the Nature<sup>2</sup> Fusion Soft from the red 4-pin terminal bar to the AquaLink RS red 4-pin terminal bar.



**Figure 15. Wiring Nature<sup>2</sup> Fusion Soft Control Center to an AquaLink RS Control System**



### 3.12.2 Connection of PureLink™ Chlorine Generator Electronics to a Jandy® AquaLink® RS

The chlorine generator electronics in the PureLink power center and the AquaLink RS controller require a four (4) wire connection to communicate. Any outdoor rated four (4) conductor cable, minimum 22 AWG, can be used. Locate the appropriate screw terminals on the circuit board according to Figures 16a and 16b. Wire the chlorine generator power interface board from the red 4-pin terminal bar to the AquaLink RS red 4-pin terminal bar. See Figure 16a.

Wire the PureLink power center transformer to the load side of the filter pump relay. See Figures 12 and 13.

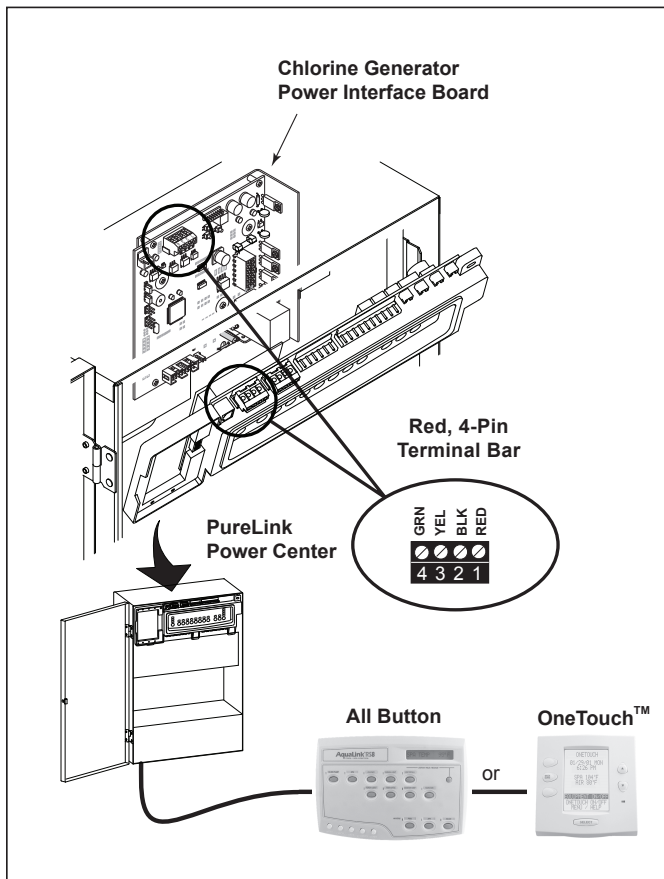


Figure 16a. Wiring a PureLink Control System Network

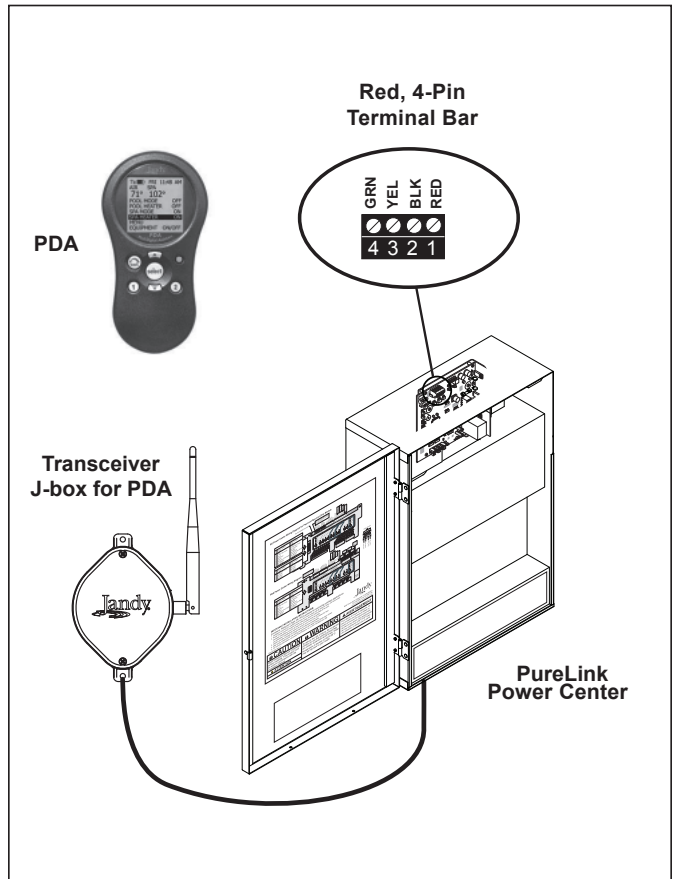


Figure 16b. Wiring a PDA Control System Network



### 3.13 Operation of External Control/ORP Control Board

An external device such as an ORP (Oxidation Reduction Potential) controller supplying 24 Volts AC can be used to control the output of the chlorinator. The chlorinator control board can be set up in the field to operate in two (2) different modes. The mode of operation is determined by the position of a movable jumper J14. See Figure 17 for location.

**POS-1** Wait at least one (1) minute after applying power. See note 1.

With J14 jumper set to POS-1 and no voltage applied to the ORP 24 VAC connector J15, the chlorinator works normally displaying the production rate of 0% to 100% on the front of the power supply.

When 24 Volts AC is applied to the ORP 24 VAC inputs, chlorine production will be disabled.

The front panel of the power supply will then flash “EC” (external control). Once the 24 Volts AC input is removed the chlorine generator will return to normal operation. The “EC” will be replaced with the current production setting of 0% to 100%.

**POS-2** Wait at least one (1) minute after applying power. See note 1.

Placing the jumper in POS-2 allows the chlorinator to operate in the opposite way to POS-1. With 24 Volts AC applied to the ORP 24 VAC inputs, chlorine production will be enabled. The front panel of the power supply will display a production rate of 0% to 100%. When the 24 Volts AC is removed the chlorine generator will flash “EC” every few seconds and chlorine production is disabled.

#### SUMMARY

POSITION OF J14	24 VAC	0 VAC
POS-1 (default)	Unit <b>OFF</b> , displays EC	Unit <b>ON</b> , displays 0-100%
POS-2	Unit <b>ON</b> , displays 0-100%	Unit <b>OFF</b> , displays EC

**Note 1** The unit samples the external control/ORP settings at the instant power is applied to the chlorinator and will not respond to any changes during the first minute of operation. The unit may appear to be STUCK IN or STUCK OUT of “EC” mode. Wait several minutes until the unit has warmed up to verify the changes made to external control set-up.

**Note 2** Unlike the previous production models with ORP control, multiple chlorinators can be linked together to be controlled with one ORP controller without the use of external relays and transformers. Contact the factory for more information.

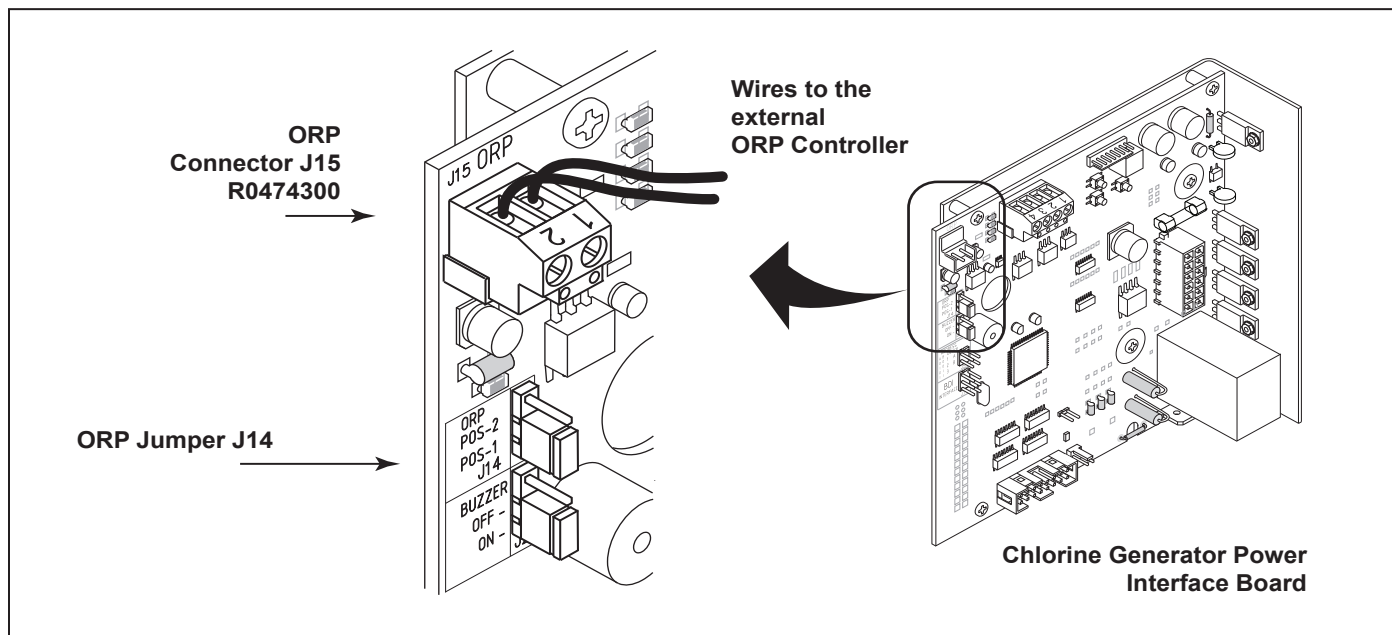


Figure 17. Movable ORP Jumper J14



## Section 4. Pool Water Preparation

### 4.1 Determining Pool Size (Gallons of Water in Your Pool)

- **Rectangular Pools**  
Average length (feet) x average width (feet) x average depth (feet) x 7.5 = gallon capacity.
- **Circular Pools**  
Diameter (feet) x diameter (feet) x average depth (feet) x 5.9 = gallon capacity.
- **Oval Pools**  
Long diameter (feet) x short diameter (feet) x average depth (feet) x 5.9 = gallon capacity.
- **Sloping Sides**  
Multiply total gallons by 0.85 = gallon capacity.

### 4.2 Determining Pool Size (Litres of Water in Your Pool)

- **Rectangular Pools**  
Average length (meters) x average width (meters) x average depth (meters) x 1000 = litres capacity.
- **Circular Pools**  
Diameter (meters) x diameter (meters) x average depth (meters) x 790 = litres capacity.
- **Oval Pools**  
Long diameter (meters) x short diameter (meters) x average depth (meters) x 790 = litres capacity.
- **Sloping Sides**  
Multiply total litres by 0.85 = litres capacity.

### 4.3 Selecting Cartridge Size

Fusion Soft 700	Fusion Soft 1400
<b>Nature<sup>2</sup> Mineral Cartridge Required</b> <b>DuoClear<sup>®</sup> 25 or Nature<sup>2</sup> Fusion 25</b> #W28000 (single) #W26000 (4-pack) <b>Chlorine Production</b> 0.625 lbs / day (283 gm / day)	<b>Nature<sup>2</sup> Mineral Cartridge Required</b> <b>DuoClear<sup>®</sup> 45 or Nature<sup>2</sup> Fusion 45</b> #W28002 (single) #W26002 (4-pack) <b>Chlorine Production</b> 1.25 lbs / day (567 gm / day)
<b>Residential Pools</b> Up to 12,000 gallons (up to 45,000 litres) (See General Rule of Sizing notes below)	<b>Residential Pools</b> Up to 40,000 gallons (up to 151,000 litres) (See General Rule of Sizing notes below)

**General Rule of Sizing:** In areas with year-round use and high water temperatures, such as Florida, Texas, Arizona, Las Vegas and Southern California, the following must be considered:

**Year Round Use:** Up-sizing the Nature<sup>2</sup> Fusion Soft device or adding more than one unit may be recommended for pools that are close to the maximum size and used year round. Please consult a qualified service representative.

**High Water Temperatures:** Because chlorine demand increases with the rise of water temperature, adjustments must be made in order to keep up with chlorine demand. In hot summer months, where the water temperature rises above 85°F (30°C), you must increase the pump run time and increase the chlorine production (%).



## 4.4 Chemistry You Need to Know

- **Chlorine Stabilizer** (cyanuric acid) is needed to maintain proper levels of chlorine. Most unstable chlorine is destroyed by the UV radiation from the sun within two (2) hours. Chlorine stabilizer should be maintained between 10 - 50 ppm. For indoor pools, it is not necessary to add chlorine stabilizer to the swimming pool water.
- **Nitrates** can cause extremely high chlorine demands and will deplete chlorine from your swimming pool. In some cases nitrates may even lower your chlorine levels to zero. Your local qualified service representative can test for nitrates. Make sure nitrates are not present in your pool.
- **Metals** (some metals) can cause loss of chlorine. Also, metals can stain your pool. Have your local qualified service representative check for metals and recommend methods of removal.
- **Chloramines** should not be present in pool water. When organic materials combine with free chlorine, chloramines are formed. This ties up the free chlorine in your pool and does not allow the chlorine in your pool to disinfect. Chloramines also cloud pool water and burn the eyes. Shock to remove chloramines at the initial startup of the pool.
- **Super Chlorination** burns out the organic material that has combined with chlorine. This frees the chlorine for sanitizing. When experiencing heavy swimming loads or heavy rainfall, use the Boost mode to maximize chlorine production.
- **Shocking** (Superoxidation) is also a means of burning out the organic material that has combined with chlorine. This method involves the manual addition of chemicals to quickly raise the level of chlorine. When the chlorine level is quickly raised to 5 - 15 ppm the pool water is said to have been shocked.

**NOTE** On initial startup of a pool, it is best to shock using an alternate source, i.e., use a shock treatment available at your local pool supplier.

### CAUTION

Never use dry acid to adjust pH in arid geographic areas with excessive evaporation and minimal dilution of pool water with fresh water. A buildup of by-products can damage the electrolytic cell.

- The **pH** condition resulting from the operation of the saltwater chlorination system is close to neutral. However, other factors usually cause the pH of the pool water to rise. Therefore, the pH in a pool chlorinated by a saltwater system tends to stabilize at approximately 7.6. If the pool pH rises above 7.6 have a qualified service representative test to see if other factors such as high calcium hardness or total alkalinity are the cause and then balance accordingly.
- **Total Dissolved Solids (TDS)** adding salt to pool water will raise the TDS level. While this does not adversely affect the pool water chemistry or clarity, the pool water professional testing for TDS must be made aware salt has been added for the sanitizing system. The individual performing the TDS test will then subtract the salinity level to arrive at the correct TDS level.
- **New pool water** in a recently filled or newly refinished pool may contain undesirable matter. This undesirable matter could interfere with the saltwater chlorinator's ability to sanitize properly. Make sure the water is tested by a qualified service representative and properly balanced before turning on the chlorinator system. New plaster pools have a constant acid demand for six (6) months. Regular testing and correcting of the pH will reduce the need for manual cleaning of the cell.
- **Sequestering Agents** may be used in some areas where the total hardness of your source water may be unusually high. High total hardness can contribute to scale formation in the pool. Sequestering agents will help keep minerals in solution and under some conditions can prevent this from happening. Consult a qualified service representative about the use of a sequestering agent.



## 4.5 Optimum Pool Water Conditions

In accordance with Association of Pool and Spa Professionals (APSP) standards, we recommend the following water balance conditions be maintained on an on-going basis to protect the pool finish and equipment and ensure the pleasing appearance of the water. The Nature<sup>2</sup> Fusion Soft is warranted to operate properly only if these conditions are met.

<b>Free Chlorine</b>	0.5 - 3.0 ppm. Continuous exposure to levels above 3.0 ppm may cause corrosion of pool metals. Refer to Section 6.2 for Chlorine Testing Procedure.
<b>Combined Chlorine (Chloramines)</b>	None (Super chlorinate to remove all chloramines.)
<b>pH</b>	7.4 - 7.6 (Use muriatic acid to lower pH and soda ash to raise pH.)
<b>Chlorine Stabilizer (Cyanuric Acid)</b>	10 - 50 ppm (For outdoor pools only.)
<b>Total Alkalinity</b>	80 - 120 ppm.
<b>Calcium Hardness</b>	175 - 400 ppm.
<b>Metals (Iron, Manganese)</b>	None.
<b>Nitrates</b>	None.
<b>Phosphates</b>	None.

## 4.6 Salt (NaCl Sodium Chloride)

### 4.6.1 When to Add Salt

Add salt to the pool if the salt is too low (see Table 1). For a new pool or newly resurfaced pool it is recommended to wait at least 30 days (surface should be completely cured) before adding salt. Follow the pool surface manufacturer's guidelines for your particular pool. For vinyl and fiberglass pools, salt can be added at start up.

### 4.6.2 What Type of Salt to Use

- The purer the salt the better the life and performance of the electrolytic cell. Use a salt that is at least 99.8% pure NaCl. The ideal salt is an evaporated, granulated, food quality, non-iodized salt. Consult your salt supplier.
- Avoid using salt with anti-caking agents (sodium ferrocyanide, also known as YPS or yellow prussiate of soda) that could cause some discoloration of fittings and surface finishes in pool.
- Water conditioning salt pellets are compressed forms of evaporated salt and may be used but will take longer to dissolve.
- **Do not** use calcium chloride as a source of salt. (Use sodium chloride only.)
- **Do not** use rock salt (insoluble impurities mixed with the rock salt can shorten the life of the unit).

### 4.6.3 How Much Salt to Use

Use Table 1 to determine how much salt will be needed. Most pools contain some salt depending on the water source and chemicals used for sanitizing. If the saltwater chlorinator has not been wired and turned on yet, a salt test strip or a hand held meter calibrated for NaCl (salt) can be used to determine the existing salt concentration of the water. If the unit is wired (connected), use it to determine the salinity. Water temperature can affect the salinity readout, always test salinity at the equipment locations.

Set chlorine production to 00%. Operating the unit above 00% production without salt will damage the electrolytic cell. The **Salinity** button **C** on the sanitizer user interface keypad can be used to determine salinity in the case of a new pool installation, or a complete water change so long as the chlorine production is set to 00%. See *Section 5.4.2, step 2*.

- 3,000 - 3,500 ppm of salt is recommended for optimum water conditions.
- Low salt concentration below 2,000 ppm will cause premature cell failure.



- High salt concentration above 4,000 ppm may damage the power center.
- High salt concentration above 6,000 ppm may cause corrosion damage to pool fixtures.

**NOTE** Should too much salt be inadvertently added to the pool see *Section 7, Troubleshooting*.

### CAUTION

It is important to note that certain materials used in and around swimming pools and spas may not be compatible with chemicals commonly used to purify pool and spa water (e.g. acids, chlorine, salt, stabilizers, etc.).

As such, Zodiac Pool Systems, Inc. does not warrant or guarantee that the chlorinated water generated by the Nature<sup>2</sup> Fusion Soft/PureLink™ will not damage or destroy certain types of plants, decking, coping and other materials in and around your pool and/or spa. Before selecting materials to be used in and around your pool and/or spa, please discuss all options with your contractor to assess the compatibility of such materials and chemicals.

Some helpful considerations may include:

- Choosing plants that can withstand splash out of pool water containing chlorine and/or salt and other water purification chemicals.
- All metal components used in and around a pool should be of a high grade, quality stainless steel.
- Careful selection of masonry products. The porosity and hardness of natural stones varies greatly. Therefore we recommend you consult with your builder or stone contractor on the best choice for stone materials around your pool or spa.
- Sealing all masonry products. Professionals in the stone industry specify that even natural stone, especially when used outdoors, be sealed to prevent weathering, staining, and premature degradation. Consult with your stone or deck contractor for the proper sealer for the masonry products you have selected to use around your pool or spa.
- For the optimal results, sealers should be reapplied on a regular basis. Reapply the protective sealer on a schedule per the manufacturer's instructions.

#### 4.6.4 How to Add Salt to the Pool?

1. Turn on pump to circulate pool water.

**IMPORTANT** Turn the chlorine production off by pressing the arrow button A and setting CHLORINE PRODUCTION rate to 00%.

2. Test the water for salinity level using test strips, electronic meter, or by your local qualified service representative.
3. Use the Table 1 to determine the amount of salt to add. Be conservative when adding salt as it is easier to add more if needed than it is to dilute if there is too much salt.
4. Broadcast salt into pool. Do not add through skimmer, main drain, or surge tank. Brush the salt around the pool to facilitate dissolving. Circulate filter system for 24 hours to ensure even distribution.
5. After 24 hours, verify correct salt reading.
6. Turn on the system and set to desired chlorine production rate (pressing the arrow buttons **A** or **B**).

**NOTE** For a new pool or newly resurfaced pool it is recommended to wait at least 30 days (surface should be completely cured) before adding salt. Follow the pool surface manufacturers guidelines for your particular pool. For vinyl and fiberglass pools, salt can be added at start up.



**Table 1. Approximate Pounds and Kilograms of Salt Needed to Obtain 3.0 gpl (3,000 ppm)**

Salt Conc. Before Addition ppm	Pool Size US Gallons (Litres)									
	10,000 g (38,000 L)	12,000 g (45,000 L)	14,000 g (53,000 L)	16,000 g (60,000 L)	18,000 g (68,000 L)	20,000 g (76,000 L)	22,000 g (83,000 L)	24,000 g (91,000 L)	26,000 g (98,000 L)	28,000 g (106,000 L)
000	250 lbs (113 kgs)	300 lbs (136 kgs)	350 lbs (159 kgs)	400 lbs (181 kgs)	450 lbs (204 kgs)	500 lbs (227 kgs)	550 lbs (249 kgs)	600 lbs (272 kgs)	650 lbs (295 kgs)	700 lbs (318 kgs)
250	230 lbs (104 kgs)	280 lbs (127 kgs)	320 lbs (145 kgs)	370 lbs (168 kgs)	415 lbs (188 kgs)	460 lbs (209 kgs)	510 lbs (231 kgs)	550 lbs (249 kgs)	600 lbs (272 kgs)	645 lbs (293 kgs)
500	210 lbs (95 kgs)	250 lbs (113 kgs)	295 lbs (134 kgs)	340 lbs (154 kgs)	380 lbs (172 kgs)	420 lbs (191 kgs)	460 lbs (209 kgs)	505 lbs (229 kgs)	545 lbs (247 kgs)	590 lbs (268 kgs)
750	190 lbs (86 kgs)	230 lbs (104 kgs)	270 lbs (122 kgs)	300 lbs (136 kgs)	340 lbs (154 kgs)	380 lbs (172 kgs)	420 lbs (191 kgs)	460 lbs (209 kgs)	495 lbs (225 kgs)	530 lbs (240 kgs)
1000	165 lbs (75 kgs)	200 lbs (91 kgs)	230 lbs (104 kgs)	265 lbs (120 kgs)	300 lbs (136 kgs)	330 lbs (150 kgs)	360 lbs (163 kgs)	400 lbs (181 kgs)	430 lbs (195 kgs)	460 lbs (209 kgs)
1250	145 lbs (66 kgs)	175 lbs (79 kgs)	200 lbs (91 kgs)	230 lbs (104 kgs)	260 lbs (118 kgs)	290 lbs (132 kgs)	320 lbs (145 kgs)	350 lbs (159 kgs)	380 lbs (172 kgs)	410 lbs (186 kgs)
1500	125 lbs (57 kgs)	150 lbs (68 kgs)	175 lbs (79 kgs)	200 lbs (91 kgs)	225 lbs (102 kgs)	250 lbs (113 kgs)	275 lbs (125 kgs)	300 lbs (136 kgs)	325 lbs (147 kgs)	350 lbs (159 kgs)
1750	105 lbs (48 kgs)	130 lbs (59 kgs)	150 lbs (68 kgs)	170 lbs (77 kgs)	190 lbs (86 kgs)	210 lbs (95 kgs)	230 lbs (104 kgs)	250 lbs (113 kgs)	275 lbs (125 kgs)	295 lbs (134 kgs)
2000	85 lbs (39 kgs)	100 lbs (45 kgs)	120 lbs (54 kgs)	140 lbs (63 kgs)	150 lbs (68 kgs)	170 lbs (77 kgs)	190 lbs (86 kgs)	205 lbs (93 kgs)	100 lbs (45 kgs)	240 lbs (109 kgs)
2250	60 lbs (27 kgs)	70 lbs (32 kgs)	85 lbs (39 kgs)	100 lbs (45 kgs)	110 lbs (50 kgs)	120 lbs (54 kgs)	130 lbs (59 kgs)	145 lbs (66 kgs)	160 lbs (73 kgs)	168 lbs (76 kgs)
2500	40 lbs (18 kgs)	50 lbs (23 kgs)	60 lbs (27 kgs)	65 lbs (29 kgs)	70 lbs (32 kgs)	80 lbs (36 kgs)	90 lbs (41 kgs)	100 lbs (45 kgs)	105 lbs (48 kgs)	110 lbs (50 kgs)
2750	20 lbs (9 kgs)	25 lbs (11 kgs)	30 lbs (14 kgs)	30 lbs (14 kgs)	40 lbs (18 kgs)	40 lbs (18 kgs)	45 lbs (20 kgs)	50 lbs (23 kgs)	50 lbs (23 kgs)	60 lbs (27 kgs)

Salt Conc. Before Addition ppm	Pool Size US Gallons (Litres)								
	30,000 g (113,000 L)	32,000 g (121,000 L)	34,000 g (129,000 L)	36,000 g (136,000 L)	38,000 g (144,000 L)	40,000 g (151,000 L)	42,000 g (159,000 L)	44,000 g (166,000 L)	45,000 g (169,000 L)
000	750 lbs (340 kgs)	800 lbs (363 kgs)	850 lbs (386 kgs)	900 lbs (408 kgs)	950 lbs (431 kgs)	1000 lbs (454 kgs)	1052 lbs (477 kgs)	1102 lbs (500 kgs)	1127 lbs (511 kgs)
250	690 lbs (313 kgs)	736 lbs (334 kgs)	782 lbs (355 kgs)	828 lbs (376 kgs)	874 lbs (396 kgs)	920 lbs (417 kgs)	963 lbs (437 kgs)	1010 lbs (458 kgs)	1032 lbs (468 kgs)
500	630 lbs (286 kgs)	672 lbs (305 kgs)	714 lbs (324 kgs)	756 lbs (343 kgs)	796 lbs (362 kgs)	840 lbs (381 kgs)	875 lbs (397 kgs)	917 lbs (416 kgs)	939 lbs (426 kgs)
750	570 lbs (259 kgs)	608 lbs (276 kgs)	646 lbs (293 kgs)	684 lbs (310 kgs)	722 lbs (327 kgs)	760 lbs (345 kgs)	789 lbs (358 kgs)	827 lbs (375 kgs)	844 lbs (383 kgs)
1000	495 lbs (225 kgs)	528 lbs (240 kgs)	561 lbs (254 kgs)	594 lbs (269 kgs)	627 lbs (284 kgs)	660 lbs (299 kgs)	701 lbs (318 kgs)	734 lbs (333 kgs)	752 lbs (341 kgs)
1250	435 lbs (197 kgs)	464 lbs (210 kgs)	493 lbs (224 kgs)	522 lbs (237 kgs)	551 lbs (250 kgs)	580 lbs (263 kgs)	613 lbs (278 kgs)	642 lbs (291 kgs)	657 lbs (298 kgs)
1500	375 lbs (170 kgs)	400 lbs (181 kgs)	425 lbs (193 kgs)	450 lbs (204 kgs)	475 lbs (215 kgs)	500 lbs (227 kgs)	525 lbs (238 kgs)	551 lbs (250 kgs)	564 lbs (256 kgs)
1750	315 lbs (143 kgs)	336 lbs (152 kgs)	357 lbs (162 kgs)	378 lbs (171 kgs)	399 lbs (181 kgs)	420 lbs (191 kgs)	439 lbs (199 kgs)	459 lbs (208 kgs)	470 lbs (213 kgs)
2000	255 lbs (116 kgs)	272 lbs (123 kgs)	289 lbs (131 kgs)	306 lbs (139 kgs)	323 lbs (147 kgs)	340 lbs (154 kgs)	351 lbs (159 kgs)	368 lbs (167 kgs)	375 lbs (170 kgs)
2250	180 lbs (82 kgs)	192 lbs (87 kgs)	204 lbs (93 kgs)	216 lbs (98 kgs)	228 lbs (103 kgs)	240 lbs (109 kgs)	262 lbs (119 kgs)	276 lbs (125 kgs)	282 lbs (128 kgs)
2500	120 lbs (54 kgs)	128 lbs (58 kgs)	136 lbs (62 kgs)	144 lbs (65 kgs)	152 lbs (69 kgs)	160 lbs (73 kgs)	176 lbs (80 kgs)	183 lbs (83 kgs)	187 lbs (85 kgs)
2750	60 lbs (27 kgs)	64 lbs (29 kgs)	68 lbs (31 kgs)	72 lbs (33 kgs)	76 lbs (34 kgs)	80 lbs (36 kgs)	88 lbs (40 kgs)	93 lbs (42 kgs)	95 lbs (43 kgs)

**NOTE** Add salt as required to maintain 3.0 gpl concentration.

**Table 2. Approximate Pounds and Kilograms of Stabilizer Needed to Obtain 50 ppm**

Current Cyanuric Acid Level - ppm	Gallons and (Liters) of Pool/Spa Water							
	10,000 gal (38,000 L)	15,000 gal (57,000 L)	20,000 gal (76,000 L)	25,000 gal (95,000 L)	30,000 gal (113,000 L)	35,000 gal (132,000 L)	40,000 gal (151,000 L)	45,000 gal (170,000 L)
0	4.2 lbs (1.9 kg)	6.3 lbs (2.9 kg)	8.4 lbs (3.8 kg)	10.5 lbs (4.8 kg)	12.6 lbs (5.7 kg)	14.8 lbs (6.7 kg)	16.9 lbs (7.6 kg)	19.0 lbs (8.6 kg)
10	3.4 lbs (1.5 kg)	5.1 lbs (2.3 kg)	6.7 lbs (3.1 kg)	8.4 lbs (3.8 kg)	10.1 lbs (4.6 kg)	11.8 lbs (5.4 kg)	13.5 lbs (6.1 kg)	15.2 lbs (6.9 kg)
20	2.5 lbs (1.1 kg)	3.8 lbs (1.7 kg)	5.1 lbs (2.3 kg)	6.3 lbs (2.9 kg)	7.6 lbs (3.4 kg)	8.9 lbs (4.0 kg)	10.1 lbs (4.6 kg)	11.4 lbs (5.2 kg)
30	1.7 lbs (0.8 kg)	2.5 lbs (1.2 kg)	3.4 lbs (1.5 kg)	4.2 lbs (1.9 kg)	5.1 lbs (2.3 kg)	5.9 lbs (2.7 kg)	6.7 lbs (3.1 kg)	7.6 lbs (3.4 kg)
40	0.8 lbs (0.4 kg)	1.3 lbs (0.6 kg)	1.7 lbs (0.8 kg)	2.1 lbs (1.0 kg)	2.5 lbs (1.2 kg)	3.0 lbs (1.3 kg)	3.4 lbs (1.5 kg)	3.8 lbs (1.7 kg)

**NOTE** The above chart is for general reference only. The recommended stabilizer reading is between 10 - 50 ppm and will vary dependent on geographic climate. Warm, sunny climates will require a stabilizer reading at the higher end of the given range. Consult your local qualified service representative for your optimum level. Always add stabilizer according to manufacturer's instructions. For indoor pools, it is not necessary to add chlorine stabilizer to the swimming pool water.



## Section 5. Operating Instructions

**NOTE** The user interface is located inside the control/power center. To access the control panel, open the door to the control/power center. See Figure 18.

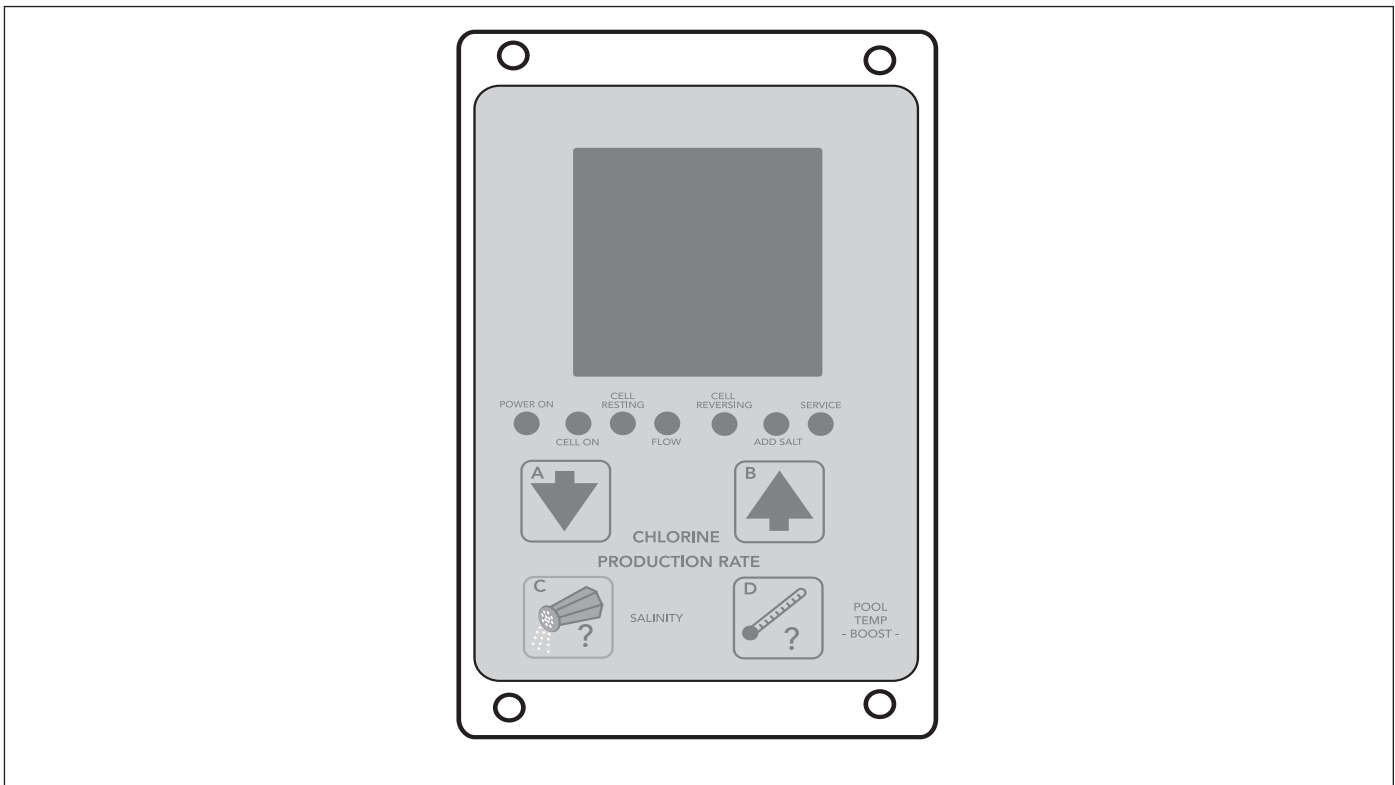


Figure 18. User Interface

### 5.1 User Interface Controls

#### Chlorine Production Rate Adjustment

Pressing the down arrow button **A** or the up arrow button **B** will change the **CHLORINE PRODUCTION RATE** in 5% increments. Generally, adjustments to production should be made in 10% increments.

In the PureLink™ system, adjustments to the chlorine production rate can be made from either the AquaLink® RS control panel or from the power center user interface.

#### Salinity

Press the **SALINITY** button **C** to check the salinity of the water in pool.

#### Boost

Press and hold the **POOL TEMP -BOOST-** button **D** for 10 seconds to enter the **Boost** mode (Note 'bo' will flash intermittently). **Boost** can be used to set chlorine production to maximum (100%) for 24 hours of operation. After 24 hours of chlorinator run time, chlorine production will return to previous setting. To clear the **Boost** mode, press and hold the **POOL TEMP -BOOST-** button **D** again for 10 seconds.

**NOTE** When a pool pump timer is used to limit chlorinator run time, the 24 hours will only count down when the chlorinator is on.

#### Temperature

Press the **POOL TEMP -BOOST-** button **D** to check the pool water temperature. Temperature measurements can be displayed in either Fahrenheit or Celsius. For more information, see *Section 8, Temperature Conversion*.





## Operating User Interface Controls when AquaLink® RS Control System is Online

### Chlorine Production Rate Adjustment with AquaLink RS Online

The user interface can be used to adjust the output production rate (%) when the saltwater chlorinator system is controlled by the AquaLink RS only when the AquaLink RS is placed into service mode. When the down arrow button **A** or the up arrow button **B** is pressed, a **JA** in the display indicates that the AquaLink RS is controlling the entire system, including the output production rates.

The AquaLink RS Control System must be set to Service Mode before you can change the chlorine production rate from the control/power center user interface.

**NOTE** The Boost button at the user interface will start Boost cycle whether the AquaLink RS is online or offline.

### AquaLink RS Control System

Press the Mode Select button to move the AquaLink RS from Auto Mode into Service Mode. The Service indicator light will turn ON.

Press the Valve Select button to choose either Pool Mode to change pool chlorine production, or Spa Mode to change spa chlorine production.

Press the Filter Pump button to turn on the pump and apply power to the sanitizing system.

### Control/Power Center User Interface

Press the down arrow button **A** or the up arrow button **B** to change the chlorine production rate in 5% increments. Generally, adjustments to production should be made in 10% increments.

### AquaLink RS Control System

Press the Mode Select button to put the AquaLink RS in the Time Out mode.

Press the Mode Select button again to place it back into Auto mode.

**NOTE** The AquaLink RS control system must be in pool mode to change the pool chlorine production rate setting; and it must be in spa mode to change the spa chlorine production rate setting. Use the valve select button to switch between the two (2) modes. The system must be cycled through SERVICE, TIME OUT, then back to AUTO to accept the Pool Setting versus the Spa Setting.

## 5.2 Reading the Display

**CELL ON** The **CELL ON** indicator shows that the cell has been turned on. Some reasons for the **CELL ON** indicator not being on during normal operation, are: **CHLORINE PRODUCTION RATE** set to 00%, **CHLORINE PRODUCTION RATE** set to less than 100% and **CELL RESTING** appears during cell rest period, **NO FLOW** condition, two (2) minutes before automatic cleaning cycle, low temperature cut off has been activated, or a service related problem such as a salinity level below 2.0 gpl or salinity level too high.

**CELL RESTING** During the normal chlorine production cycle when the unit is set for less than 100%, the cell will periodically rest; that is, the unit will not make chlorine. The **CELL RESTING** indicator shows that the cell has been turned off by the control power center.

**FLOW or NO FLOW Indication** When the control/power center determines that water is flowing past the flow/temp/salinity sensor, the **FLOW** indicator is displayed. When no flow is detected, **NO FLOW** is displayed on the LCD and the cell is turned off.

**CELL REVERSING** The automatic cleaning cycle is in progress. The cleaning cycle is factory set and cannot be adjusted. Cell Reversing does not interrupt the production of chlorine.



**SALINITY** Salinity is displayed along with the **gpl** (grams per liter) indicator, when the **SALINITY** button (**C**) is depressed. If a reading of **HH** appears, the salinity is above 4.5 to 6.5 gpl (depending on pool temperature) and is too high to measure correctly (at normal temperatures). Maintain salinity between 3.0 and 3.5 gpl. See *Section 4*.

**ADD SALT** The **ADD SALT** indicator comes on when the flow/temp/salinity sensor determines that the salinity level of the pool water is too low. Maintain Salinity between 3.0 and 3.5 gpl.

**SERVICE and Service Code** The **SERVICE** indicator will turn on whenever the control system detects a problem that requires attention. The **SERVICE** indicator is accompanied by a service code displayed on the front panel, displayed as a three (3) digit code. The service code(s) are displayed twice per minute with an audible alarm.

**NOTE** See *Section 7.2, Service Codes*. Problems can range from insufficient salinity to the DC cord not connected.

**Audible Alarm** An audible alarm (beep) sounds once per hour, and only for the first service code, when a **SERVICE** condition is detected. The alarm can be cleared by pressing and holding the **SALINITY** button (**C**) for five (5) seconds. The audible alarm can be cleared for 24 hours or until the power to the unit is turned off and back on whichever comes first. However, the audible alarm will return if a new problem is detected.

**NOTE** The audible alarm can be permanently disabled by removing the jumper from J2 on the control/power center power interface board.

**Audible Alarm Volume Control** Audible alarm operation and volume control can be adjusted. To adjust volume control, press and hold the **TEMPERATURE** button (**D**) for 15 seconds. The system will beep once when pressed, once after 10 seconds and once after 15 seconds. Release the key after the third beep. Press the **SALINITY** button (**C**) within five (5) seconds to enter the temperature change screen.

**NOTE** The boost cycle is normally activated after 10 seconds, however, if the key is held down until after the third beep at 15 seconds, the Boost mode will not be changed.

The system will display a '1' followed by 'F' or 'C'. Press the **TEMPERATURE** button (**D**) to move to the second parameter screen. The screen will display a 0, and the alarm volume will be fully reduced. The system will occasionally show a '2' to display the screen number. Press the arrow button B to increase the volume and the arrow button A to reduce the volume. The volume increments from 0 to 100 in 20 steps. After each press of the arrow buttons, the alarm will activate to demonstrate the current volume level. When the alarm volume has been adjusted to the desired setting, press the **SALINITY** button (**C**) to confirm the new alarm volume setting. The change will be stored in permanent memory. If you do not wish to keep the change, wait five (5) seconds, and the change screen will 'time out' and return to normal operation without keeping any changes to the system. Any changes made to the alarm volume will NOT be saved if this occurs.



### 5.3 Operation

#### **⚠ CAUTION**

Before attempting to operate the device, refer to *Section 4, Pool Water Preparation*. Also, do not adjust Chlorine production above 00% until it is certain that salt has been dissolved in pool. Operating without salt will damage the Electrolytic Cell.

**Use of an external pool pump timer is not required with the saltwater chlorinator power/power pack.** The chlorinator is designed to supply a sufficient amount of chlorine to sanitize pool water on a daily basis. If the system is operated for 24 hours a day at a 100% production rate, more chlorine would be generated than would be needed by most pools (0.5 - 3.0 ppm). The chlorinator control system has an internal timer which cycles the electrolytic cell on and off depending on what percent is set for the Chlorine Production Rate. For instance, at 100% the cell is on at all times while the pump is running. When the system is set at 90%, the cell will rest 10% of the time which helps prolong the cell life. In order to fine tune the chlorine production for any size pool just increase or decrease the Chlorine Production Rate from 00% to 100% until the chlorine level in the pool stabilizes between 0.5 - 3.0 ppm while the pump is running (see Section 5.4.3, “Apply Power” steps 1-5).

**NOTE** The chlorinating system only operates when the pump is running. During hot weather months you may need to increase pump run time to allow sufficient chlorine production.

**If you are connected to the AquaLink<sup>®</sup> RS control system or use a Pool Pump Timer.** The Association of Pool & Spa Professionals (APSP) recommends that all water in a residential pool pass through the filtration system at least once every 12 hours (referred to as pool water turnover). However, many factors have an effect on actual pump and filter system run times. Pool size, source of water, direct sun light, indoor/outdoor, screened/unscreened, filtration system, cold or hot weather, swimmer load, rain, organic debris, algae, etc., are all factors which contribute to either more or less pool pump and filter system run times. Because of these differences, it is extremely difficult to set an initial run time (starting point) for the pool pump and chlorinating system.

Try initially setting the pool pump run-time to 12 hours per day. It will take a few days to get just the right pool pump operating time. Adjust accordingly using the steps listed in Section 5.4.3, “Apply Power” steps 1-5. ***When the Nature<sup>2</sup> Fusion Soft is wired with a pool pump timer the results will vary greatly from one pool installation to the next, so this should be discussed with either the pool builder or the local qualified service representative.***

#### ***The key points are:***

- Check Chlorine Level on a regular basis and adjust the chlorine production rate (%) accordingly.
- Operate pool pump at least the minimum time needed for good filtration.
- The Pool Pump Timer reduces energy consumption.

**NOTE** Chlorine Production can be adjusted in 5% increments at the User Interface or through the AquaLink RS control system.

**NOTE** Exception - For Cold Weather Operation: If the saltwater chlorinator is set to run 24 hours a day through the winter, extremely cold water temperatures can contribute to a reduction in the operating life of the electrolytic cell. Sometimes it will be necessary to run the chlorinator at a very low production rate (10 - 20%) or to turn the unit off. See *Section 6.7, Winterizing*.



## 5.4 Startup

### 5.4.1 Start-Up Cartridge Procedure

1. Install the cartridge after the water has been balanced.
2. With the circulation system OFF, remove the collar from the Nature<sup>2</sup> side of the system. If this is a newly installed system, remove and store the temporary plug supplied with the unit.
3. Insert the Nature<sup>2</sup> start-up cartridge and replace the collar and hand tighten.
4. Turn on pool circulation system.
5. For newly filled pools, replace after 30 days with Nature<sup>2</sup> mineral cartridge [seven (7) days for other pools]. See Section 4.3.

### 5.4.2 Shocking

Shock (superoxidation) the pool water from an alternate source at the time of pool startup to burn off contaminants. During normal operating conditions the chlorinator is capable of generating a sufficient level of chlorine for sanitation within several hours. However, if the pool water has a high chlorine demand due to startup conditions then the chlorinator will not be able to produce enough chlorine to reach break-point chlorination. Shocking involves the manual addition of chemicals to quickly raise the level of chlorine. When the chlorine level is quickly raised to 5 - 15 ppm the pool water is said to have been shocked. Wait until the chlorine level has returned to 0.5 - 3.0 ppm before turning on the saltwater chlorinating system.

### 5.4.3 Apply Power

1. Turn on the pool pump. When the chlorinator is first turned on (cold), the unit will beep. Next it will self-calibrate the flow/temp/salinity sensor. After going through an internal test and calibration, the LCD will display the current setting for chlorine production (00% to 100%). During the calibration period "Wait" will appear. "Wait" means the unit is self calibrating and doing internal testing. This process usually takes less than six (6) minutes.
2. Check salinity level by pressing the **SALINITY** button **(C)**. It should read between 3.0 gpl and 3.5 gpl. If it does not, then press the **SALINITY** button **(C)** two (2) or three (3) more times until the salinity reading stabilizes.

**NOTE** If still less than 3.0 gpl refer to pages 30 through 31 and adjust salt concentration level. (Maintain the Recommended Salinity Level of 3.0 to 3.5 gpl). If salinity is below 2.0 gpl the system will automatically turn the electrolytic cell off until the salinity is raised above 2.0 gpl. Operating with a low salt concentration will damage the electrolytic cell. Likewise, if salinity is above the range of measurement the system will automatically turn the electrolytic cell off until the salinity is lowered to a measurable level. Operating with high salt will damage the power center. If salinity is greater than 3.5 gpl, see *Section 7, Troubleshooting*.

3. Adjust the chlorine production to 50% by pressing the arrow buttons **(A)** or **(B)**.
4. After 24 hours, use a reliable test kit to measure the pool water for free active chlorine. The ideal range to maintain is 1 - 3 ppm. If the chlorine content of the pool water is *too low, increase chlorine production by pressing the up arrow button (B)*. If the chlorine content of the water is *too high, decrease chlorine production by pressing the down arrow button (A)*. Adjust in 10% increments initially then in smaller increments (5%) as the correct chlorine level is approached.
5. Due to a varying chlorine demand of pool water, it may take a few days to determine the correct pool pump operating time and chlorine production percentage setting for your pool. Continue adjusting as necessary, allowing 24 hours between adjustments until the chlorine content of the pool water has stabilized at 1 - 3 ppm.



## 5.5 Operating in Winter

See *Section 6.7, Winterizing*.

## 5.6 Recommendations

### • DO List

- Read and keep your manual in a safe place.
- Replace the start-up cartridge within 30 days and again every six (6) months.
- Increase chlorine production rate before a large number of bathers enter the pool and return to normal afterwards.
- Increase chlorine production rate when temperature goes up.
- Increase chlorine production rate when the number of bathers goes up.
- For outdoor pools only, use stabilizer (cyanuric acid) to stabilize chlorine in pool.
- Mount power center in shade or out of the direct sunlight whenever possible.
- Decrease production rate when temperature goes down (for example, in the Fall and Winter seasons).
- Take pool water sample to a qualified service representative once per month.

### • DON'T List

- Do not get fertilizer in your pool. Fertilizers contain nitrates which cause a high chlorine demand on pool water.
- Never use dry acid to adjust pH in arid geographic areas with excessive evaporation and minimal dilution of pool water with fresh water. A build up of by products can damage the electrolytic cell.
- Do not add chemicals or salt to the pool unless the chlorinator is turned off.
- For outdoor pools only, do not let chlorine stabilizer (cyanuric acid) drop below 10 ppm.
- Do not add salt without first checking the pool salinity level. Too much salt can disable and possibly damage the chlorinator.



## Section 6. User Maintenance Instructions

The following information describes how to care for your sanitizing system.

**IMPORTANT** Always test the chlorine levels of your pool before each use.

### 6.1 Daily

1. **Filtration and Circulation.** Follow the manufacturer's directions for keeping the circulating pump in good working order and operate it at least six (6) hours a day. Consult your Nature<sup>2</sup> dealer for optimum run times. Check pool filter periodically, clean as recommended by manufacturer.

### 6.2 Weekly

1. **Chlorine Test.** Maintain ideal range by adjusting the Nature<sup>2</sup> Fusion Soft chlorine production rate using *Section 5.4, Startup*. Recommended Free Chlorine is 0.5 - 1 ppm.

Use a home test kit or ask your qualified service representative to test your water. It is recommended that chlorine test samples be taken from two (2) places, described below. Compare the two (2) samples. A higher level should be found at the pool return line. The higher level at the pool return line indicates the saltwater chlorinator system is producing chlorine.

- a. At the pool return line.
  - b. 18" (46 cm) below the surface and well away from the pool return line.
2. **pH Level Test.** Test the pH level of your pool with a test kit. If necessary, adjust according to your qualified service representative's recommendations. APSP standard of 7.4 - 7.6 is recommended.

#### CAUTION

Never use dry acid to adjust pH in arid geographic areas with excessive evaporation and minimal dilution of pool water with fresh water. A build up of by products can damage the electrolytic cell.

### 6.3 Monthly

1. **Salt Level Test.** Test pool water salt level by depressing the **Salinity** button **C** and reading the LCD located on the DuoLink<sup>®</sup> power centre user interface. Maintain the ideal range of 3.0 - 3.5 gpl for optimum performance. If additional salt is required, follow the procedures and charts described in *Section 4*. If salt level does not rise after 24 hours, see *Section 7, Troubleshooting*.
2. **Pool Water Sample.** Take water sample to local pool store for testing.
3. **Total Alkalinity Test.** Test pool water for total alkalinity with a test kit. Adjust according to your qualified service representative's recommendations. 80 - 120 ppm APSP Standard.
4. **Stabilizer (Cyanuric Acid).** Test pool water stabilizer (*cyanuric acid*) level using a test kit or by having a water sample tested by a qualified service representative. Maintain ideal range of 10 - 50 ppm. Follow your qualified service representative's recommendations. Stabilizer is not necessary for indoor pool use.
5. **Calcium Hardness.** Test pool water for calcium hardness level using test kit or by having a water sample tested by a qualified service representative. If necessary, adjust according to your qualified service representative's recommendations. APSP standard of 150 - 400 ppm is recommended.
6. **Metals Test.** It is recommended that the pool water be tested periodically for the presence of metals such as iron, and manganese. These metals should not be present in the pool water. If those metals are present, contact the local qualified service representative.



## 6.4 Every Six (6) Months (Or once every pool season whichever is shorter)

### 6.4.1 Nature<sup>2</sup> Mineral Cartridge Replacement

The Nature<sup>2</sup> cartridge for the Nature<sup>2</sup> Soft Fusion lasts six (6) months or one pool season (whichever is the shorter length of time).

1. Shut off the pool pump and filter.
2. Close valves between filter and pool to prevent pool draining.
3. Turn large collar counterclockwise to remove and lift off cap.
4. Remove old cartridge and discard in household trash. Insert the new cartridge (see Section 4.3)
5. Position cap flat on the vessel housing.

**IMPORTANT** Make sure the o-ring is secure in the groove on the vessel top, not on the underside of the cap. Turn large collar clockwise until it locks into place, do not over tighten.

6. Open any valves that were closed to isolate the Nature<sup>2</sup> Fusion.

## 6.5 Electrolytic Cell Cleaning - As Needed

Depending upon water chemistry, occasional manual cell cleaning may be necessary.

1. Switch off the filter pump and chlorinator, close necessary valves.

### **⚠ WARNING**

Always turn pump off prior to installing or removing any components from the pool's plumbing. Your pump/filter system is operated under pressure and pressure must be released before you begin to avoid system damage or personal injury. Open the air relief valve on your pool filter to release the pressure in the system.

2. Unplug the yellow connector from the vessel.
3. Unscrew the electrolytic cell retaining ring and remove the electrolytic cell.
4. Look down into the electrolytic cell to see if there is scale on the plates.

### **⚠ WARNING**

To avoid personal injury when working with pool chemicals, always wear rubber gloves and eye protection, cover exposed skin, and work in a well ventilated area. Use caution when choosing a location to open and use chemicals as they may damage any surface into which they come in contact. If any chemical gets on your skin, rinse the area immediately with water. If any chemical gets on your clothing, immediately remove the piece of clothing and rinse with water.

5. Mix cleaning solution in a suitable plastic container by adding one (1) part of hydrochloric (muriatic) acid to ten (10) parts water. Note: To avoid splash, always ADD MURIATIC ACID TO WATER rather than water to muriatic acid. Solutions stronger than 1:10 will damage the electrolytic cell and void warranty. Submerge only the plates of the electrolytic cell in the cleaning solution. See Figure 19. Allow the cleaning solution to dissolve the calcium deposits for approximately five (5) minutes.
6. Repeat the procedure if necessary. Take care to avoid splashing the electrolytic cell terminals and other equipment with the acidic cleaning solution. Wash down any spills with plenty of fresh water. To neutralize acid cleaning solution, add baking soda (foaming will occur).
7. Rinse the electrolytic cell in clean water and reinstall into the vessel. Insure the O-ring is seated properly and coated lightly with silicone lubricant. Hand tighten collar.



8. Replace the yellow plug after drying and smearing lightly with silicone grease.
9. Reset valves and switches. Turn pump and sanitizer on.
10. Confirm chlorine output and settings on the user interface.

## 6.6 Flow/Temp/Salinity Sensor Cleaning

**One (1) time per year or as needed.** It is rare but scale formations on the flow/temp/salinity sensor sometimes occur and will affect the accuracy of the salinity test.

1. Remove flow/temp/salinity sensor from the vessel.
2. Brush with a mildly abrasive green fiber household cleaning pad. Contacts should be clean and bright.
3. Thoroughly rinse the flow/temp/salinity sensor with clean tap water. Replace and resume normal operation.
4. **Turn power off and back on in order to recalibrate and reset flow/temp/salinity sensor. Reset anytime flow/temp/salinity sensor is unplugged.**

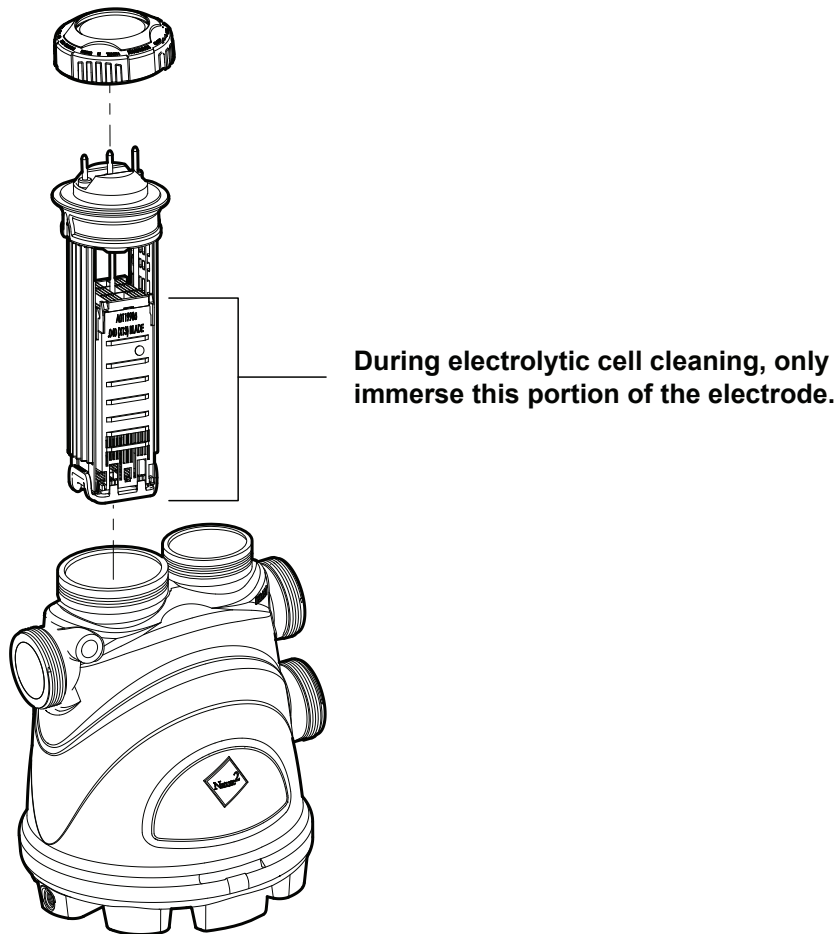


Figure 19. Electrolytic Cell Cleaning





## 6.7 Winterizing

Very little chlorine is needed in cold water. Below 51°F (11°C), chlorine production is not permitted; operating the chlorinator in cold water might result in over-chlorinated pool water. If more chlorine is needed, **activating the “Boost” mode will override this cold water feature allowing chlorine production for 24 hours of operation.** See *Section 5.1, User Interface Controls*.

If preventative measures are not taken, freezing water may cause severe damage to the cell and flow/temp/salinity sensor. Prevent freeze damage to the cell and flow/temp/salinity sensor by running pump continuously or winterize pool by draining water from pump, filter, and all intake and return lines. Remove the cell, clean and store it. Disconnect the flow/temp/salinity sensor from the power center, then remove it from the vessel. Wrap flow/temp/salinity sensor in a plastic bag or protective covering and coil flow/temp/salinity sensor and DC power cord cables around the power center for storage.

An optional Spool Piece (sold separately) is available to replace the vessel during winterizing or vessel maintenance. This will enable pool pump to circulate water with the vessel out the of line.

When a FREEZE CONTROLLER is used on pump equipment and the chlorinator is run through the winter, turn the CHLORINE PRODUCTION down to 10 - 20%. Otherwise, chlorine production will exceed the recommended level of 1.0 - 3.0 ppm.

**NOTE** A chlorine level above 3.0 ppm may cause corrosion of pool metals and possibly cause damage to associated pool equipment.



## Section 7. Troubleshooting

**NOTE** Turn off power to unit prior to attempting service or repair.

### 7.1 Problems and Corrective Action

Problem	Possible Cause	Corrective Action
Low or no chlorine.	Low stabilizer (cyanuric acid) level in pool water. Insufficient operating hours of the unit (outdoors pools only).	Add stabilizer to maintain 10 - 50 ppm.
	CHLORINE PRODUCTION percentage set too low or off at 00%.	Increase chlorine production by pressing the Chlorine Production Rate Adjustment button (arrow button B). See Section 5, Operating Instructions.
	Recent increases in weather temperature without increasing the chlorine production of your unit.	Increase chlorine production by pressing the Chlorine Production Rate Adjustment button (arrow button B). See Section 5, Operating Instructions.
	Temporary loss of chlorine due to heavy organic load - rain, leaves, fertilizer or heavy bather load. Pets using pool.	Set "Boost" mode and allow to run for 24 hours. Recheck. If still too low, Super Chlorinate with outside source. (Take pool water sample to a qualified service representative.) See Section 5, Operating Instructions.
	Low (Less than 2.5) gpl salt level in pool water.	Test salinity by pressing the Test Salinity button. See Section 4, Tables 2 and 3.
	High nitrate level.	Contact a qualified service representative.
	Metals present in pool water.	Contact a qualified service representative.
	New pool water. Not shocked properly upon startup.	Super Chlorinate Pool. See Section 5.4, Startup.
	Clogged or dirty cell.	Remove cell for inspection. Clean if necessary. See Section 6, User Maintenance Instructions.
No display on LCD ( <i>Screen is blank</i> ).	No Power to Unit.	Check power. Turn on pump. 1. Defective automatic timer or pump switch. 2. Loose connection at automatic timer or pump switch.
	Loose ribbon cable between front and back PC board.	Check that ribbon cable is fully inserted into connector.
	Incorrectly wired. Unit not wired for 240 VAC.	Check that unit is correctly wired for 240 VAC and connected to 240 VAC.
	Loose or bad connection at white connector between transformer and PC board.	Check connector at white plug to insure proper connection. If burnt connector contact a qualified service representative.



Problem	Possible Cause	Corrective Action
"Cell On" indicator does not come on.	Chlorine Production set to 00%.	Adjust CHLORINE PRODUCTION to desired Percentage.
<i>If No Flow also....</i>	Insufficient water flow. Cell is plugged with debris, pump has lost prime.	Remove obstruction and/or clean cell. See <i>Section 6.5, Electrolytic Cell Cleaning</i> . Prime pump if necessary.
<i>If No Flow also....</i>	Flow/temp/salinity sensor not plugged in.	Plug in flow/temp/salinity sensor. See <i>Section 3, Figures 11, 12, and 13</i> .
	Salt level below 2.0 gpl (2000 ppm).	Add salt as described in <i>Section 4.8</i> .
"No Flow" indicator stays on continuously.	Pump fails to provide sufficient water flow.	Check for correct operation of the pump. Ensure there is no loss of pump prime or clogged strainer baskets.
	Improperly set valves or closed valves.	Check and correct all valve alignments.
	Clogged basket or dirty filter.	Follow filter cleaning procedures.
	Obstruction in the Nature <sup>2</sup> Fusion Soft cell.	Remove cell for inspection. Follow cleaning procedures. See <i>Section 6.5, Electrolytic Cell Cleaning</i> .
	Flow/temp/salinity sensor not installed properly.	Ensure that the flow/temp/salinity sensor is installed according to <i>Section 3, Figure 10</i> . If not, contact a qualified service representative.
	Flow/temp/salinity sensor not plugged in.	Plug flow/temp/salinity sensor into connector on power center printed circuit board. Turn power to unit off and back on (Cycle Power). See wiring diagram in Figures 11, 12, and 13. See also, <i>Section 6.6, Flow/Temp/Salinity Sensor Cleaning, Step 4</i> .
	Flow/temp/salinity sensor elements covered with PVC glue, taped over, or covered with other debris.	Remove and clean flow/temp/salinity sensor and reinstall. See <i>Sections 3.11 and 6.5</i> .
	Defective flow/temp/salinity sensor.	Contact a qualified service representative.
Salt level too high.	Too much salt has been added to pool.	Backwash or partially drain pool and dilute with fresh water until salinity returns to 3.0 gpl to 3.5 gpl.
Chlorine level too high.	Electrolytic cell is manufacturing too much chlorine.	Decrease the chlorine production rate adjustment button (arrow button A). See <i>Section 5, Operating Instructions</i> . If chlorine output at the lowest setting consistently provides for excessive chlorine levels, decrease daily pump operation time as much as necessary. If chlorine output at lowest setting is still excessive the Nature <sup>2</sup> Fusion Soft system is oversized for the pool.



Problem	Possible Cause	Corrective Action
"Service" indicator on.	Low salt level in pool water.	Test salinity. Add salt as described in <i>Section 4.6</i> .
	Cell requires cleaning.	Refer to Maintenance Procedure for acid wash cleaning. See <i>Section 6.5, Step 2</i> .
	Cell not working properly after cleaning.	Contact a qualified service representative.
	DC power cord not properly connected to the cell.	Check connection. Check for dirt or corrosion around DC cord contacts at cell. Check Cell studs for same.
	Flow/temp/salinity sensor not plugged in.	Plug flow/temp/salinity sensor into connector on power center printed circuit board (Cycle Power).
	Water temperature too low.	Winterize your pool. See <i>Section 6.7, Winterizing</i> .
	All the above have been checked and indicator light is still on.	Contact a qualified service representative.
Salt level too low.	Not enough salt added on start up.	Add salt to pool, 3.0 gpl to 3.5 gpl. See <i>Section 4.6</i> .
	Heavy rainfall.	Add salt to pool, 3.0 gpl to 3.5 gpl. See <i>Section 4.6</i> .
	Leak in pool.	Repair pool.
	Dirty flow/temp/salinity sensor contacts or faulty flow sensor.	Remove and clean flow/temp/salinity sensor contacts. Check flow/temp/salinity sensor cable for damage. See <i>Section 6.6</i> . Verify salinity with Myron "L" meter calibrated for NaCl, titration test units, or other salt meters. Please be aware that salt test strips have a large variance in readings (400 - 800 ppm).
Chlorine odor.	Presence of excess chloramines (combined chlorine).	Manually shock the pool following the directions in <i>Section 5.4.2 Shocking</i> .
Cloudy water, slimy walls of pool.	It has been six (6) months since present cartridge was installed.	Brush pool, manually shock, adjust pH, replace cartridge. Run filtration system for 24 hours.
	Combined algae and bacteria growth.	Brush down the affected walls and follow the directions in <i>Section 5.4.2 Shocking</i> .
Eye and/or skin irritation.	Improper water balance.	Balance the water to recommended levels in <i>Section 4.5</i> .
Scale formation on pool equipment. NOTE: To clean the deposit (scale) on the electrolytic cell plates, see <i>Section 6.4</i> .	Incorrect pH causing metals to come out of solution.	Adjust total alkalinity to 80 - 120 ppm. Then adjust pH to within the range 7.4 - 7.6. See <i>Section 4.5</i> .
	High total hardness.	Dilute pool with fresh water. Contact a qualified service representative regarding use of a sequestering agent.



## 7.2 Service Codes

Code Number	Possible Cause	Corrective Action
120	Low current in forward direction to cell.	1. Clean cell if necessary (see Section 6.5). 2. Check DC Cord.
121	Low current in reverse direction to cell.	1. Clean cell if necessary (see Section 6.5). 2. Check DC Cord.
123	Extremely low current to cell.	1. Clean or replace cell if necessary (see Section 6.5). 2. Check DC Cord.
124	Higher than normal current to cell.	Contact a qualified service representative.
125	Cell needs to be cleaned.	Clean cell if necessary (see Section 6.5).
126	Low current in forward direction and VAC input voltage below 100/200 VAC.	Contact a qualified service representative.
127	Low current in reverse direction and VAC input voltage below 100/200 VAC.	Contact a qualified service representative.
144	Low salinity (below 2.0 gpl).	Add salt to pool to achieve 3.0 gpl (see Section 4.6).
145	High salinity (above 4.0 gpl).	Backwash filter if a DE filter is installed. Partially drain pool and dilute with fresh water until salinity returns to 3.0 to 3.5 gpl.
170	Possible front board service condition or unit not correctly wired to 120 VAC.	Contact a qualified service representative.
171	Possible backboard service condition.	Contact a qualified service representative.
172	Flow sensor service condition or flow sensor is unplugged.	Contact a qualified service representative.
173	Low VAC input voltage and on board power supply is not regulated or unit not correctly wired.	Unit wired to improper AC voltage. Contact a qualified service representative.
174	Pool temperature is too high for operation of Nature <sup>2</sup> Fusion Soft.	Flow/Salinity Sensor indicates water temperature at sensor above 108°F (42°C). Reduce water temperature.
175	Flow sensor air lock condition or very low salinity.	Verify proper flow/temp/salinity sensor installation (see Section 3, Figure 10). Check salinity with Myron "L" meter calibrated for NaCl or test strips. Add salt as necessary (see Section 4.6).



### 7.3 Level 2 Service Codes

If you encounter a Level 2 Service Code, contact a qualified service representative.

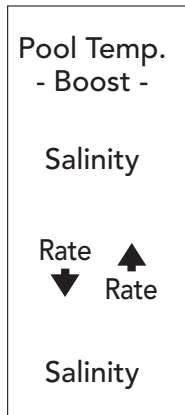
Code Number	Possible Cause	Corrective Action
180	Heated sensor element not heating. (Generates 172 code)	Contact a qualified service representative.
181	Flow sensor temperature sensor failure. (Generates 172 code - flow sensor service)	Contact a qualified service representative.
182	Salinity Sensor sees less than 0.2 gpl of salt, no salt in pool or sensor air locked. (Generates 175 code – flow sensor air lock)	Contact a qualified service representative.
183-186	Flow salinity sensor temperature probe error codes. (They will all generate 172 codes which indicate flow sensor service is required)	Contact a qualified service representative.
187	Power supply either too low or too high. (Generates 173 - Low input voltage code if Level 2 code 188 is present) (Generates 170 code if 188 is not present)	Contact a qualified service representative.
188	VAC input voltage is too low. (Generates 173 code if Level II code 187 is present)	Contact a qualified service representative.
189	Relay not conducting in the forward direction. (Generates 171 code - Backboard service)	Contact a qualified service representative.
190	Relay not conducting in the reverse direction. (Generates 171 code - Backboard service)	Contact a qualified service representative.
191	High cell current (at upper limit of A/D converter) and cell voltage below 19V. (Generates 170 code front board service)	Contact a qualified service representative.
192	High cell current and cell voltage below 19V. (Generates 171 code – Backboard service)	Contact a qualified service representative.
193	Measured significant cell current when SCRs were turned off. (Generates 170 code – front board service)	Contact a qualified service representative.
194	Cell Current is 85% lower than desired and cell voltage above 19V. (Generates 125 code - Cell dirty or needs replacement)	Contact a qualified service representative.
195	Salinity invalid due to out of range measurements caused by power board error. (Generates 170 code – front board service)	Contact a qualified service representative.

### 7.4 Additional Letter Codes

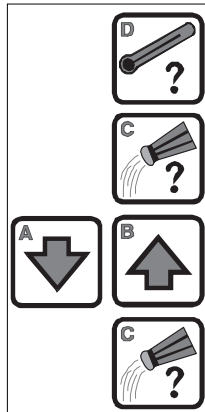
Code	Condition	Reason
EC	External Control	ORP unit or external controller has shut off chlorine production.
Lo	Low Temperature Cutoff	Temperature of Pool is < 50°F (10°C). Chlorine production stopped.
bo	Boost	In “Boost” mode unit will operate at 100% production for 24 run time hours.
HH	High-High	Input has exceeded Maximum Range.
JA	AquaLink® RS Online	AquaLink RS is controlling the Nature <sup>2</sup> Fusion Soft and desired output percentages.
Jb	Boost (AquaLink RS Interface)	AquaLink RS is controlling the Nature <sup>2</sup> Fusion Soft and “Boost” is active.

## Section 8. Temperature Conversion

To display Celsius or Fahrenheit on the digital display.



or



1. Press and hold button **Pool Temp. -Boost- or D** for 15 seconds (third beep).
2. Within five (5) seconds, momentarily press **Salinity or C** to enter the Fahrenheit/Celsius change mode.
3. To toggle between Celsius and Fahrenheit, press **Rate ↓ or Rate ↑, or A or B**.
4. Confirm by momentarily pressing **Salinity or C**. The change will be stored in permanent memory.

**NOTE:** The Boost mode will normally be activated if the Boost button **D** is depressed for 10 seconds. However, if button **D** is held down an additional five (5) seconds (for the third beep), the state of the Boost mode will not be changed.



# Section 9. Nature<sup>2</sup> Fusion Soft and PureLink™ Exploded Views and Replacement Kits

## 9.1 Nature<sup>2</sup> FUSIONM and PureLink Control/Power Pack Replacement Parts

Dwg.#	Kit #	Description	Qty.	Dwg.#	Kit #	Description	Qty.
1	R0467400	User Interface Board Screws	1 4	5	R0447500	Wiring Harness, PureLink Back PCB to DC Cord	1
2	R0467700	Bezel Cover Plate, PureLink Power Center Bezel Support Plate, PureLink Power Center Battery Cover, PureLink Power Center Screws, Bezel Cover Plate Screws, Bezel Support Plate Screw, Battery Cover	1 1 1 2 2 1	6	R0467600	Power Interface Board Assembly Screws, Power Interface	1 2
3	R0447300	Battery Door, PureLink Power Center Screw, Battery Cover	1 1	7	R0503400	Face Plate, Control Center, APURE-F Mounting Bracket, User Interface, APURE-F Screws, User Interface Mounting Bracket and Face Plate Battery Door, Control Center, APURE-F Screw, Battery Cove	1 1 4 1 1
4	R0467800	Screws, User Interface, PureLink Screws, Power Interface Assy Screws, Bezel Cover Plate Screws, Bezel Support Plate Screw, Battery Cover	4 2 2 2 1	8	R0503300	Battery Door, Control Center, APURE-F Screw, Battery Cover	1 1

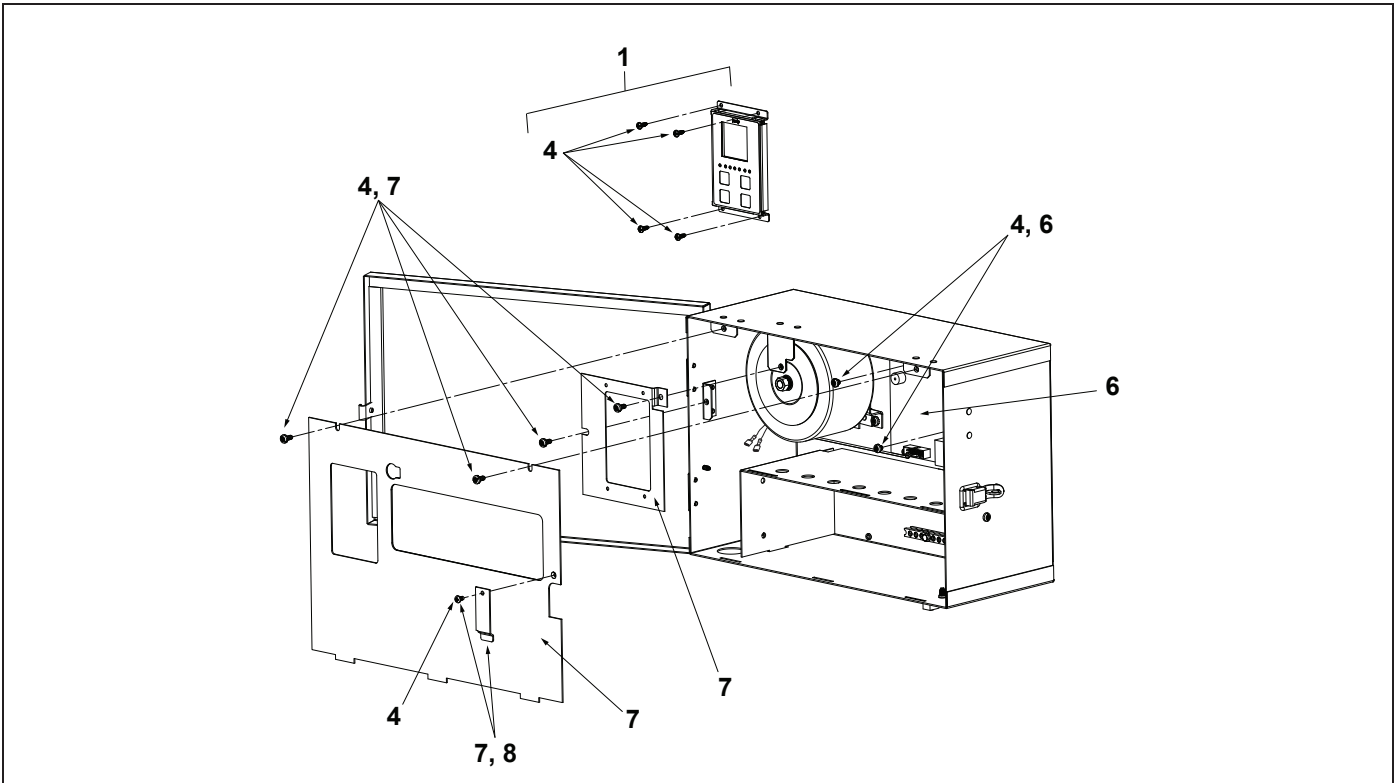


Figure 20a. Nature<sup>2</sup> Fusion Soft Power Pack



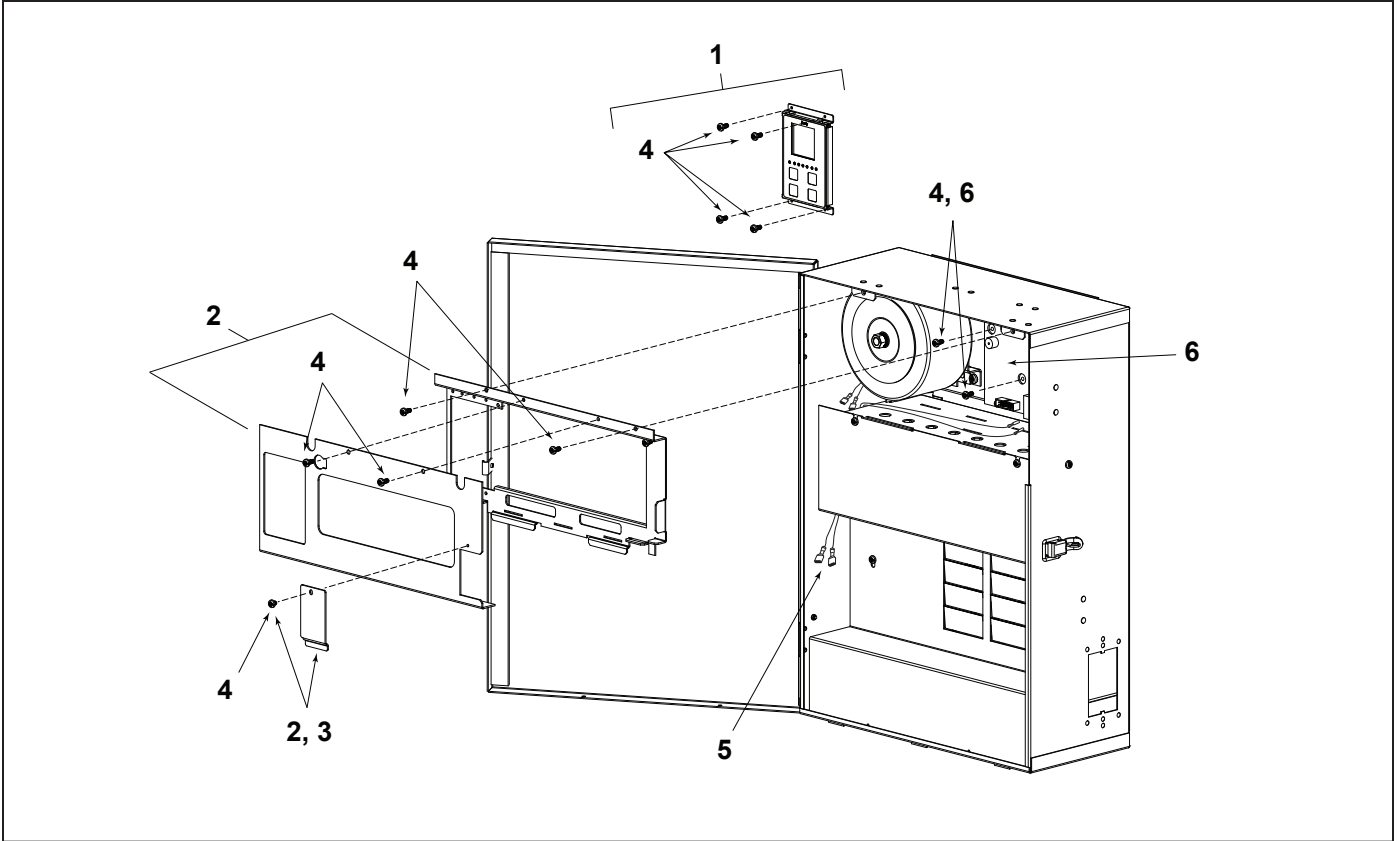


Figure 20b. AquaLink® RS PureLink™ Power Center, 6614AP

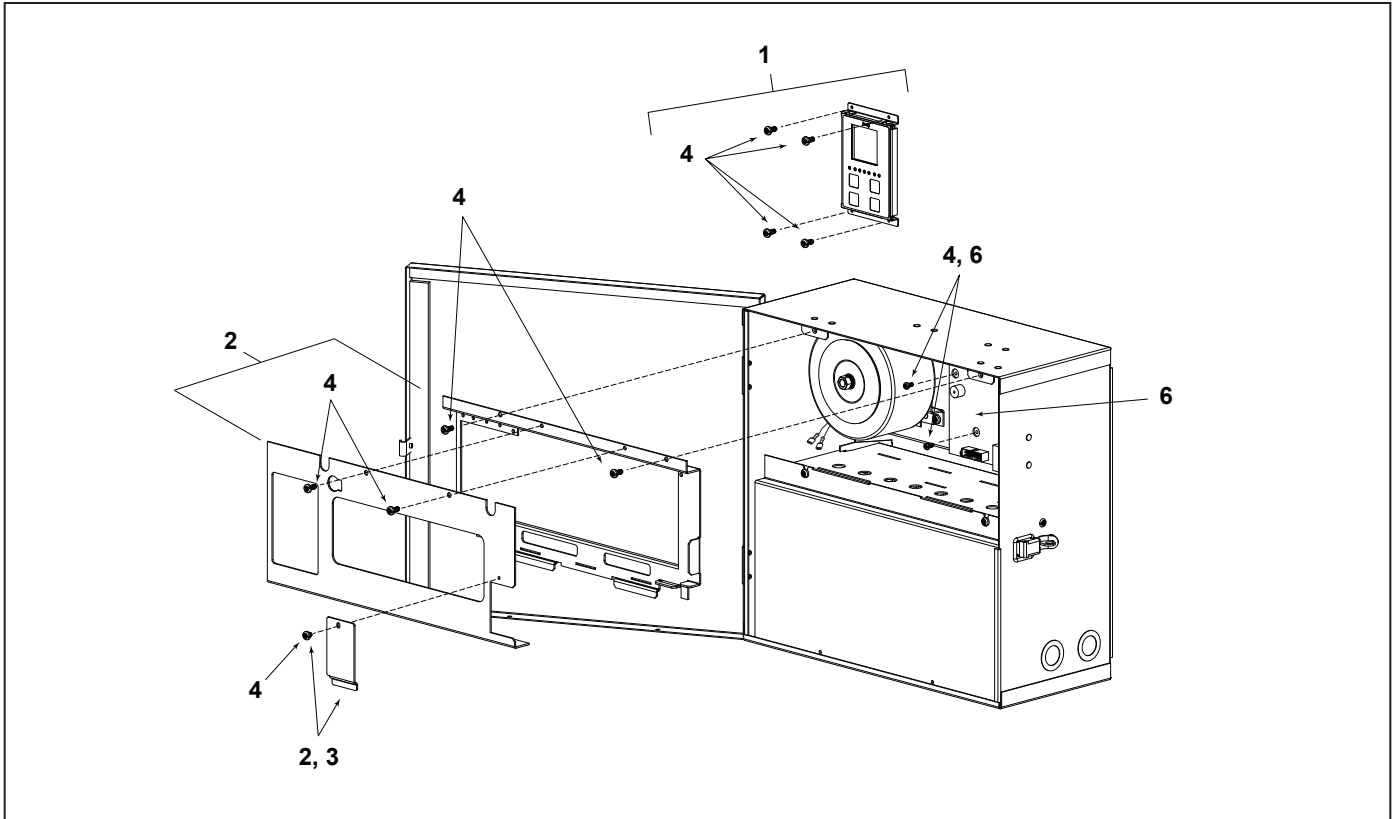


Figure 20c. AquaLink RS PureLink Power Center, 6613AP



## 9.2 Nature<sup>2</sup> Fusion Soft Replacement Parts

Dwg. #	Kit #	Description	Qty.
1	R0452100	Universal Union/Tailpiece/Plug Includes: Nut, Union Universal O-Ring, #2-231 Tailpiece, 2" X 2 1/2" Plug, Port (not shown)	3 3 2 1
2	W28000	DuoClear <sup>®</sup> 25 or Nature <sup>2</sup> Fusion 25	1pk
	W26000	DuoClear 25 or Nature <sup>2</sup> Fusion 25	4pk
	W28002	DuoClear 45 or Nature <sup>2</sup> Fusion 45	1pk
	W26002	DuoClear 45 or Nature <sup>2</sup> Fusion 45	4pk
3		Vessel w/ Flow Management System, R0502000 Nature <sup>2</sup> Fusion Soft R0502100 Nature <sup>2</sup> Fusion Soft Includes: Vessel Plug, Drain O-Ring, drain plug Anchor Bracket	1 1 1 2
4	R0502200	Anchor Bracket Kit	2
5	R0446000	Drain Plug w/ O-Ring	2
6	R0502300	Large Collar w/ O-Ring	1
7	R0502400	Small Collar w/ O-Ring	1
8	R0502500	Nature <sup>2</sup> Fusion O-Ring Kit Includes: O-Ring, Large Collar O-Ring, Small Collar O-Ring, Unions & Port Plug O-Ring, Feeder Shaft O-Ring, Drain Plug	1 1 3 2 1
9	R0502800	Nature <sup>2</sup> Fusion Soft 700 Cell Kit	1
	R0503000	Nature <sup>2</sup> Fusion Soft 1400 Cell Kit Includes: Electrolytic Cell O-Ring	1 1
10	R0402800	16' Cable, DC	1
11	R0476300	25' Cable, DC	1
12	R0452500	Port Sensor 16' w/O-Ring	1
13	R0476400	Port Sensor 25' w/O-Ring	1

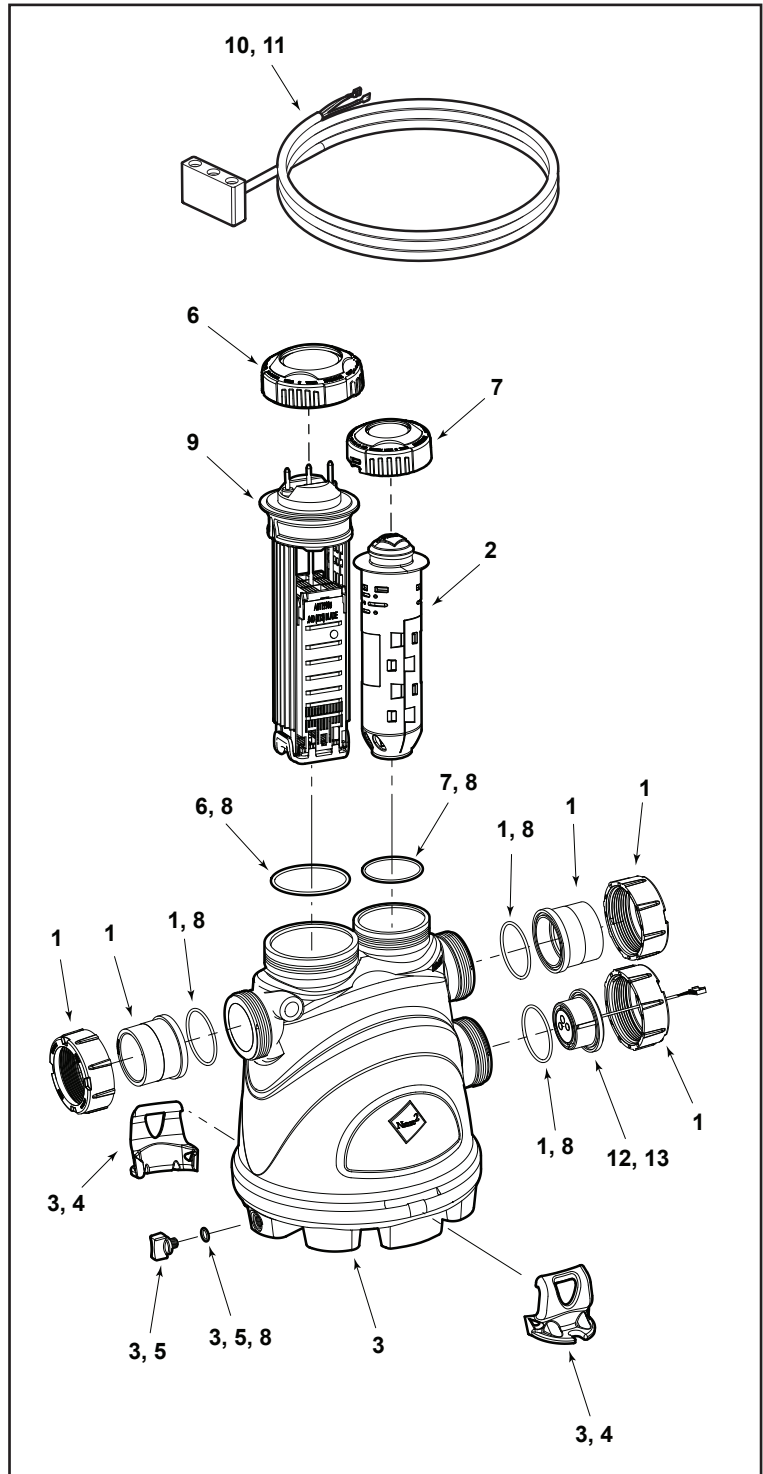


Figure 21. Nature<sup>2</sup> Fusion Soft Vessel Exploded View



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## NOTES



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