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Section 1. Important Safety Instructions

READ AND FOLLOW ALL INSTRUCTIONS

Lire la notice technique.

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

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

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. The symptoms of hyperthermia include dizziness, fainting, drowsiness, lethargy, and an increase in the internal temperature of the body. The effects of hyperthermia include: 1) unawareness of impending danger; 2) failure to perceive heat; 3) failure to recognize the need to exit spa; 4) physical inability to exit spa; 5) fetal damage in pregnant women; 6) unconsciousness resulting in a danger of drowning.

WARNING

To Reduce the Risk of Injury -

- a) 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.
- b) 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).
- 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.
- d) The use of alcohol, drugs, or medication before or during spa or hot tub use may lead to unconsciousness with the possibility of drowning.
- e) 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.
- f) 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

Risk of electric shock - Install the power center at least five (5) feet (152.4cm) from the inside wall of the pool and/or hot tub using non-metallic plumbing. Canadian installations must be at least three (3) meters from the water. Children should not use spas or hot tubs without adult supervision.

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

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

AVERTISSEMENT

Danger d'electrocution - Les installations canadiennes doivent se trouver à au moins trois (3) mètres de l'eau. Ne pas laisser les enfants utiliser une cuve de relaxation sans surveillance.

Pour éviter que les cheveux ou une partie du corps puissent être aspirés, ne pas utiliser une cuve de relaxation si les grilles de prise d'aspiration ne sont pas toutes en place.

Les personnes qui prennent des médicaments ou ont des problèmes de santé devraient consulter un médecin avant d'utiliser une cuve de relaxation.

⚠ 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 5 feet (1.5 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.

⚠ AVERTISSEMENT

Les personnes atteintes de maladies infectieuses ne devraient pas utiliser une cuve de relaxation.
 Pour éviter des blessures, user de prudence en entrant dans une cuve de relaxation et en sortant.
 Pour éviter l'évanouissement et la noyade éventuelle, ne prendre ni drogue ni alcool avant d'utiliser une cuve de relaxation ni quand on s'y trouve.
 Les femmes enceintes, que leur grossesse soit confirmée ou non, devraient consulter un médecin avant d'utiliser une cuve de relaxation.
 Il peut être dangereux pour la santé de se plonger dans de l'eau à plus de 38°C/100°F.
 Avant d'utiliser une cuve de relaxation mesurer la température de l'eau à l'aide d'un thermomètre précis.
 Ne pas utiliser une cuve de relaxation immédiatement après un exercice fatigant.
 L'utilisation prolongée d'une cuve de relaxation peut être dangereuse pour la santé.
 Ne pas placer d'appareil électrique (luminaire, téléphone, radio, téléviseur, etc) à moins de 1.5m de cette cuve de relaxation.
 La consommation d'alcool ou de drogue augmente considérablement les risques d'hyperthermie mortelle dans une cuve de relaxation.
 Il peut être dangereux pour la santé de se plonger dans de l'eau à plus de 38°C/100°F.

⚠ WARNING

To avoid injury ensure that you use this control system to control only packaged pool/spa heaters which have built-in operating and high limit controls to limit water temperature for pool/spa applications. This device should not be relied upon as a safety limit control.

⚠ CAUTION

A terminal bar marked "GROUND" is provided within the power center. To reduce the risk of electrical shock, connect this terminal bar to the grounding terminal of your electric service or supply panel with a continuous copper conductor having green insulation and one that is equivalent in size to the circuit conductors supplying this equipment, but no smaller than no. 12 AWG (3.3mm). In addition, a second wire connector should be bonded with a no. 8 AWG (4.115mm) copper wire to any metal ladders, water pipes, or other metal within five (5) feet (1.52m) of the tub.

⚠ CAUTION

A ground-fault circuit-interrupter must be provided if this device is used to control underwater lighting fixtures. The conductors on the load side of the ground-fault circuit-interrupter shall not occupy conduit, boxes, or enclosures containing other conductors unless the additional conductors are also protected by a ground-fault circuit-interrupter. Refer to local codes for complete details.



Attention installer: Install to provide drainage of compartment for electrical components.

SAVE THESE INSTRUCTIONS

Section 2. Control Panel Overview

2.1 Indoor Control Panel

The indoor control panel serves as a means of turning equipment on and off, entering programs to run equipment automatically at selected times, and displaying what is going on in the rest of the system. Programs (and other information entered through the controller) are stored in a memory chip on the power center board, even during a power interruption (however long).

2.2 Controller

The power center supplies the controller 10 VDC via the two (2) outside wires (red and green) of the four (4) conductor cables. If the voltage drops below 8 VDC, the display will flicker on and off. The two (2) inner wires (yellow and black) provide the two-way communication link between the controller and the power center. They communicate via serial communication, using signals like the standard "RS-485".

If either of the communication wires (inner pair) is broken or misconnected, but the power supply wires (the outer pair) are connected properly, the controller will stop responding. It may show a steady screen of information, and stop responding to its buttons. If power is then interrupted, the controller will lock up. The way it locks up will depend on the type of controller.

1. Locked-up All Button. All LEDs will be on and the text will resemble the following: "6700 REV C".
2. Locked-up OneTouch. The screen will be covered with dots, with a line of text that resembles the following: "Firmware Rev XXX".

2.3 Reset Switch

1. All Button Controller. Pressing the reset switch, located on the left side, will momentarily display the software part numbers and revision letters for both the controller's micro controller chip and the power center's firmware chip. The reset switch also resets the micro controller, but does not remove any programming, AUX labels, etc.
2. OneTouch Controller. The reset switch can be used to show the revision code for the firmware for both the controller's micro controller chip and the power center's firmware chip.



Figure 1. All Button Controller (Front View)

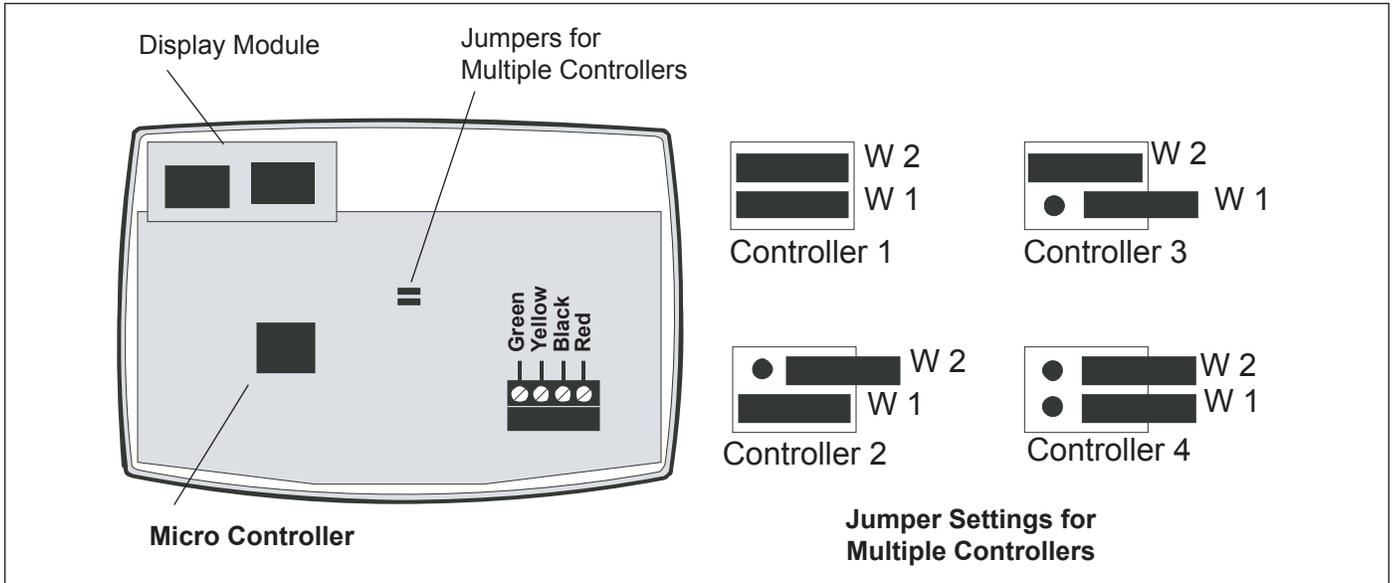
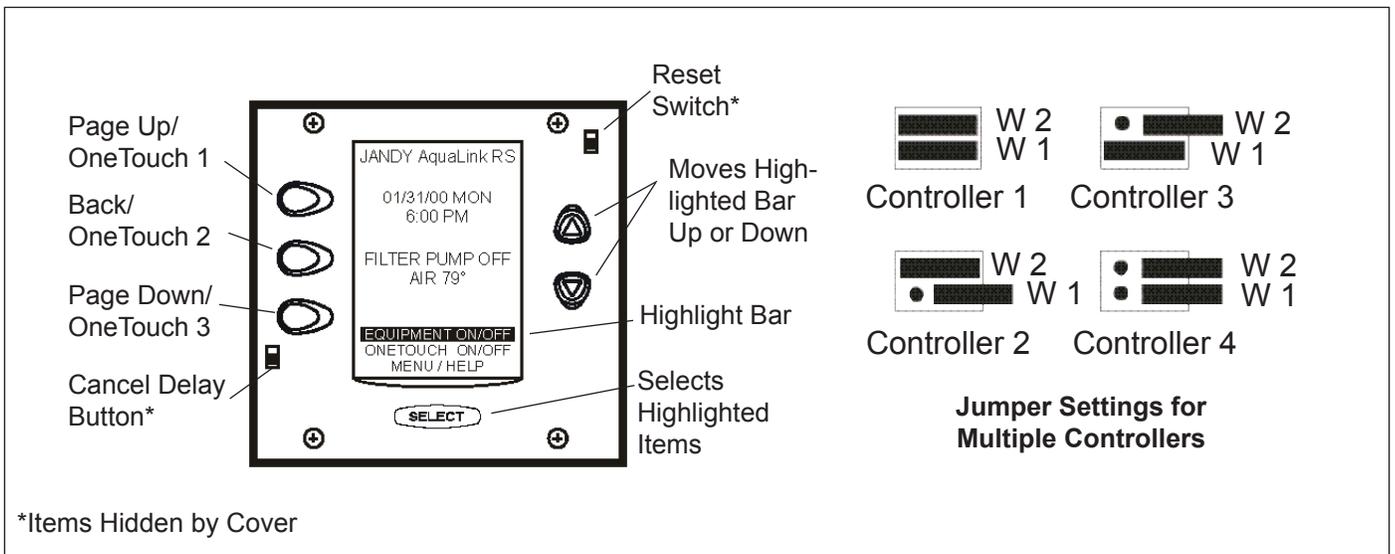


Figure 2. All Button Controller (Back View)



Figure 3. OneTouch Controller (Front View)



*Items Hidden by Cover

Figure 4. OneTouch Controller (Face Plate Removed)

Section 3. Controller

3.1 Diagnostics

The AquaLink system has an internal self-checking process, which can display its current status on the indoor control panel. Use the following steps to get to this "diagnostics" information:

1. All Button: Use the buttons along the lower left side of the controller.
 - a. Press **MENU**, **BACK**, and **BACK** again until **SYSTEM SETUP** displays on the screen.
 - b. Press **ENTER** (*), **BACK**, and **BACK** again until **DIAGNOSTICS** displays on the screen.
 - c. Press **ENTER**, and read the information that is presented in order.

NOTE To step through the information faster, press an arrow key (for example, Up). If you make a mistake, select **CANCEL** before selecting **ENTER** again. When done, the controller will return automatically to its normal operating cycle.

2. OneTouch: From the main OneTouch screen, use the **Up** or **Down** arrow button.
 - a. Highlight **MENU** (press **Select**).
 - b. Highlight **HELP** (press **Select**), highlight **DIAGNOSTICS** (press **Select**).
 - c. Press **BACK** when done.

Information displayed includes identification of the exact model number (shown as a four (4) digit firmware number) and firmware revision letter, and the status of the battery, temperature sensors, and other devices that are currently working on-line (communicating with the power center). If an LX or LXi heater is on-line, information about its error condition (if any) will also be shown here.

Possible Online Devices	As Shown in Diagnostics While Online	Possible Unit Numbers	Unit Order* Important?	Earliest PPD Revision Usable
All Button	CONTROL PANEL	1,2,3,4	No*	C
AquaLink PC	CONTROL PANEL 4	4	Yes**	C
OneTouch	ONETOUCH	1,2,3,4	No	I
Wireless OneTouch***	ONETOUCH	1,2,3,4	No	I
Serial Adapter	SERIAL ADAPTR	1,2,	No	I
PHASTLink Serial Adapter	SERIAL ADAPTR	1,2	No	I
SpaLink® RS	SPALINK	1,2,3	No	G
Dual Spa Side Switch	SPA SW BOARD	----	----	C
Tele-Link®	TELELINK 1	1	----	C
Auxiliary Power Center	REMOTE PWRCNTR	1,2,3	Yes	
LX Heater	LX HTR	1,2	Yes	H
AquaPure® Chlorinator	AquaPure	1	----	I
AquaPalm™	AQUAPALM	1	----	MMM
RS InterLink		----	----	N
LXi Heater	LXi HTR	1,2	Yes	N

Table 1. Diagnostics Table

* Unit order. Yes means that the unit number must be set correctly or the device will not work properly. The unit number is set by slide-on jumpers, a DIP switch, or a wire, depending on the type of device.

**If an AquaLink PC is online, there must NOT be an All Button or OneTouch jumpered, as in number 4.

***Wireless OneTouch is shown as any other OneTouch. Its jumpers must not match the jumpers in any other OneTouch.

3.2 Controller Troubleshooting

3.2.1 Display Is Not Illuminated

Check the voltage between the red and green wires at the red terminal bar (terminals 1 and 4). If the voltage is between 8 and 10 VDC, check the polarity. The red wire is positive (+) and the green wire is negative (-). If the voltage and polarity are correct, replace the control panel. If the voltage is less than 8 VDC, go to the power center.

1. At the power center, check the voltage between the red and green wires at the red terminal bar (terminals 1 and 4). See Figure 5. If the voltage is between 8 and 10 VDC and the polarity is correct, but there is less than 7 VDC at the indoor control, check the wires for the following:
 - a. Broken or shorted red or green wires.
 - b. Wire size. The minimum gauge for one control no more than 300 feet away from the power center is 22 AWG. To ensure a lower drop in current, use larger wire (16 to 20 AWG)
2. If the voltage is less than 7 VDC, check the following:
 - a. Transformer secondary wires (two yellows). See Figure 6. If the voltage is less than 22 VAC, check the incoming (primary power) to the system.
 - b. If the power to the transformer primary is less than 105 VAC, contact the power supply company.
 - c. If the voltage to the transformer primary is above 105 VAC, but the transformer secondary is less than 22 VAC, replace the transformer.
 - d. If the secondary voltage is 24 to 28 VAC, turn off the power.
 - e. Remove the fuse from its holder and do a continuity test. If there is no continuity, unplug all the Jandy Valve Actuators (JVAs), replace the fuse (3.15 amp), and turn on the power. If the fuse blows with all JVAs unplugged, the circuit board is damaged and needs to be replaced. If the fuse does not blow, plug a JVA cord into the Intake JVA Socket. Test the JVA by switching to **SPA**. If the fuse holds, remove the tested JVA and plug the next JVA into the Intake JVA Socket. Continue until all JVAs have been tested or the fuse blows.

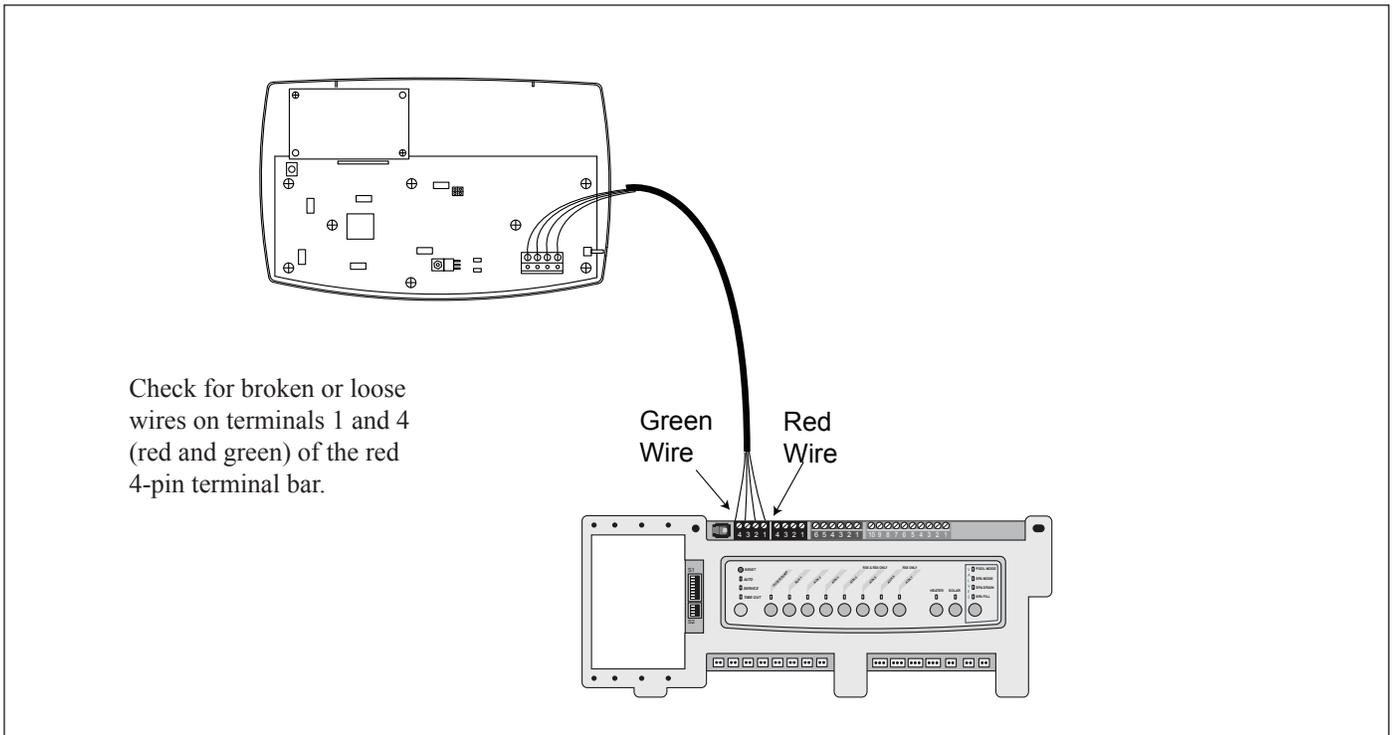


Figure 5. Checking Voltage at Red Terminal Bar

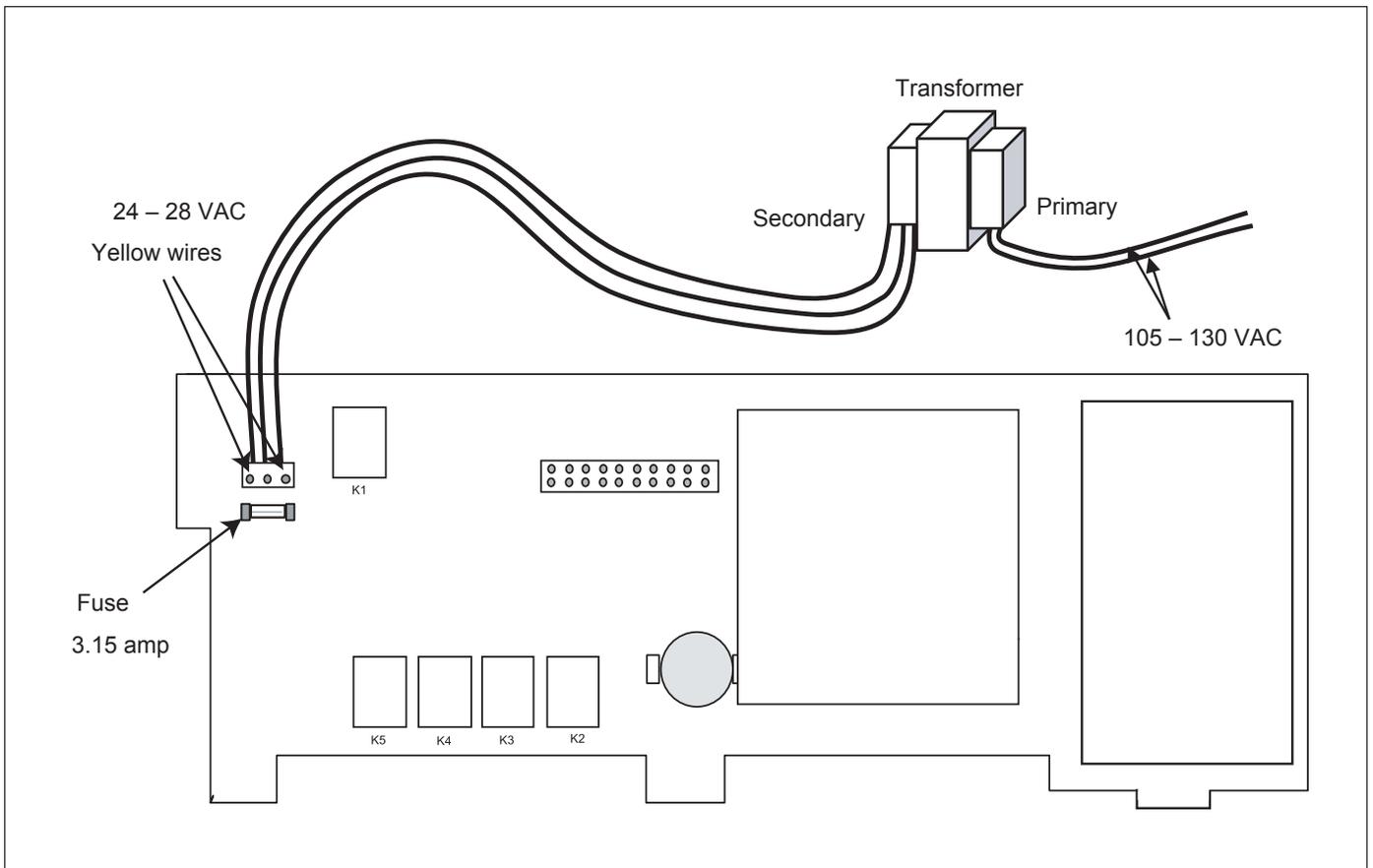


Figure 6. Transformer Primary and Secondary Voltages

3.2.2 Control Not Communicating with Power Center PCB

The following conditions indicate that the control is not communicating with the power center PCB:

1. All Button Control: All the circuit LEDs are illuminated and the display is locked on a part number and revision letter.
2. OneTouch Control: The screen is covered with dots and displays a firmware version number.

Communication problems can be caused by the following:

1. Broken communication wire(s). These wires are connected to the red terminal bar at terminals two (2) and three (3) (yellow and black). See Figure 7.
2. The microprocessor was hit by a power surge. Turn off all power to the system. (If the PCB is prior to Revision N, disconnect the nine (9) volt battery.) Wait two (2) minutes and then turn the power on. If this frees up the system, you will need to reset the time and date, except with a Revision N board. Programming will not be lost. It is advisable to install a Surge Protection Kit.

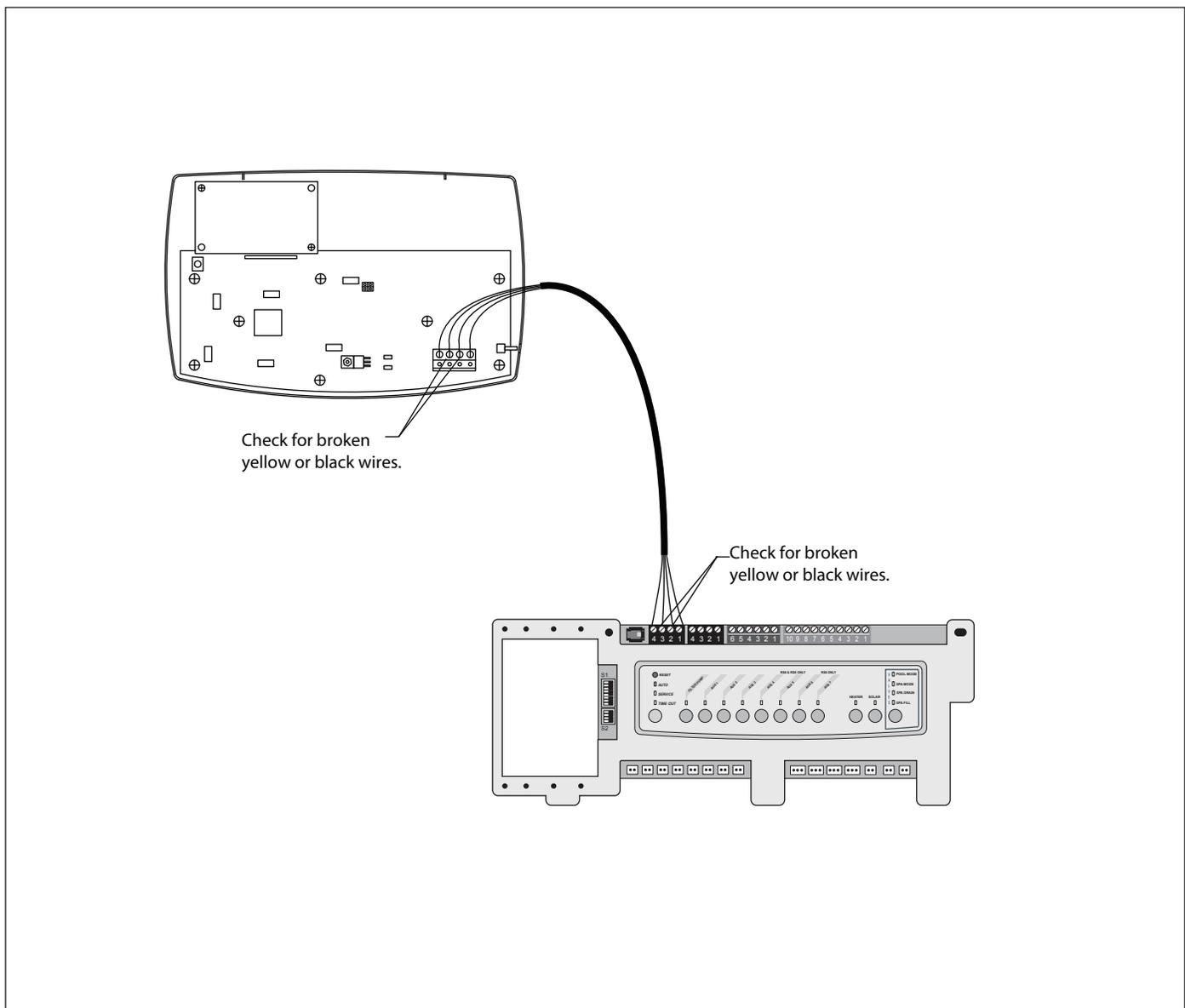


Figure 7. Checking Communication Problems between Control and Power Center PCB

3.3 Heater Operation

The pool and spa heater LED and the solar LED are two-color LEDs. Green indicates the heater is enabled but not on. Red indicates the signal to the heater relay is being sent. A heater or solar LED will remain green for the following reasons:

1. Thermostat setting has been reached.
2. Thermostat setting is below the water temperature.
3. Water temperature sensor has failed.
4. Other body of water is circulating (i.e., pool heater is enabled but spa is circulating).

To eliminate the control system as the cause of the heating problem, insert both wires to the heater into the same terminal of the green terminal bar, as shown in Figure 8. If the heater does not operate, the problem is in the wires or the heater, not the control system. Reinsert wires into the correct terminals after the test.

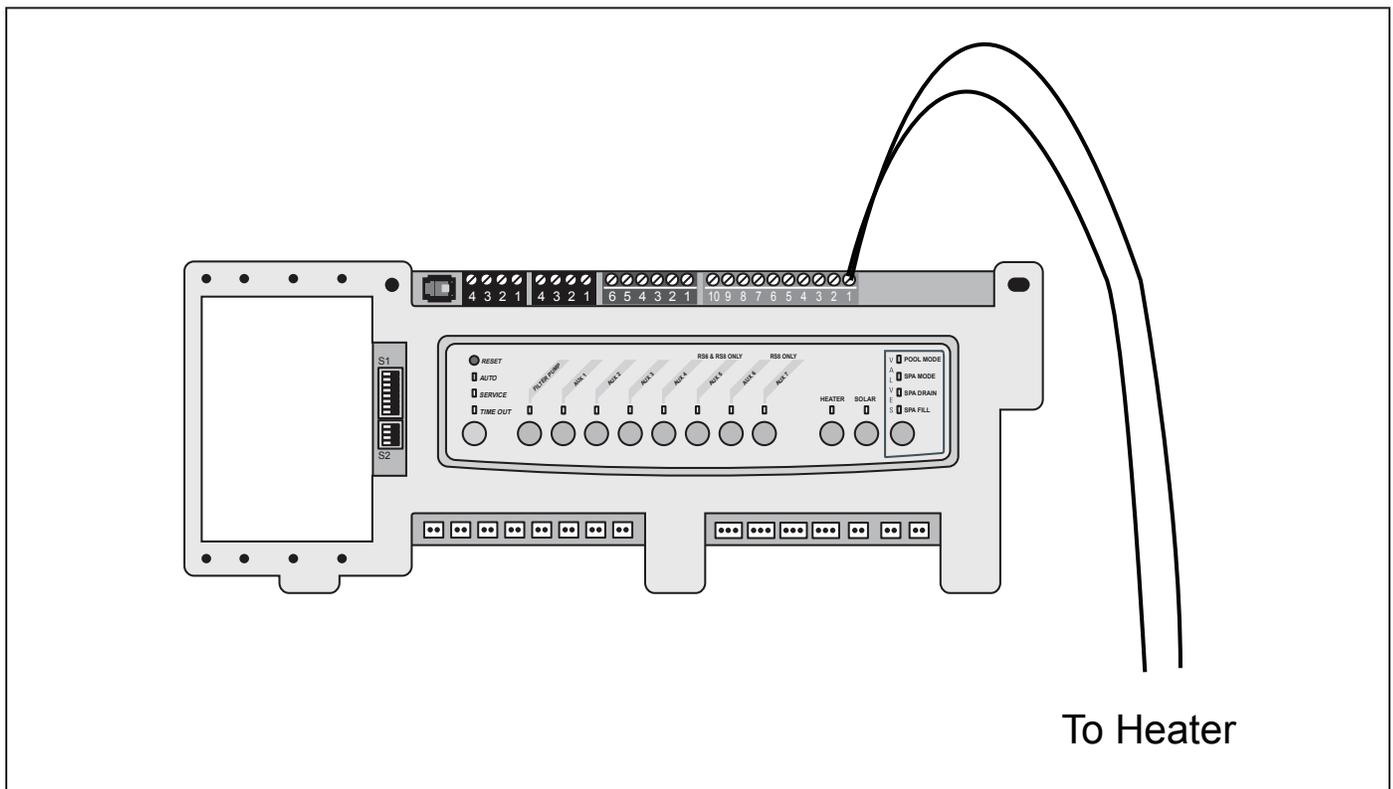


Figure 8. Connecting Both Heater Wires to the Same Terminal for Testing

Section 4. Power Center

4.1 Overview

The power center PCB is the true brain of the system. The micro-controller on the PCB is constantly sending signals through the communication wires to the control panel and polling the system to determine which circuits should be on and which should be off.

4.1.1 Driver Chips

The driver chips can be thought of as a series of small relays. When one of the driver chips receives a signal, it closes a contact which passes 24 to 32 VDC to the appropriate relay coil socket, in this case AUX 1. Each relay driver chip activates a specific set of relay coil sockets (see the chart below). If a driver chip fails, it is usually caused by either shorted relay coil wires, a shorted relay coil, or a relay not designed for the 24 VDC coil voltage (i.e., 24 VAC rather than 24 VDC). The relay coil provides resistance (approximately 300 Ohms); if there is no resistance, the driver chip circuit will be damaged.

4.1.2 Reset Button

Pressing the reset button, located in the upper left hand corner of the power center bezel, resets the power center micro-controller. This also changes the time and date to the default settings for PCBs prior to Rev N. Pressing this button will not remove any programming, AUX labels, etc.

4.1.3 EEPROM

All programming, labeling, temperature settings, etc., are stored within an EEPROM (Electrically Erasable Programmable Read Only Memory) chip. This chip is located on the PCB and will retain all settings indefinitely, even if power is lost for an extended period. If the Power Center PCB is prior to Rev N, a 9-volt battery will keep the clock running during power outages.

4.1.4 Battery

If the power is off for more than 34 hours, the battery will drain below 6.3 volts. This is insufficient to keep the clock running, therefore, the date and time will be lost. If the PCB is Rev N or newer, a three (3) volt lithium battery will keep the clock running during a power outage. If the line power is off for more than three (3) years, this battery may drain to the point where it will no longer keep the clock running. Even if the battery is dead, the user inputs (Programs, Labels, Temperature Settings, etc.) will never be lost.

4.2 Power Center Troubleshooting

4.2.1 Loss of Power

Check the power center transformer for the proper voltage.

1. Disconnect the transformer from the power center PCB. Check the voltage on the secondary transformer (the two (2) outside yellow wires). The two (2) outside wires provide the 24 to 28 VAC to the PCB.
2. If there is less than 22 VAC at the secondary wires, check the voltage at the primary (black and white) wires for 105 to 130 VAC. If there is no voltage on the primary, check the supply source (the circuit breaker).
3. If there is 105 to 130 VAC on the primary and no voltage on the secondary, replace the transformer. Note: the transformer and/or its fuse can be damaged by a short circuit. Water in the JVA can cause a short. A cut or spliced JVA cord can cause a short. A damaged chip on the PCB (usually a driver chip) can cause a short.

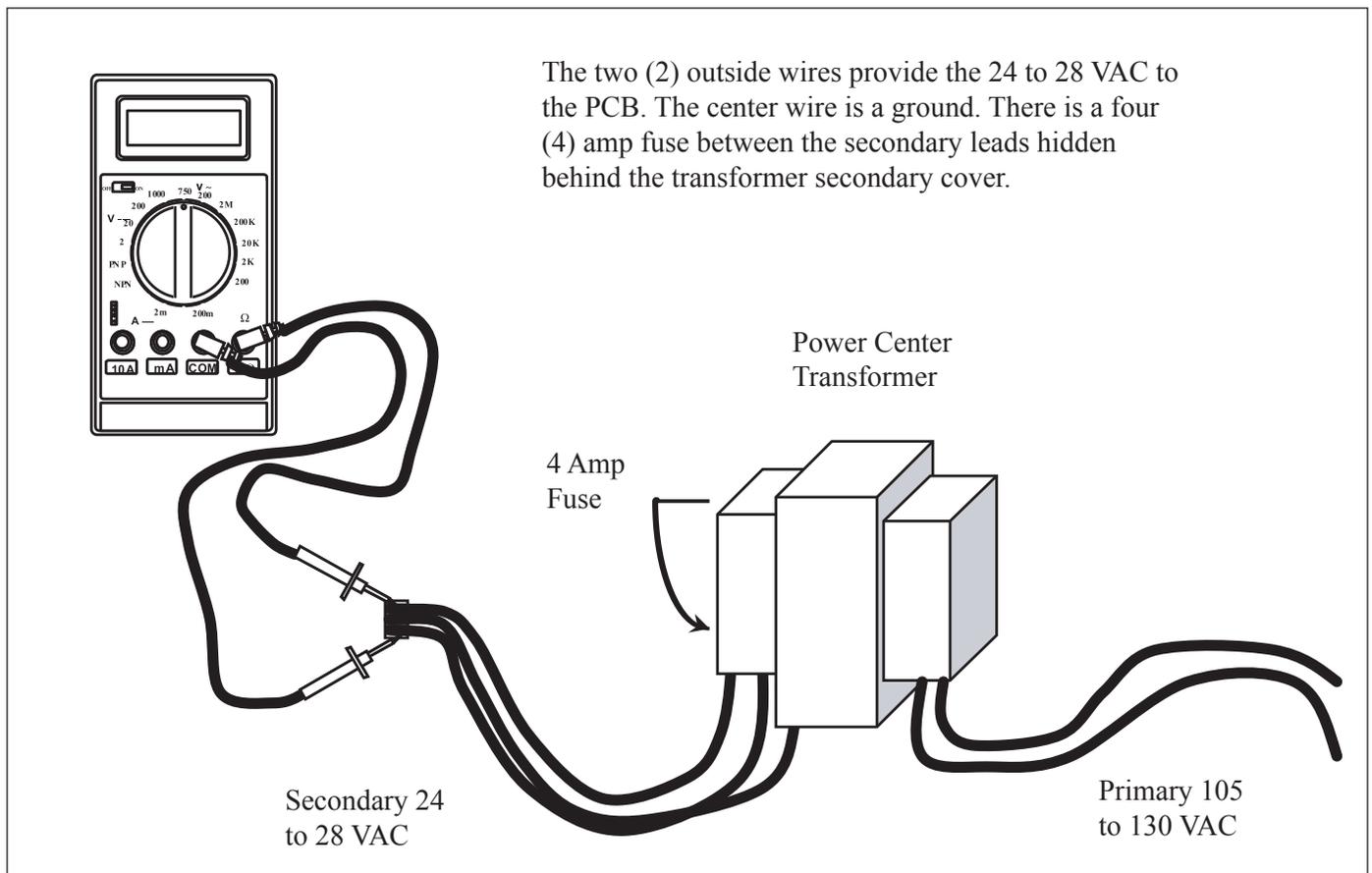


Figure 9. Transformer Voltage Test

4.3 Main Power Center PCB

4.3.1 PCB Circuit Layout

1. JVA Relays (K2 - K5)
2. Low Voltage Heater Relay
3. 3.15 amp fuse. Fuse will blow to protect the transformer when there is a short circuit in the JVA(s) or the circuit board driver chip is damaged.
4. CPU Board
5. U2 Communication Chip. This chip will be damaged if a lightning strike hits the four (4) conductor wires. It will turn brown when damaged. This chip is mounted on the PCB board and is located underneath the top edge of the CPU board.
6. Sprinkler Module Connector
7. Battery (3 Volt Lithium)
8. Spare Auxiliary. Operates with pool/spa combo units only. With firmware prior to Rev. I this socket is on when the filter pump is on and the system is in pool mode. It turns off when the spa is activated. With Rev. I or newer, turning on dip switch 6 will reverse the operation of this socket (i.e. on in spa mode and off in pool mode).

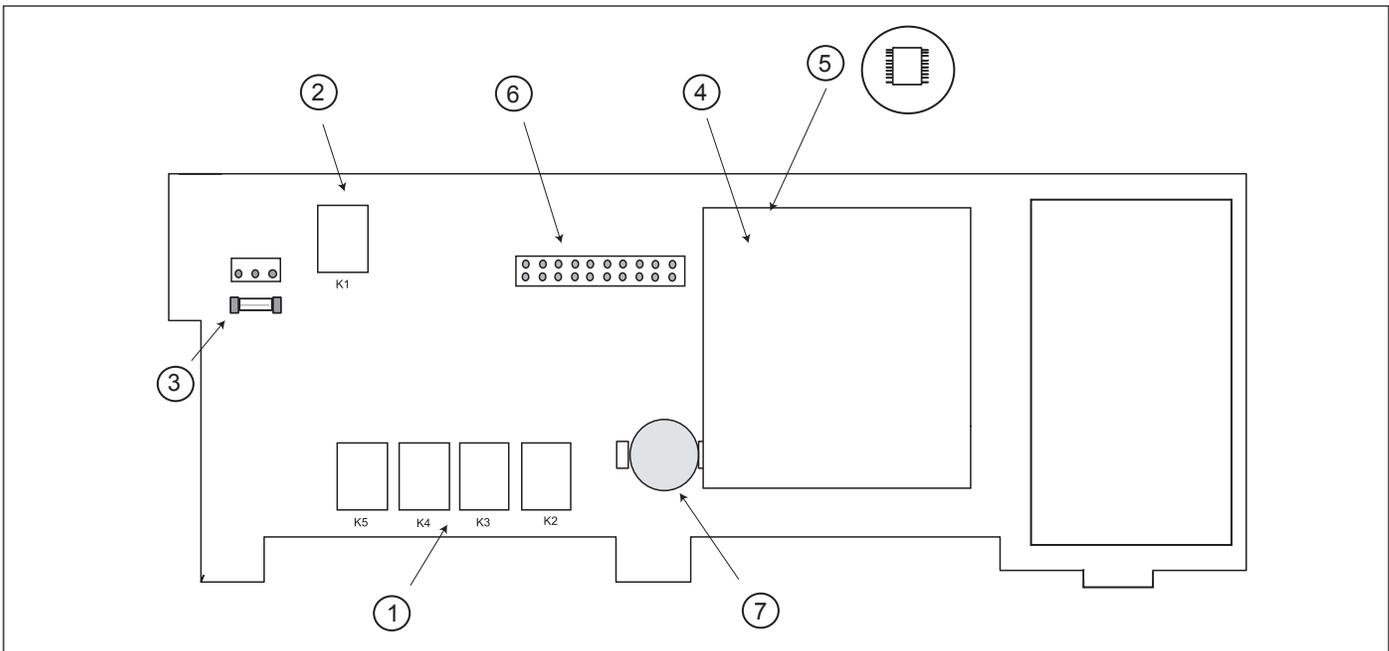


Figure 10. Main Power Center PCB, Back View

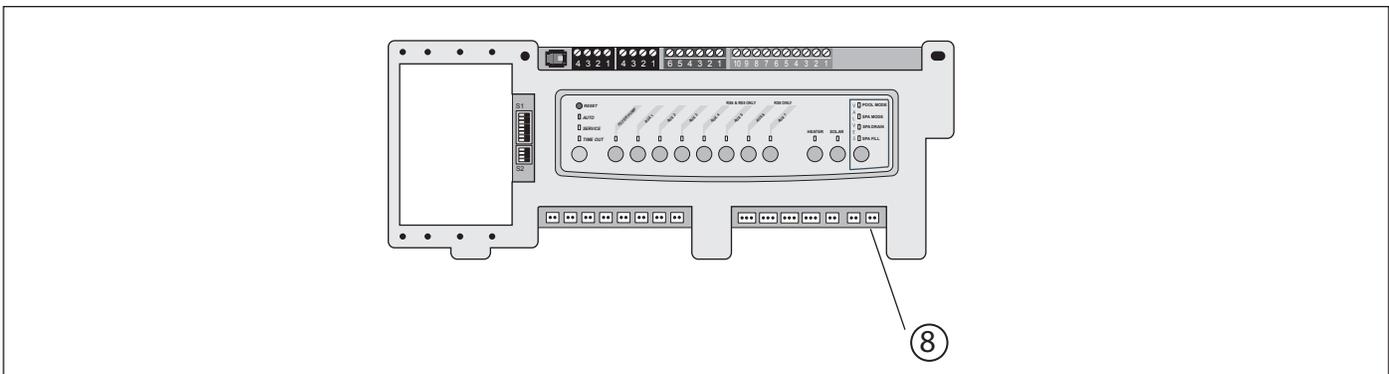


Figure 11. Main Power Center PCB, Front View

4.3.2 PCB Voltages

1. From Power Center to Controller, between terminals one (1) and four (4) of the two (2) red terminal blocks = 8 to 10 VDC.
2. To JVA 2444 = 24 to 28 VAC*.
3. To Relay Coils = 24 to 32 VDC*.
4. Transformer Primary = 105 to 130 VAC.
5. Transformer Secondary = 24 to 28 VAC.

* Never measure voltage at the socket.

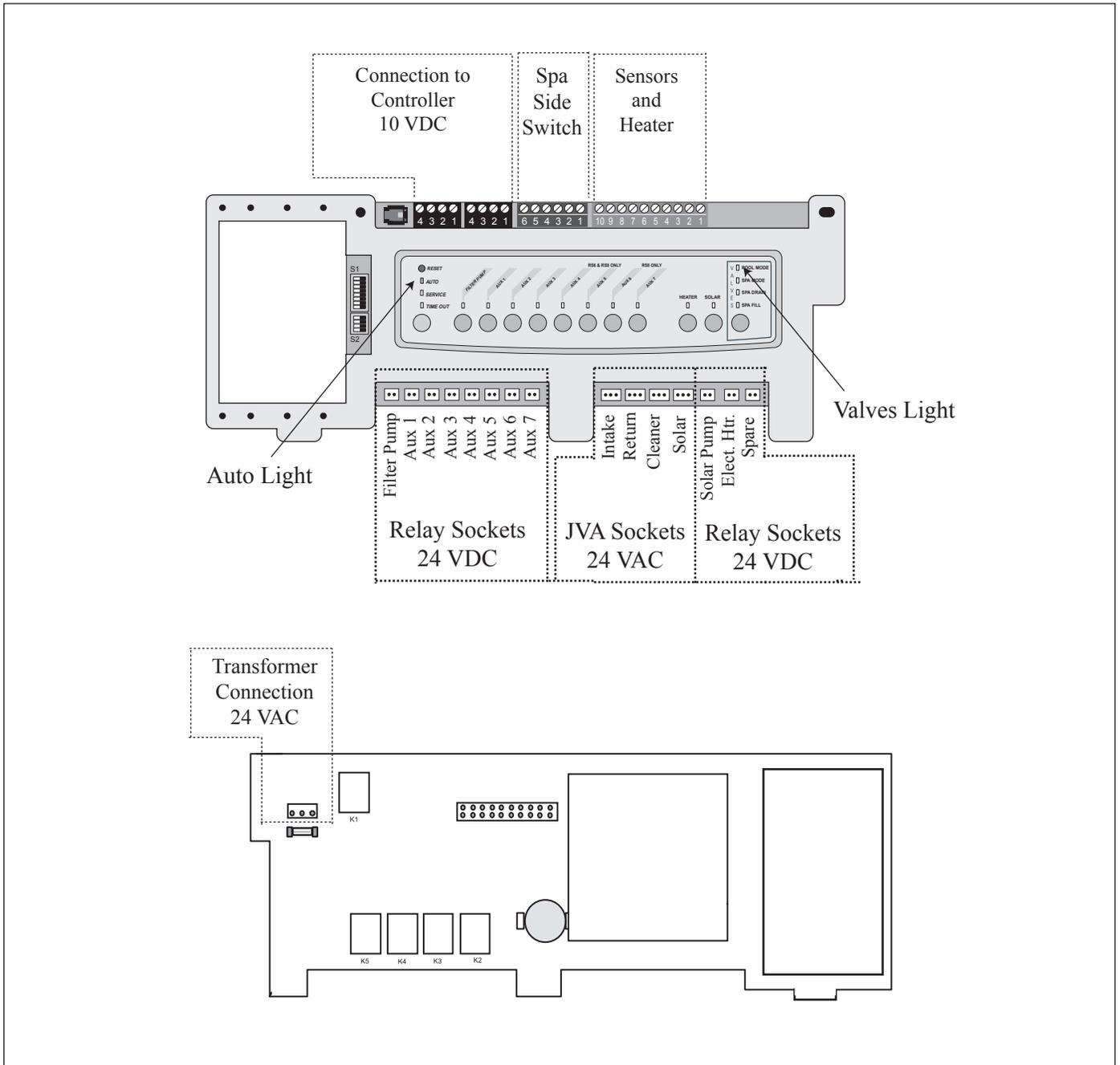


Figure 12. PCB Voltages

Section 5. Auxiliary Power Center

5.1 Overview

An auxiliary power center provides control for systems that need to run more relays (and/or JVAs) than can be handled by the main power center. The main one is still the central "brain" of the system; it sends control signals to the auxiliary power center PCB through the 4-wire bus (red connector). Those control signals tell the auxiliary power center which of its relays to turn on, and it provides the power for them. There are no temperature sensors or DIP switches in the auxiliary power center, and it has no battery (as it depends on the time keeping that's done by the main power center).

5.1.1 Jumpers

Jumpers "W1" and "W2": these are slide-on jumpers on the back side of the auxiliary power center board. They identify the board and must be set correctly, or the board will not respond properly to commands from the main power center PCB. (See below for jumper settings.)

5.1.2 Driver Chip

A driver chip (U6) drives the relays, just like the similar chips on the main power center. It is in a socket, to simplify replacement in case of damage.

5.1.3 Switch

The left-most (bottom) switch on the auxiliary power center bezel works just like the one on the main power center, changing from AUTO to SERVICE to TIME OUT (3 hour) and back to AUTO.

5.1.4 JVA Sockets

The (4) JVA sockets are driven together with the first (4) auxiliary relays here (they are not independent). Dimming: use the second four (4) auxiliary sockets (B5 – B8) for light dimming relays, rather than the first four. (See section on Light Dimming, later in this manual.)

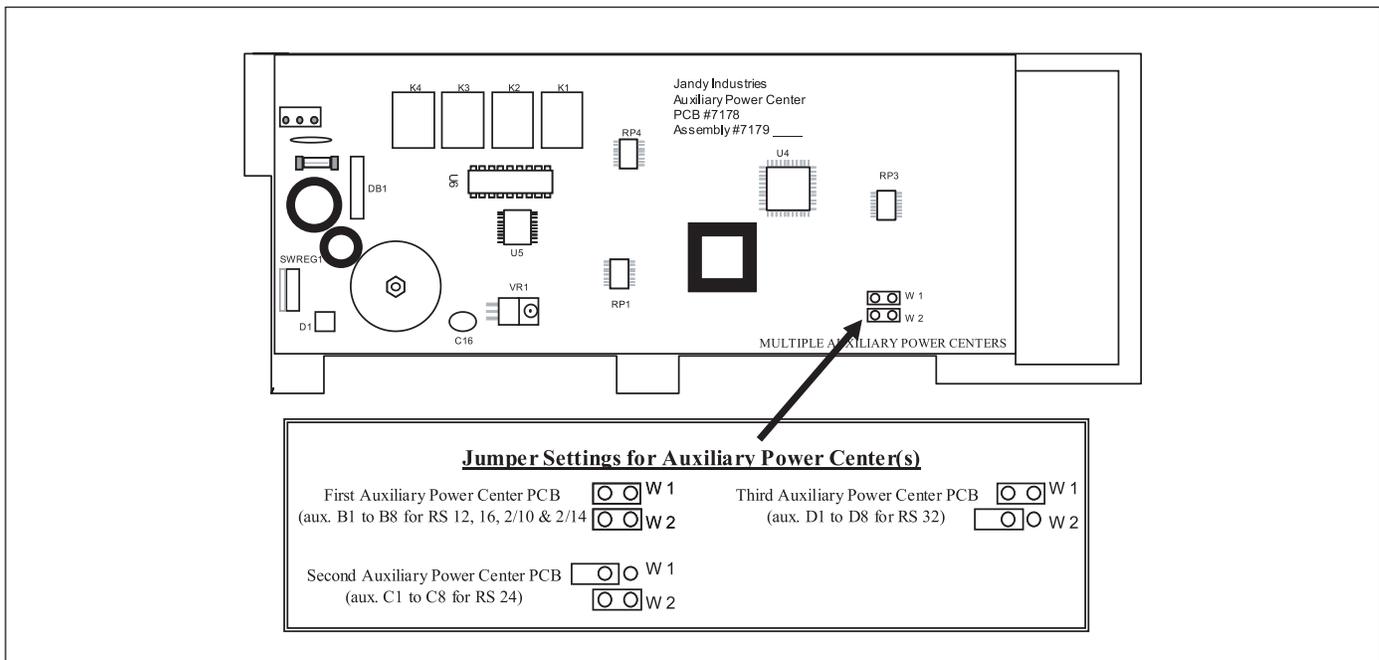


Figure 13. Auxiliary Power Center

5.2 DIP Switches

All DIP switches are located on the left side of the power center bezel. To change a setting, turn off the power and move the appropriate switch from left (**OFF**) to right (**ON**).

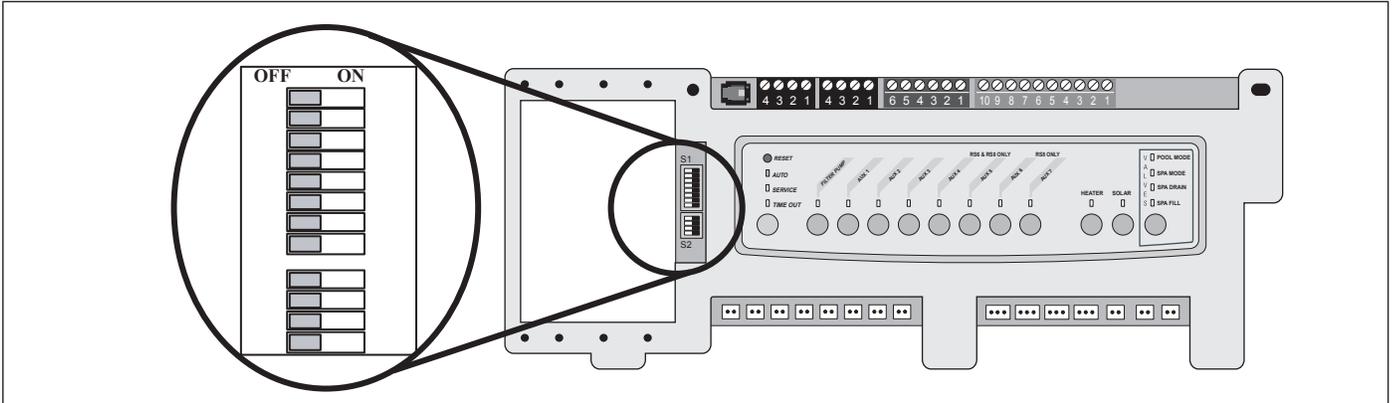


Figure 14. Dip Switches

S1 DIP Switch #	OFF	ON
1	Aux. 1 = Any equipment	Aux. 1 = Pool cleaner
2	Aux. 2 = Any equipment	Aux. 2 = Low speed for a two (2) speed filter pump. Filter pump circuit becomes high speed.
3	Aux. 3 = Any equipment	Aux. 3 = Spa spillover effect. Combo controls only.
4	Heater cool down operates.	Heater cool down disabled.
5	Normal operation	Factory adjustment. When this switch is on, temperature delays are eliminated and solar temperature is displayed. Do not leave this switch in the ON position.
6	Spare Aux has power when filter pump is in Pool Mode, goes off when in Spa Mode.	Spare Aux has power when filter pump circuit is in Spa Mode, goes off when in Pool Mode.
7	Spare	No change on Combo or Only controls (see Dual Equipment DIP Switch settings).
8	After thermostat setting has been reached, the heater will remain off for three (3) minutes.	After thermostat setting has been reached, the heater will remain off for five (5) minutes.

S2 DIP SWITCH	OFF	ON
1	The AquaLink RS will be able to control a Solar Heating system (If a solar sensor is connected to the solar sensor input).	The AquaLink RS will be able to control a Heat Pump. (The AquaLink RS will not be able to control a Solar Heating system.)
2		NOT USED
3		NOT USED
4		NOT USED

Table 2. Pool and Spa Combination Controls

DIP Switch #	OFF	ON
1	Aux. 1 = Any equipment	Aux. 1 = Pool cleaner
2	Aux. 2 = Any equipment	Aux. 2 = Low speed for a two speed filter pump. Filter pump circuit becomes high speed.
3	Aux. 3 = Any equipment	Aux. 3 = Spa spillover effect. Combo controls only.
4	Heater cool down operates.	Heater cool down disabled.
5	Normal operation	Factory adjustment. When this switch is on, temperature delays are eliminated and solar temperature is displayed. Do not leave this switch in the ON position.
6	Spare	No change.
7	Spare	No change.
8	After thermostat setting has been reached, the heater will remain off for three (3) minutes.	After thermostat setting has been reached, the heater will remain off for five (5) minutes.

Table 3. Pool or Spa Only Controls

DIP Switch #	OFF	ON
1	Aux. 1 = Any equipment	Aux. 1 = Pool cleaner
2	Aux. 2 = Any equipment	Aux. 2 = Low speed for a two speed filter pump. Filter pump circuit becomes high speed.
3	Spare	No change.
4	Heater cool down operates.	Heater cool down disabled.
5	Normal operation	Factory adjustment. When this switch is on, temperature delays are eliminated and solar temperature is displayed. Do not leave this switch in the ON position.
6	Separate pool and spa heaters	Sharing one heater
7	No solar system installed. Air temperature displayed.	Changes air sensor to solar sensor. Air temperature no longer displayed. AquaLink RS Adjustable Freeze Kit must be added for freeze protection.
8	After thermostat setting has been reached, the heater will remain off for three (3) minutes.	After thermostat setting has been reached, the heater will remain off for five (5) minutes.

Table 4. Dual Equipment Controls

5.3 Water Temperature Sensor

5.3.1 Troubleshooting

When the Power Center PCB is put in Service or Time Out Mode, the thermostat setting will automatically be switched to 104° F for testing. If the heater circuit is activated and the water heater temperature is less than 104° F, the LED above the heater button should turn on. If it does not fire, the problem is caused by either the Water Temperature Sensor or the PCB. Test the sensor as indicated below.

Remove the green terminal bar from the Power Center PCB. Place a good thermometer in the flow of water for the body of water to be tested (e.g. pool skimmer) and turn on the filter pump. Set your test meter to resistance at or above 20 K Ohms. Test between terminals five (5) and six (6) on the green terminal bar. Compare the reading to the chart. If the reading and chart do not match, replace the sensor.

Temp	Resistance	Temp	Resistance
50°F	19.898 K Ohms	78°F	9.735 K Ohms
51°F	19.435 K Ohms	79°F	9.483 K Ohms
52°F	18.871 K Ohms	80°F	9.284 K Ohms
53°F	18.382 K Ohms	81°F	9.079 K Ohms
54°F	17.902 K Ohms	82°F	8.864 K Ohms
55°F	17.473 K Ohms	83°F	8.655 K Ohms
56°F	16.988 K Ohms	84°F	8.450 K Ohms
57°F	16.549 K Ohms	85°F	8.253 K Ohms
58°F	16.150 K Ohms	86°F	8.057 K Ohms
59°F	15.710 K Ohms	87°F	7.871 K Ohms
60°F	15.314 K Ohms	88°F	7.687 K Ohms
61°F	14.923 K Ohms	89°F	7.509 K Ohms
62°F	14.547 K Ohms	90°F	7.335 K Ohms
63°F	14.193 K Ohms	91°F	7.166 K Ohms
64°F	13.823 K Ohms	92°F	7.001 K Ohms
65°F	13.477 K Ohms	93°F	6.840 K Ohms
66°F	13.138 K Ohms	94°F	6.685 K Ohms
67°F	12.813 K Ohms	95°F	6.531 K Ohms
68°F	12.492 K Ohms	96°F	6.384 K Ohms
69°F	12.186 K Ohms	97°F	6.238 K Ohms
70°F	11.893 K Ohms	98°F	6.099 K Ohms
71°F	11.593 K Ohms	99°F	5.963 K Ohms
72°F	11.309 K Ohms	100°F	5.829 K Ohms
73°F	11.032 K Ohms	101°F	5.700 K Ohms
74°F	10.765 K Ohms	102°F	5.572 K Ohms
75°F	10.502 K Ohms	103°F	5.449 K Ohms
76°F	10.250 K Ohms	104°F	5.327 K Ohms
77°F	10.000 K Ohms		

Table 5. Temperature and Resistance Chart

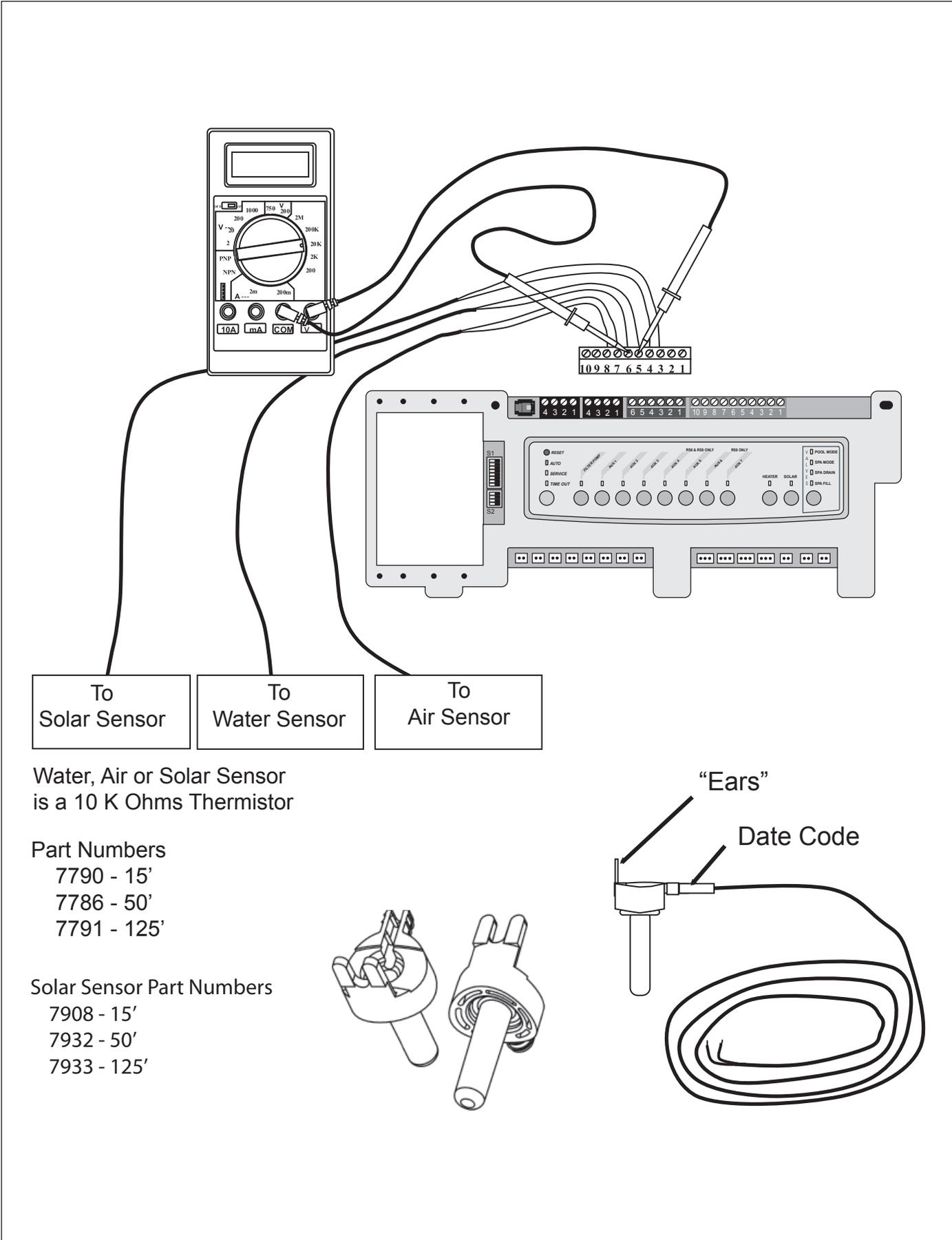


Figure 15. Water Temperature Sensor

5.4 3 HP Relay

5.4.1 Operation

1. A standard 3 HP Relay's coil is supplied with 24 VDC from the power center PCB via one (1) of the driver chips. When 24 VDC is received by the relay's coil wires, it closes the contacts that complete the circuit to turn on the equipment (i.e., power supplied to Line 1 goes out Load 1 to the equipment). See Figure 16.
2. Standard 3 HP Relays may be wired to activate a 120 VAC circuit (i.e. Line 1/Load 1) or a 240 VAC circuit (i.e. Line 1/Load 1 and Line 2/Load 2).

Note If a relay's coil wires are shortened, or an AC relay coil is plugged into a relay socket, when that circuit is activated, it will damage one of the relay driver chips on the power center PCB.

Specifications

Maximum Contact Ratings:
 3 HP at 240 VAC
 1 1/2 HP at 120 VAC
 1500 watts (per contact) - Incandescent

Relay coil - 24 VDC
 Resistance across coil - 300 Ohms
 Amperage draw of coil - 0.10 Amps

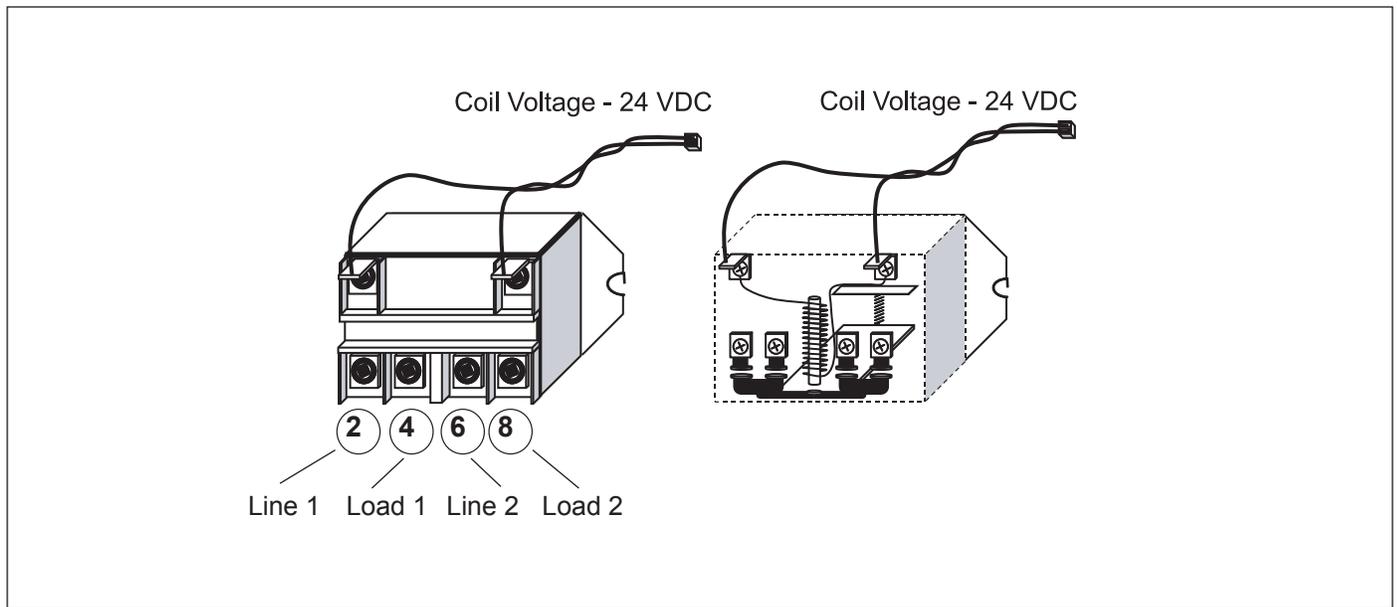


Figure 16. 3 HP Relay

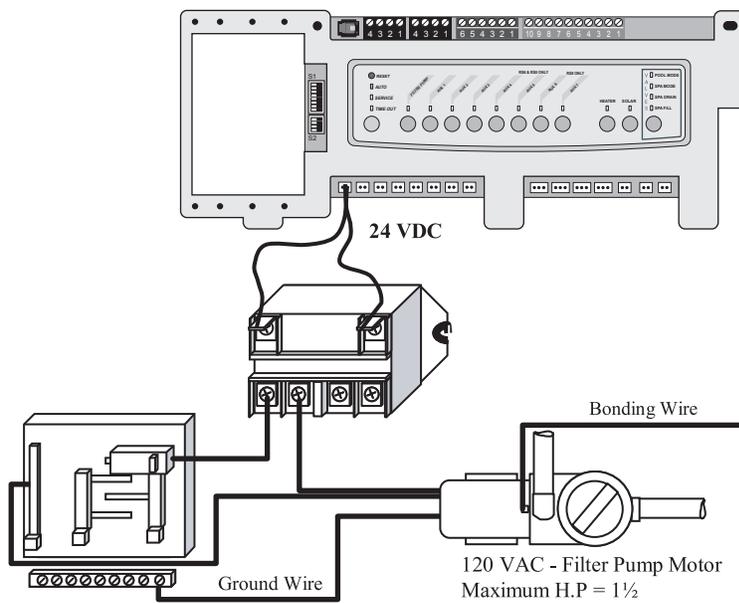
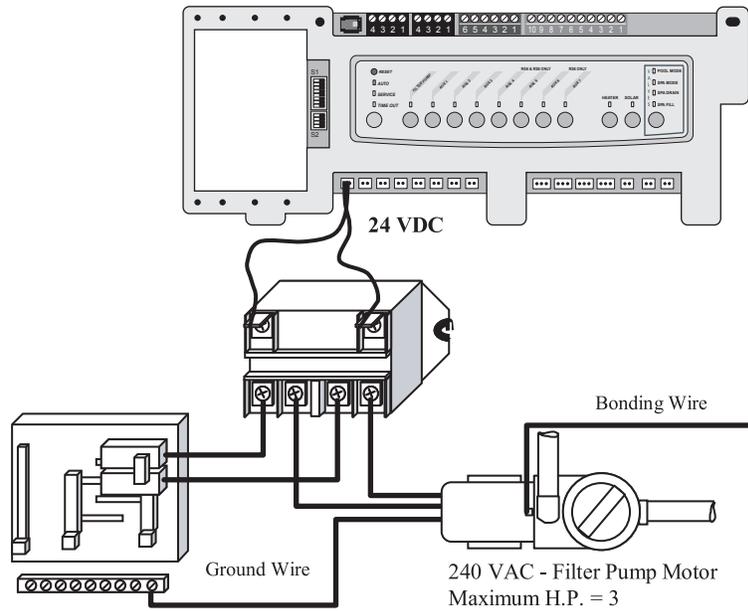


Figure 17. 3 HP Relay Wiring

5.5 Two Speed Relay

5.5.1 Operation

1. The two speed relay operates in conjunction with a standard relay to operate a two speed pump/motor. The standard relay is the on/off relay and the two speed relay is the switching relay. Activating the relay coil for the standard relay will complete the contact circuit between Line 1 and the motor common, Line 2 and the two speed relay common. If the two speed relay coil wires are deactivated, the motor runs at high speed. When the two speed relay coil is activated, the motor switches to low speed.
2. If the two speed motor is the filtration pump, plug the relay coil wires for the standard relay into the filter pump relay socket. Next, plug the two speed relay coil wires into the Auxiliary 2 socket. Finally, turn on DIP switch 2 to set the circuitry to two speed operation. This will interlock the low speed and high speed together. If low speed is activated, the control will turn on high speed first for three (3) minutes (to prime the system) before switching to low.
3. If the two speed motor is in a dual equipment system, plug the relay coil wires for the standard relay into the Auxiliary 7 socket. Next, plug the two speed relay coil wires into the Auxiliary 2 socket. Finally, turn on DIP Switch 2 to set the circuitry to two speed operation.

Note: Turn off the power to the system before moving any DIP Switches.

Specifications

Maximum Contact Ratings:
2 HP at 240 VAC
1 HP at 120 VAC
1500 watts (per contact) - Incandescent
Relay coil - 24 VDC
Resistance across coil - 128 Ohms
Amperage draw of coil - 0.20 Amps

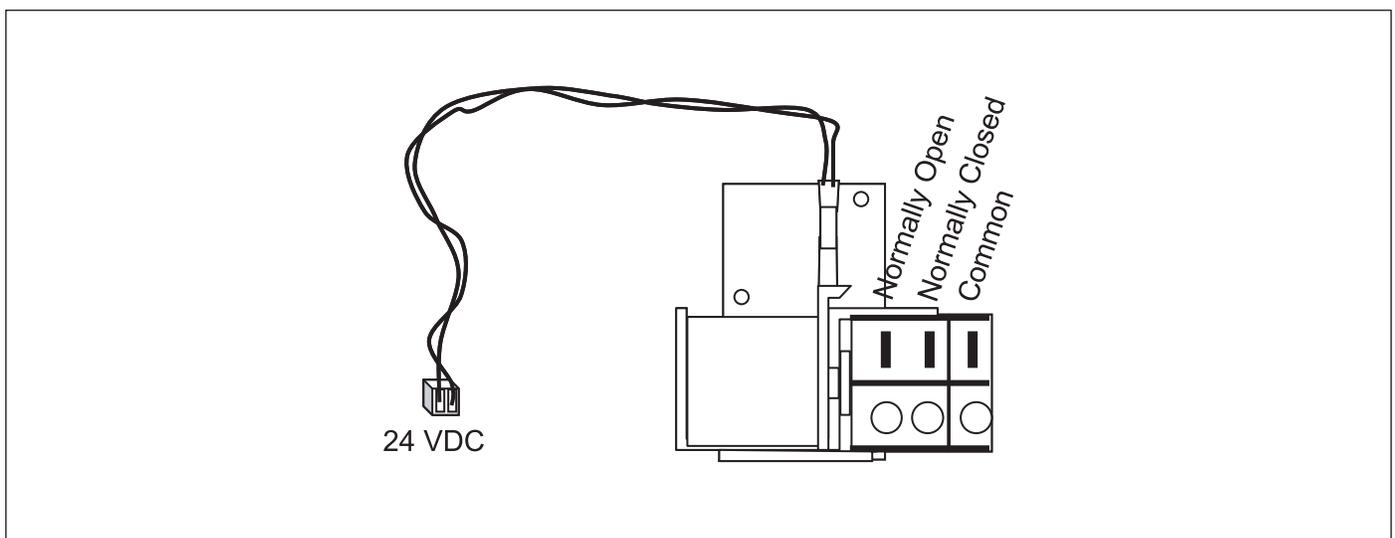


Figure 18. Two Speed Relay

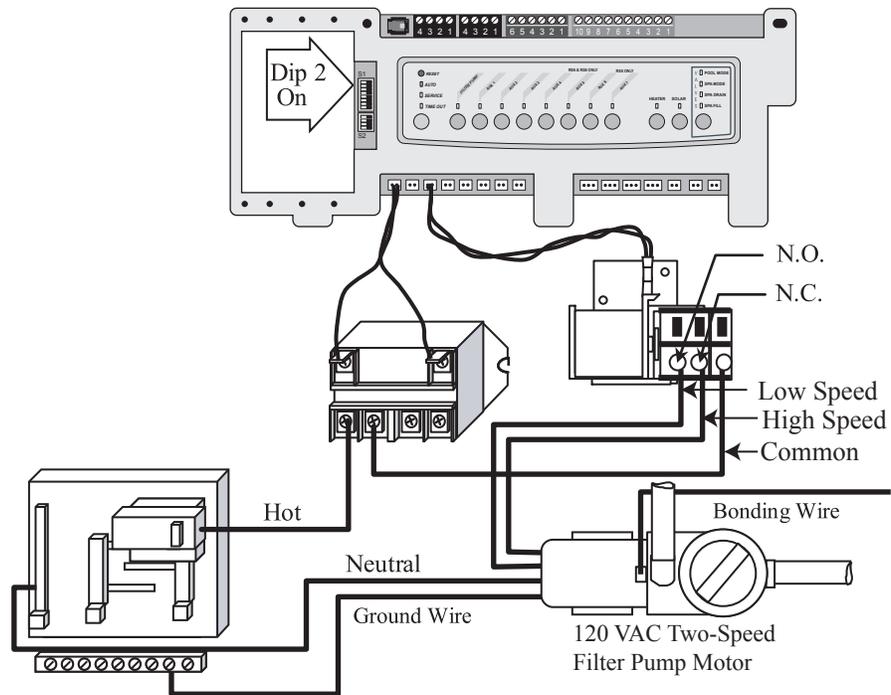
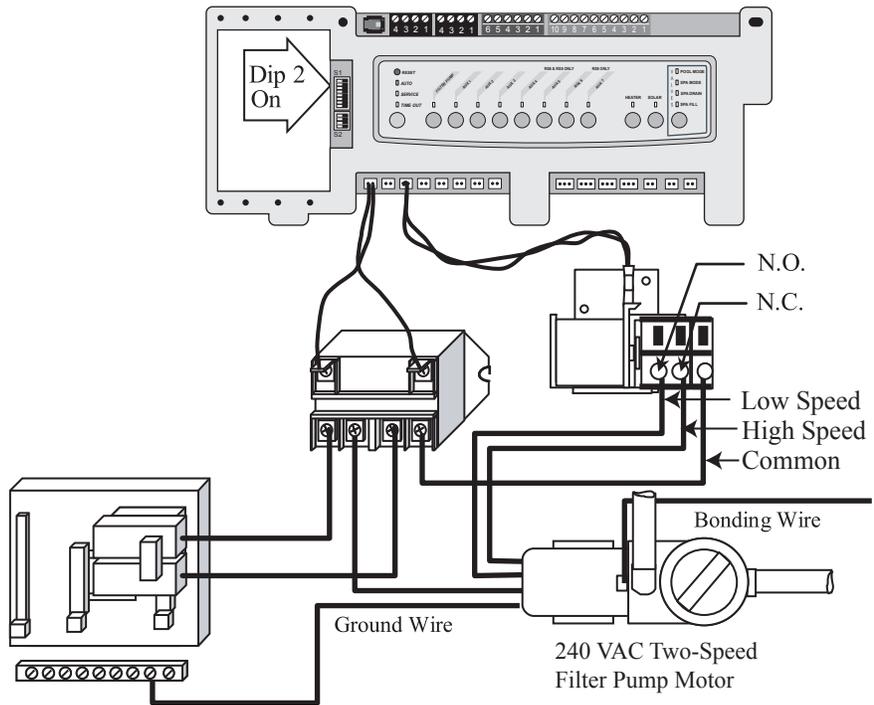


Figure 19. Two Speed Relay Wiring

5.6 Light Dimming Relay

5.6.1 Operation

The controller signals the light dimming relay to turn "fully on", "partially dimmed", or "completely off" by sending a specific number of pulses in a set period of time to the light dimming relay. The circuitry of the light dimming relay, which requires 120 VAC to operate, interprets the number and timing of pulses to determine whether the light should be on, off, or dimmed.

The circuitry of the light dimming relay is driven by the 120 VAC power from the circuit breaker for the light. Unlike a standard relay, which receives a constant 24 VDC to its coil to hold the relay contacts closed (and which opens when that voltage is removed), the light dimming relay receives only signal pulses on the relay coil wires, and it is the circuitry on the relay that actually turns the light on and off and dims it. Therefore, if the light is fully on or dimmed, unplugging the relay coil wires to the light dimming relay will not turn the light off. The light will remain on as long as 120 VAC is supplied to the relay.

Note: In addition to needing a light dimming relay installed, the auxiliary to operate the light dimming circuit must be assigned at the indoor controller.

Specifications

Voltage: 12 to 120 VAC

Wattage: 1000 maximum

Note: a maximum of four (4) light dimming relays can be installed in each power center.

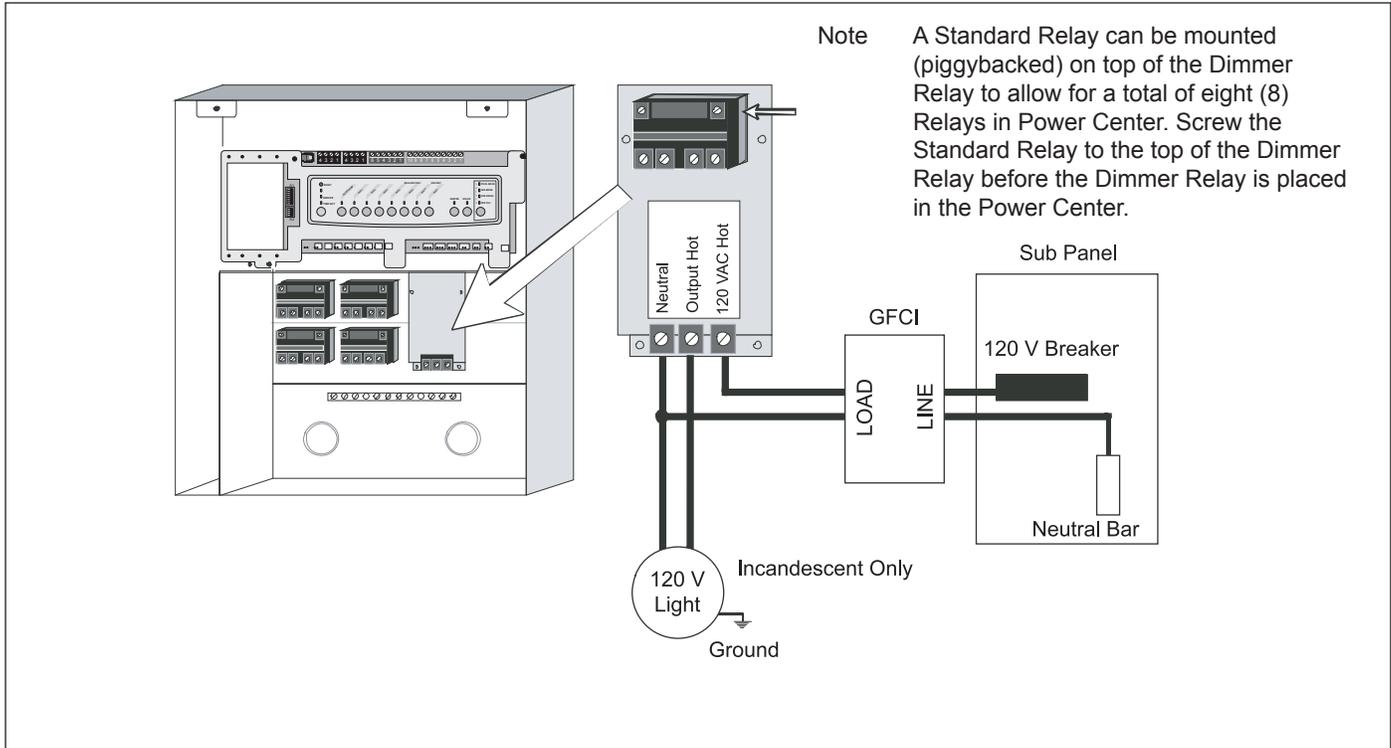


Figure 20. Wiring 120 V Light Dimming

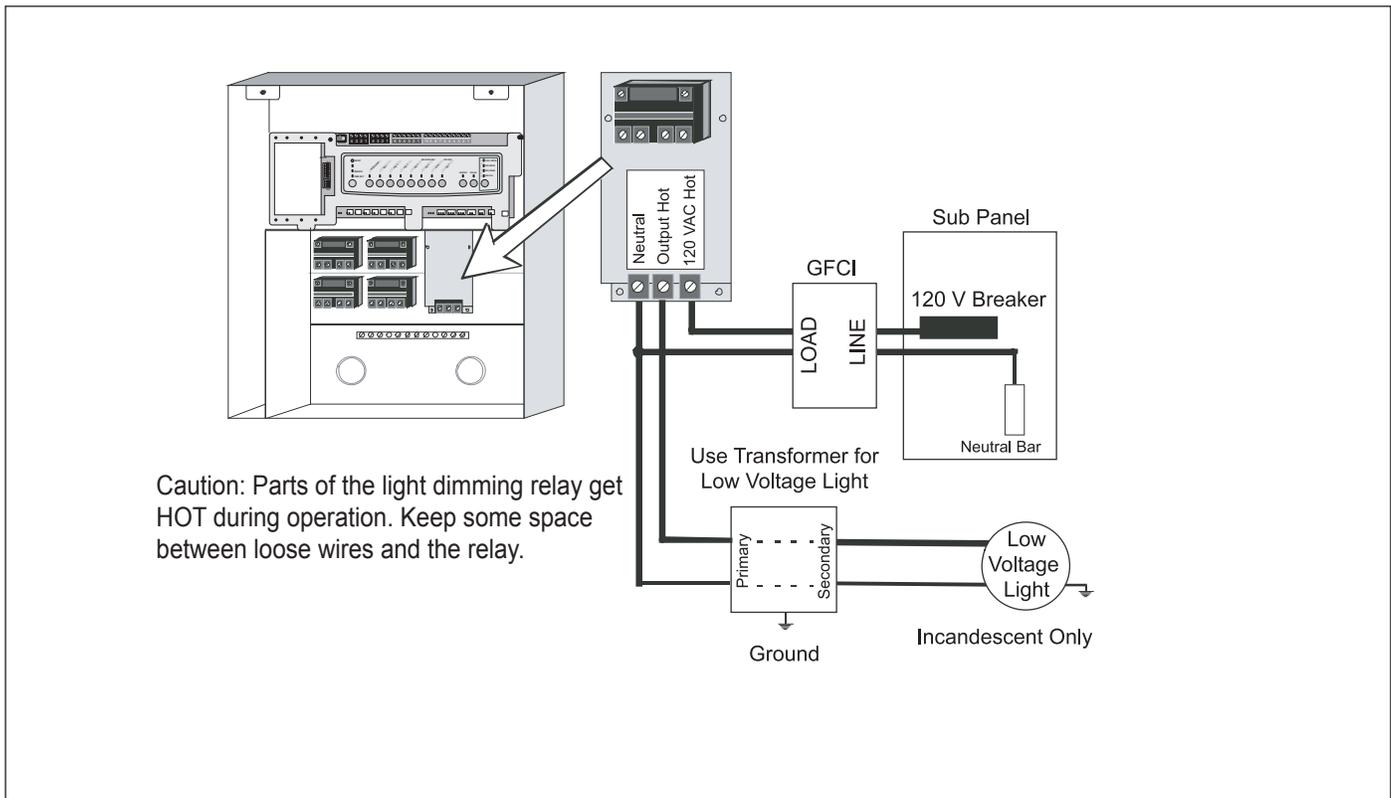


Figure 21. Wiring Low Voltage Light Dimming

Section 6. Jandy Valve Actuator

6.1 Operation

One leg of a 24 VAC transformer secondary supplies voltage to the common terminal of a SPDT (single-pole, double-throw) relay. The N.C. (normally closed) terminal of that relay is connected to the red wire of the JVA cord, and the N.O. (normally open) terminal is connected to the white wire of the JVA cord. The completion of the circuit is through the black (common) wire of the JVA cord.

When the coil of the SPDT relay is de-energized, voltage is supplied from one leg of the transformer secondary to the common terminal of the relay and then down the red wire of the JVA cord to the toggle switch at the rear of the JVA. The toggle switch then routes the voltage to either the lower microswitch (toggle in ON 1 position), the upper microswitch (toggle in ON 2 position), or to neither microswitch (toggle in OFF position). If the voltage is routed to the lower microswitch, and that microswitch is closed, the voltage passes through the motor to the black wire and then back to the other leg of the transformer secondary to complete the circuit. The motor will then rotate clockwise, turning the gear train (and ultimately the output shaft) until the lower cam comes in contact with the lower microswitch, which opens the circuit and stops the motor. If the voltage is routed to the upper microswitch, the motor rotates in the opposite direction until the upper cam lobe comes into contact with the upper microswitch, which stops the rotation.

If the coil of the SPDT relay is energized, the voltage travels through the white wire to the toggle switch, which as above, routes it either to the lower microswitch for clockwise rotation or upper microswitch for counterclockwise rotation, with the voltage traveling back to the black wire to complete the circuit.

The capacitor, which is wired in parallel with the motor, keeps the motor rotating in the correct direction and ensures that the JVA rotates with the proper torque.

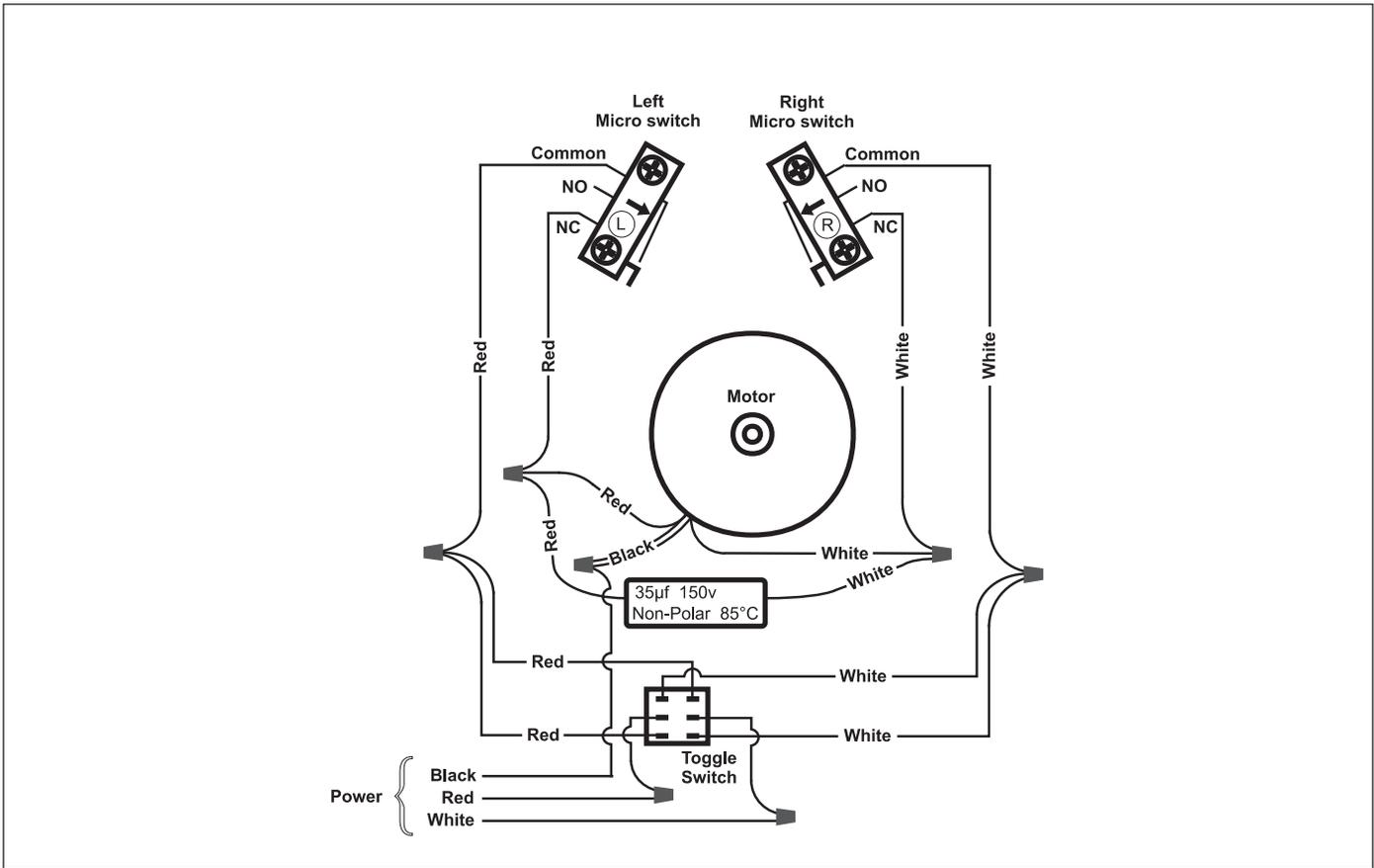


Figure 23. JVA Internal Wiring

Section 7. Troubleshooting

7.1 Quick Check List

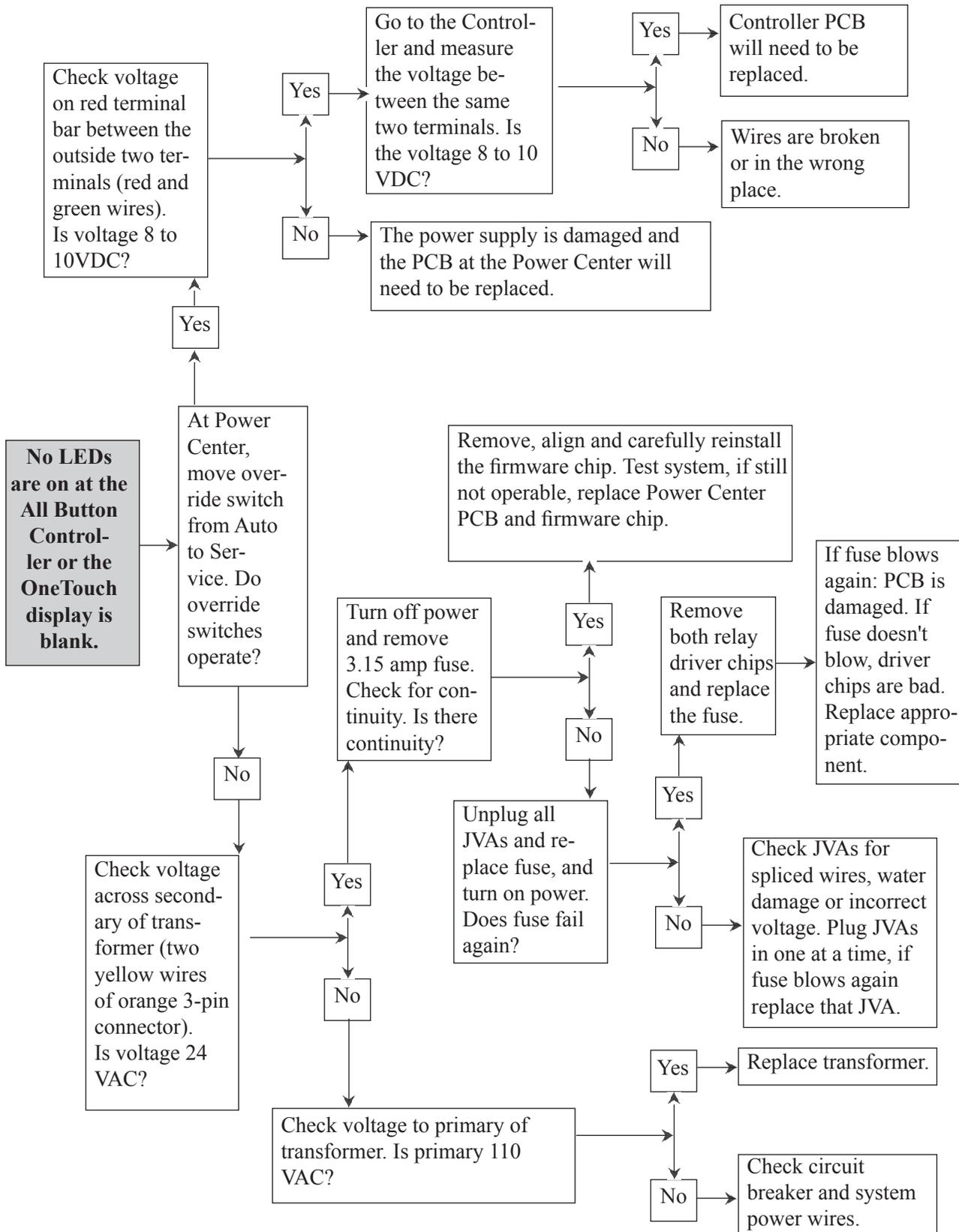
Symptom	Problem	Possible Solution
Power Center override switches operate when in Service or Time Out Mode, but the Controller is completely dead. No lights on, no display.	Mis-wired four (4) conductor wires. Broken four (4) conductor wires. Broken red or green wire.	The wire polarity is incorrect (Red +, Green -) The voltage is incorrect. It should be 8 to 10 VDC.
All LEDs are on at the All Button Controller and the part # and revision letter of the Controller software are shown or with a OneTouch Controller the screen shows only a Firmware Revision Code and the rest of the screen is all dots. The override switches at the Power Center operate as they should.	Controller is not communicating with the Power Center PCB. Broken black or yellow wire.	Prior to Rev N, the firmware chip could be installed incorrectly. Damaged communication chip.
All LEDs are on at the All Button Controller and the part # and revision letter of the Controller software are displayed or with a OneTouch the screen shows only a Firmware Revision Code and the rest of the screen is black. The override switches at the Power Center do not operate at all.	1. Damaged or improperly installed firmware chip. 2. Damaged Power Center firmware chip.	1. Check alignment of the firmware chip. 2. If firmware chip is installed correctly, replace the Power Center PCB.
Some buttons (All Button Only) do not operate from the Controller, nor from the Power Center override switches.	Wrong firmware chip installed at the Power Center PCB.	Check part number and revision letter by pressing the Reset button at the Controller. The second part number and revision letter displayed is for the firmware chip indicating which model.
System is locked up.	Microprocessor locked.	Turn off power to the system. Disconnect the battery and turn on the power. Reconnect battery and (prior to Rev N), reset time and date.

Table 6. Quick Check List.

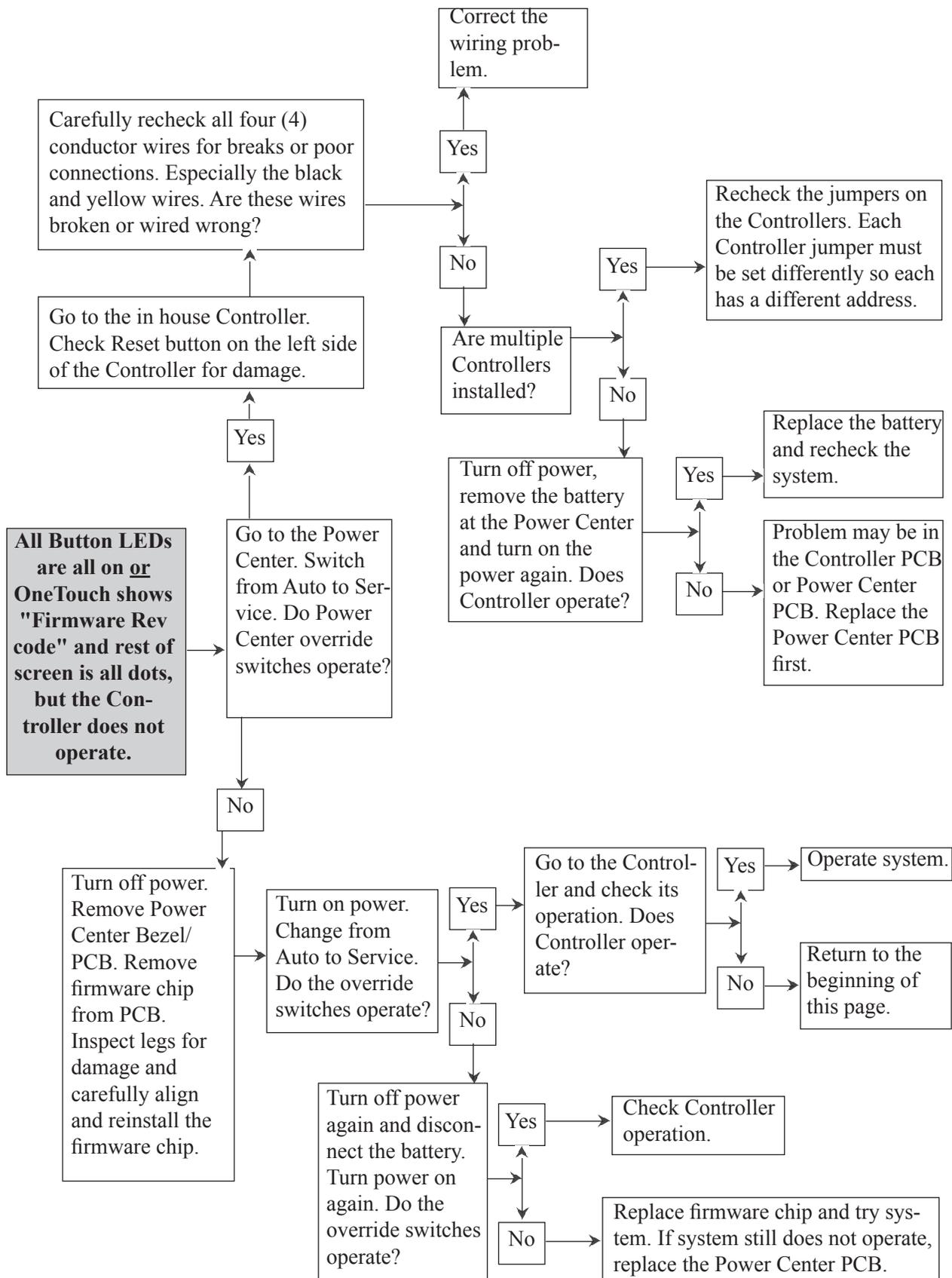
Symptom	Problem	Possible Solution
System sometimes does not run programmed on and off times.	Power outage with dead battery.	At the Controller, check battery level. With software level Rev. F or newer, battery status is located in Diagnostics section of System Setup Menu
One button on the Spa Side Remote does not operate.	Check programming first. If the Spa Side Remote is programmed correctly, the button may be shorted.	See Troubleshooting the Spa Side Remote.
Controller model is Dual Equipment, message scrolls "Adjustable Freeze Sensor Not Installed".	Normal operation when a Dual Equipment model is controlling a solar system and an adjustable freeze sensor is not installed.	Either install the adjustable freeze sensor, or wait 24 hours and this message will go away.
System comes on at times that are not programmed.	Phantom programs.	From the Control Panel review programs. Look for overlapping programs.
Heater will not fire. Heater LED will not light in Service Mode	Water temperature sensor not installed or defective	Check water temperature.

Table 6. Quick Check List (continued)

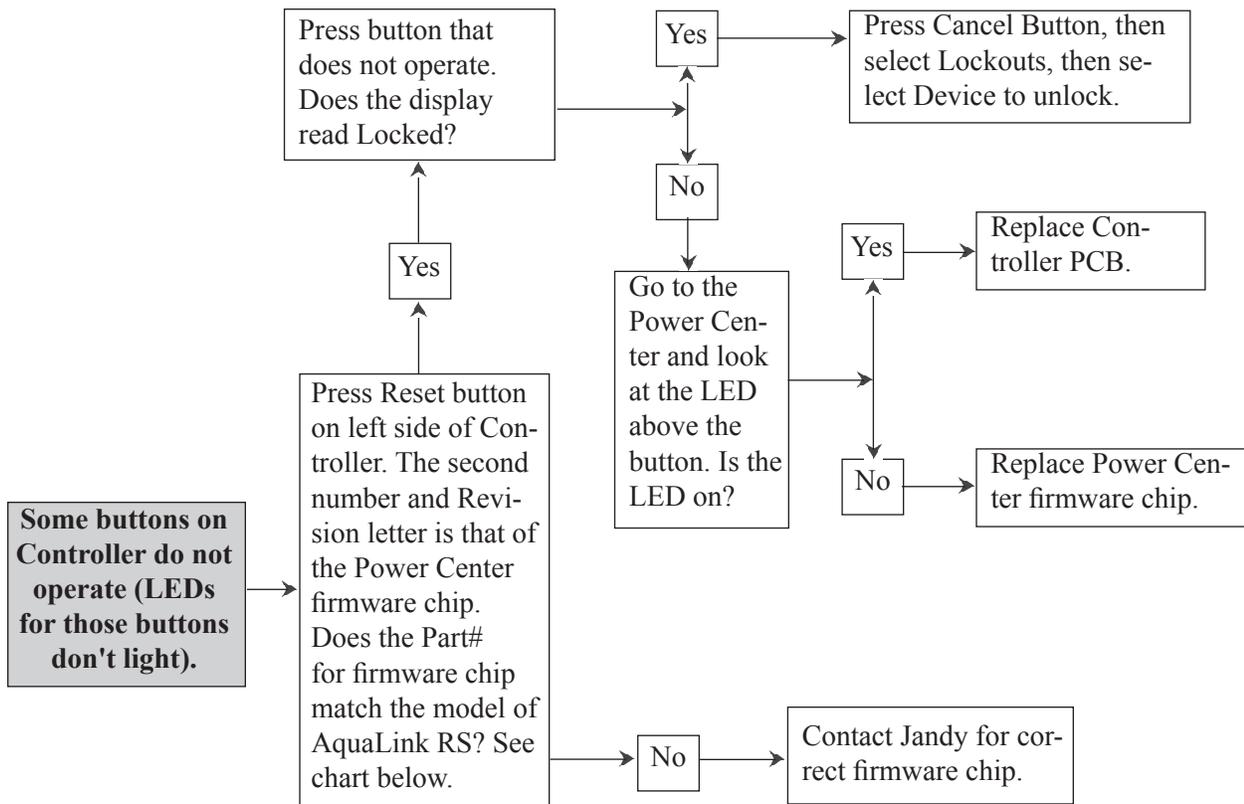
7.2 Controller Inoperable, Display Blank



7.3 All Lights Lit on Controller



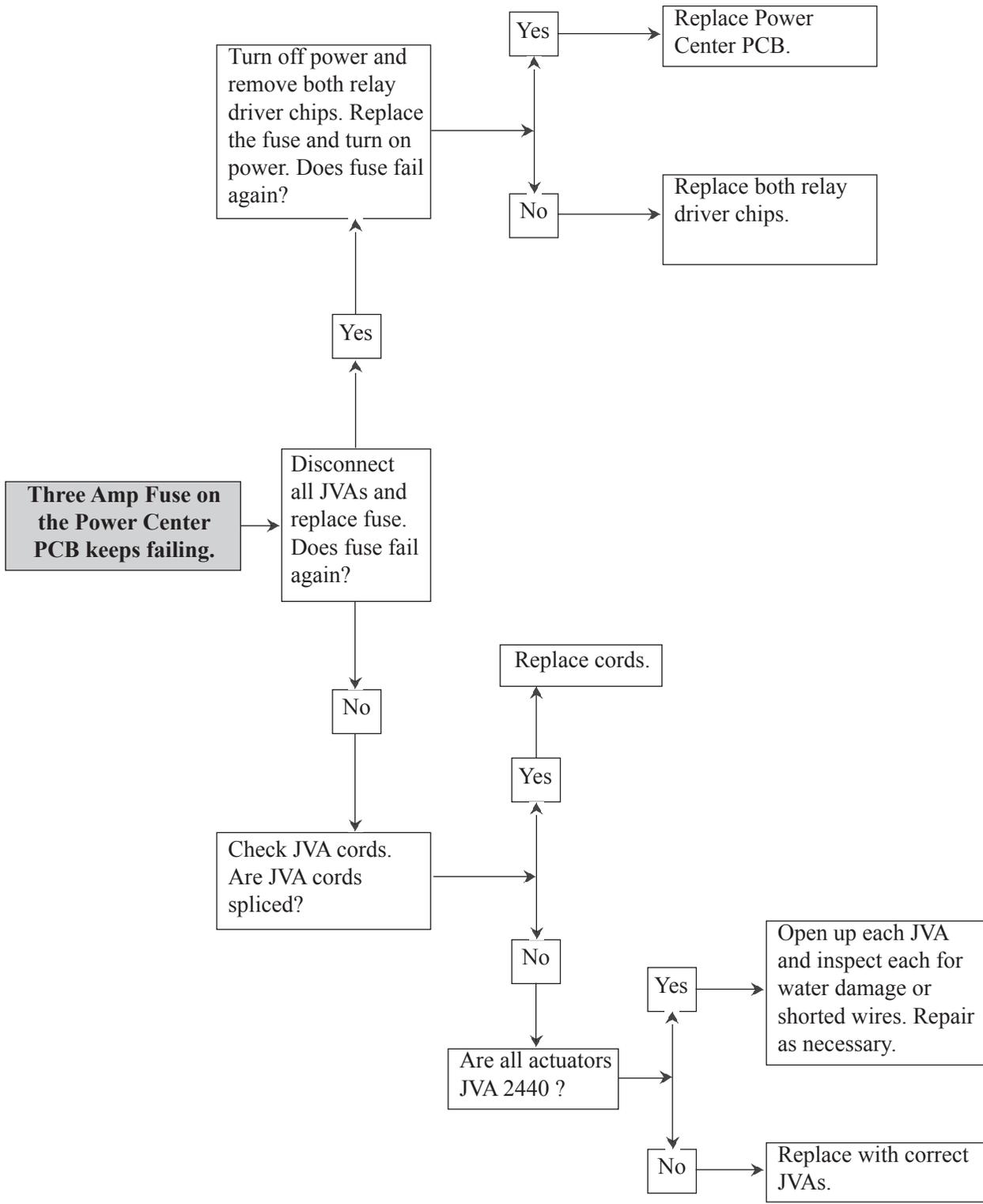
7.4 Some Controller Buttons Do Not Operate



Model	Description	Part # Rev. C to Rev II	Part # Rev J to Rev MMM	Part # Rev N and Later
AquaLink RS 16, 24, 32 P & S	Pool and Spa Combination	7202	8166	E0260811
AquaLink RS 12 P & S	Pool and Spa Combination	7201	8165	E0260810
AquaLink RS 8 P & S	Pool and Spa Combination	6520	8156	E0260801
AquaLink RS 6 P & S	Pool and Spa Combination	6521	8157	E0260802
AquaLink RS 4 P & S	Pool and Spa Combination	6522	8158	E0260803
AquaLink RS 16, 24, 32 P or S	Pool or Spa Only System	7215	8168	E0260813
AquaLink RS 12 P or S	Pool or Spa Only System	7214	8167	E0260812
AquaLink RS 8 P or S	Pool or Spa Only System	6523	8159	E0260804
AquaLink RS 6 P or S	Pool or Spa Only System	6524	8160	E0260805
AquaLink RS 4 P or S	Pool or Spa Only System	6525	8161	E0260806
AquaLink RS 2/14, 2/22, 2/30 Dual	Separate Equipment System	7217	8170	E0260815
AquaLink RS 2/10 Dual	Separate Equipment System	7216	8169	E0260814
AquaLink RS 2/6 Dual	Separate Equipment System	6526	8162	E0260807

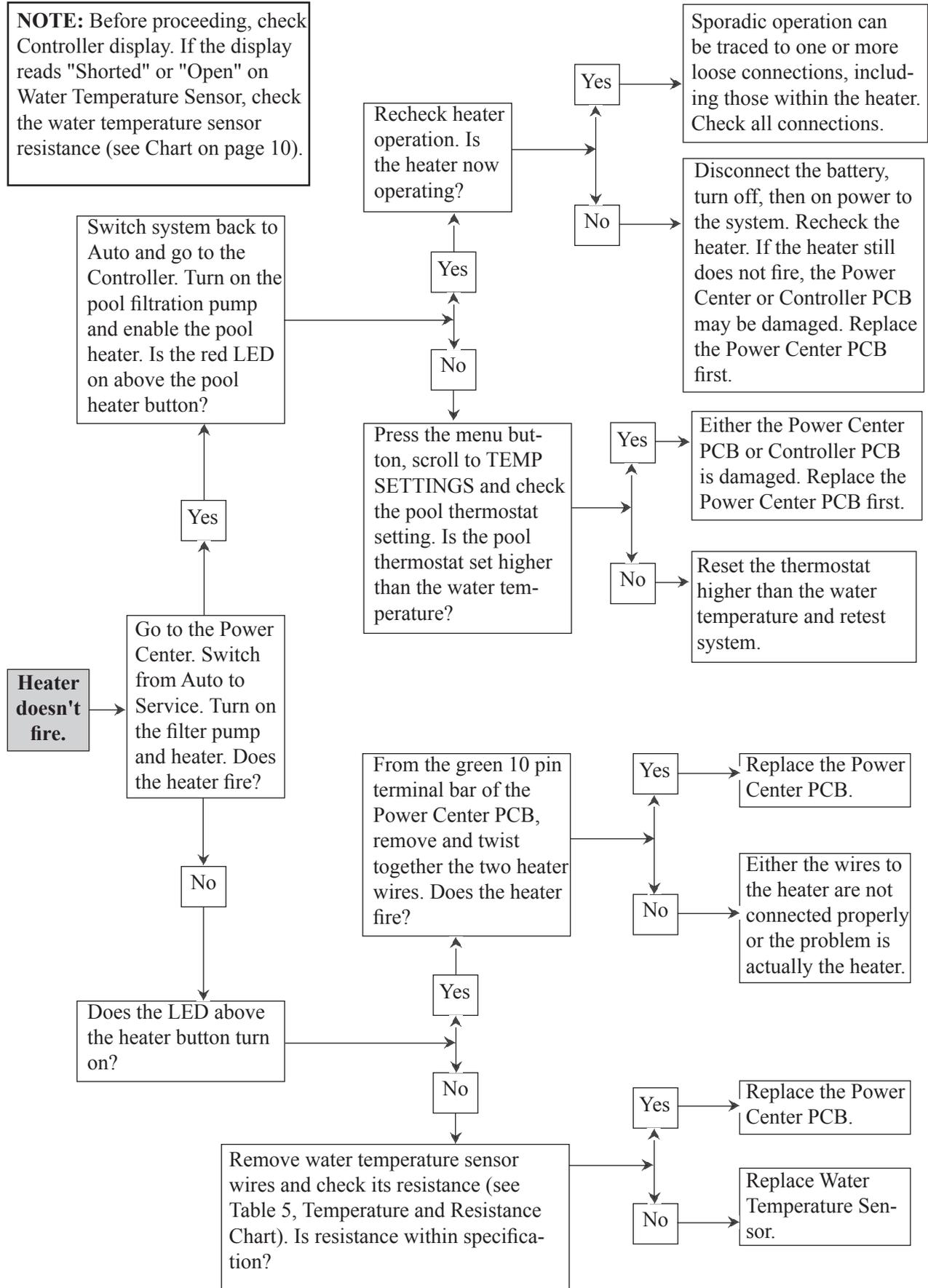
Table 7. Models, Descriptions and Part Numbers

7.5 Three Amp Fuse Keeps Failing



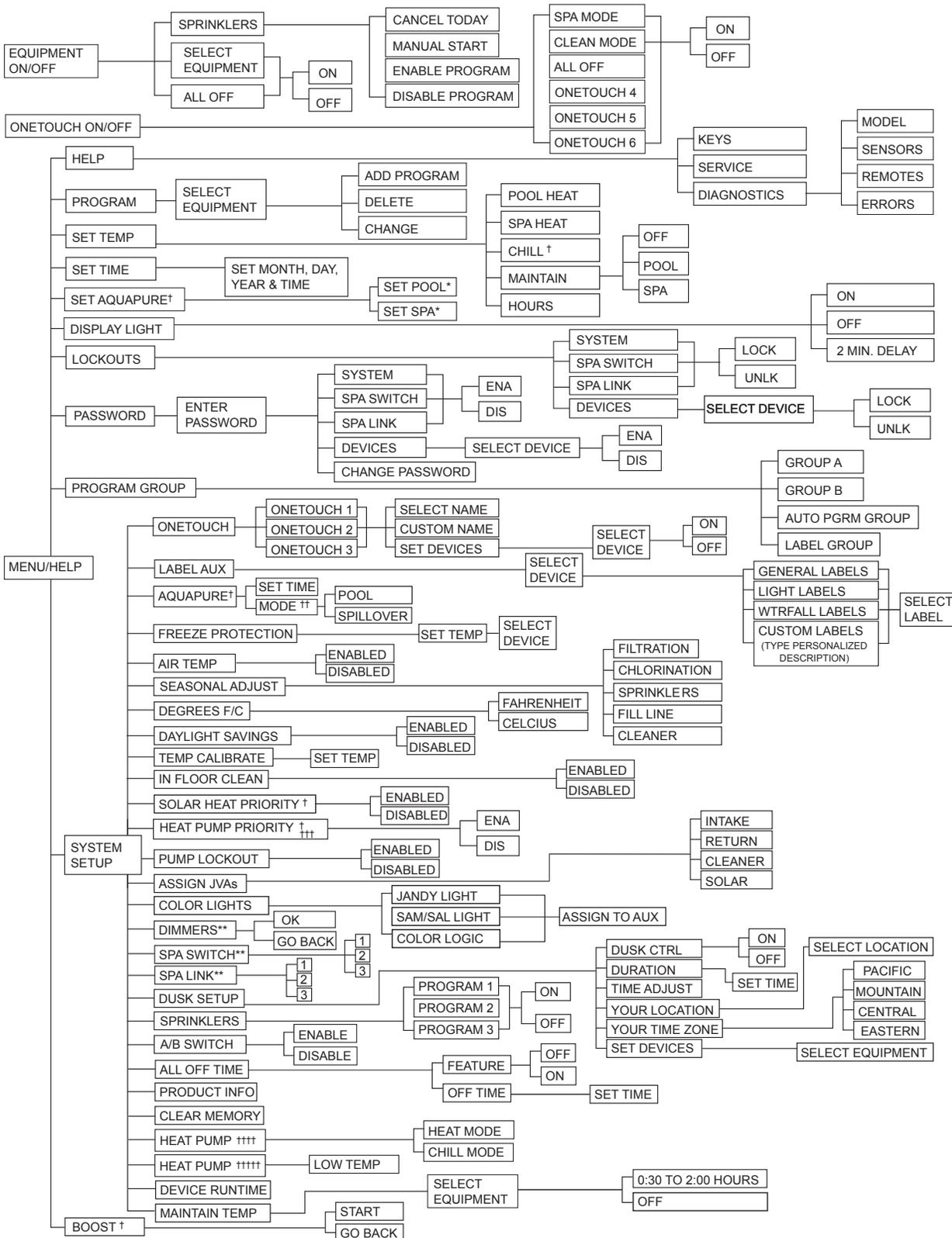
7.6 Heater Doesn't Fire

NOTE: Before proceeding, check Controller display. If the display reads "Shorted" or "Open" on Water Temperature Sensor, check the water temperature sensor resistance (see Chart on page 10).



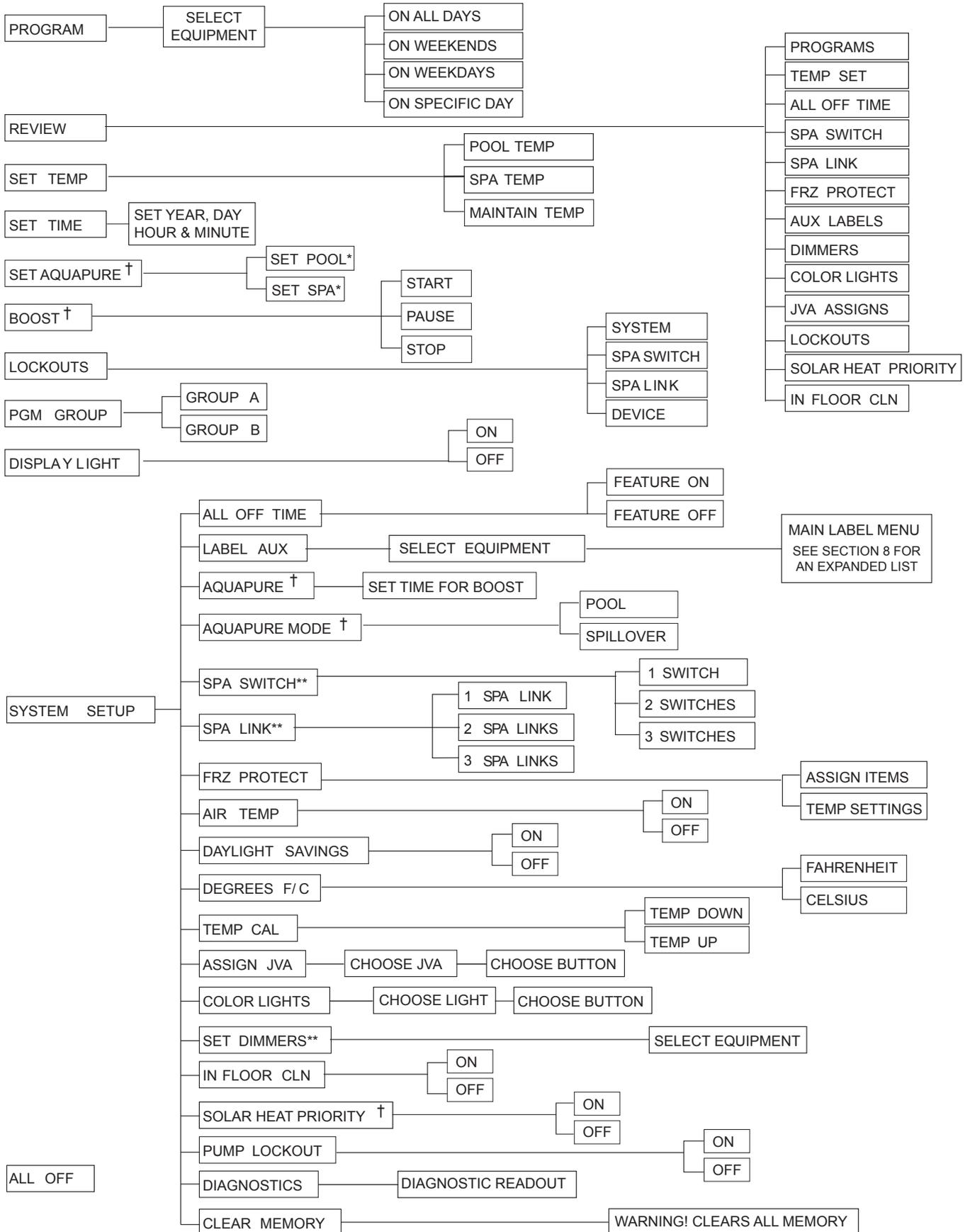
Section 8. Flow Charts

8.1 OneTouch Menu Flow Chart



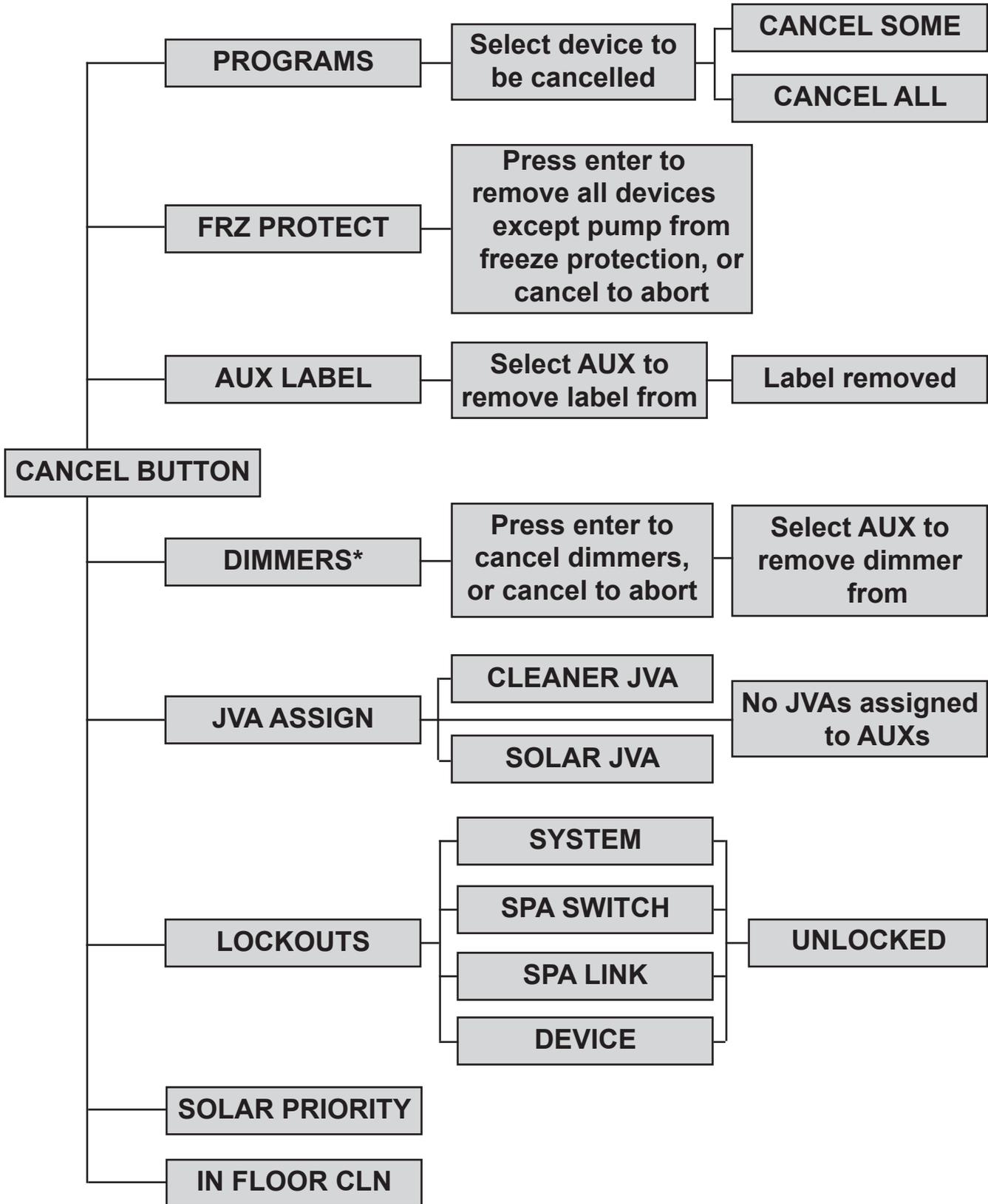
- † Items seen only with optional equipment
- ‡ Mode only displayed when DIP switch S1-3 is set to ON
- ‡‡ DIP switch S2-1 must be ON. See differences between heat pumps controlled via RS485 or solar pump relay
- ‡‡‡ Heat pump is controlled via the solar pump relay
- ‡‡‡‡ Heat pump is controlled via the RS485
- * Items seen only in Revision "N"
- ** Not available on Export Models

8.2 All Button Menu Flow Chart



† Items seen only with optional equipment
 * Items seen only in Revision "M"
 ** Not available on export models

8.3 All Button Cancel Flow Chart

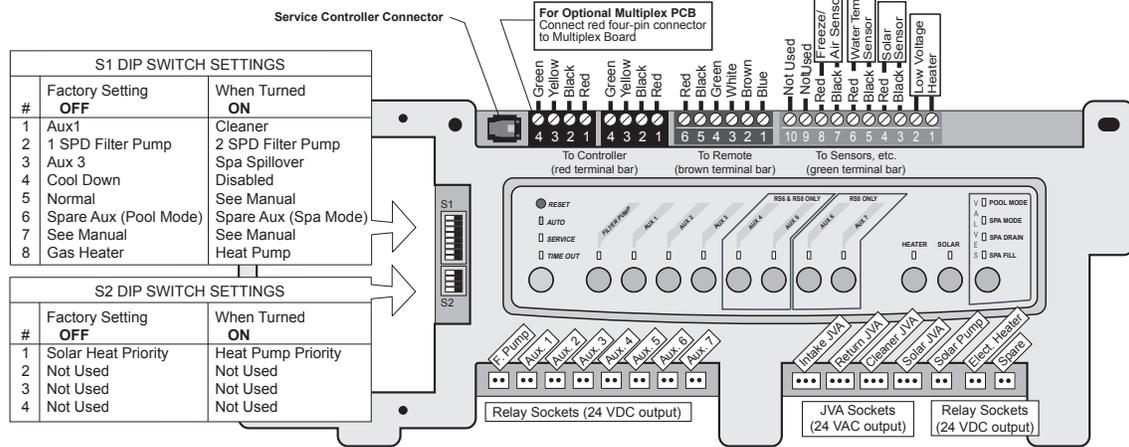


***Not Available for Export Models**

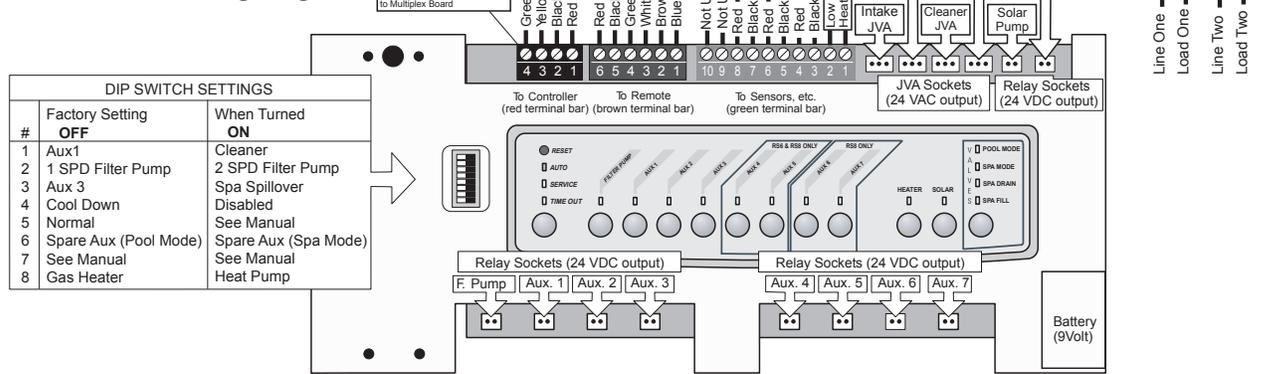
Section 9. Wiring Diagrams

9.1 AquaLink RS Pool/Spa Combination and Pool/Spa Only

RS Power Center Wiring Diagram for Pool and Spa and Only Models



PDA Power Center Wiring Diagram



IMPORTANT INSTALLATION INSTRUCTIONS:

Enclosure: Rainproof (Type 3R, IPX3) suitable for swimming pool/spa applications.

1. Installation must be by a qualified electrician and must comply with all national, state, and local codes.
2. Power Center must be mounted at least five (5) feet away from the inside edge of the pool.
Canadian installations must be at least three (3) meters from the water.
Les installations Canadiennes doivent se trouver à au moins trois (3) mètres de l'eau.
3. Install to provide drainage of compartments for electrical components.
4. After wiring, install panels over wiring compartments and keep Power Center door closed.
5. For technical information, call Jandy Pool Products, Inc. at 707-776-8200 ext. 260.



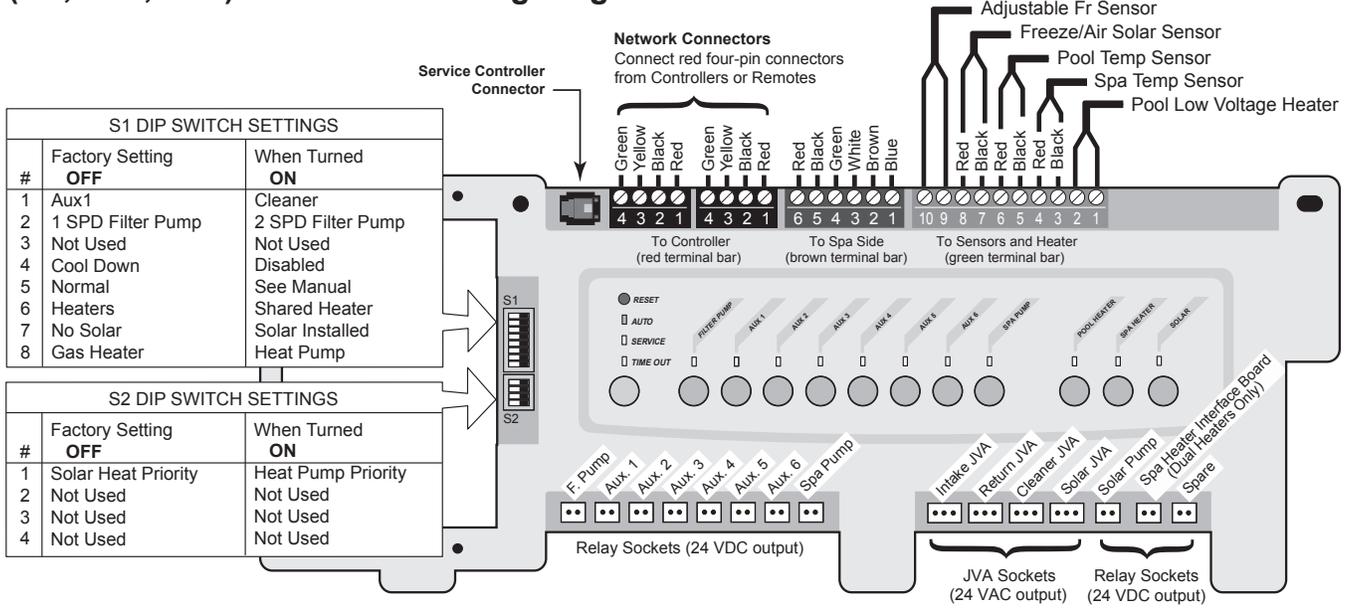
6000 Condor Drive • Moorpark, CA USA 930201
707.776.8200 • Fax 707.763.7785
Litho in USA © Jandy Pool Products, Inc. 0703

Sheet #7192, Rev. H

⚠ CAUTION	⚠ WARNING	⚠ AVERTISSEMENT
Read Installation Manual completely before installing. This product must be wired in accordance with the Installation Manual.	To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times. Water temperature in excess of 100°F/38°C may be injurious to your health.	Pour réduire le risque de blessures, ne pas permettre aux enfants d'utiliser ce produit à moins qu'ils soient supervisés de près en tout temps. Des températures de l'eau supérieures à 38°C/100°F peuvent présenter un danger pour la santé.
⚠ ATTENTION		
Lire la notice technique.		

9.2 AquaLink RS Dual Equipment

AquaLink RS Dual Equipment (2/6, 2/10, 2/14) Conversion Wiring Diagram



AUTO/SERVICE/TIME OUT Button
Pressing this button switches between the three (3) modes outlined below

AUTO Mode

Normal operation. Leave the system in this mode unless you are servicing the pool or the system. Power Center buttons (above) do not work.

SERVICE Mode

In-house Controller is locked out. Allows manual operation of equipment using the buttons above. This mode will stay on until the button is pressed again.

TIME OUT Mode

Allows service person to override all programs and lock out indoor Controller for three (3) hours. Any equipment turned on will remain on, any equipment left off will remain off. Operation will automatically switch back to AUTO mode after three (3) hours.

NOTE: Safety Interlocks are not in effect when service or time mode is active.

System must be in SERVICE or TIME OUT mode for these buttons to operate.

POOL PUMP Button

Turns the Filter Pump on and off.

SPA PUMP Button

Turns the Filter Pump on and off.

AUX Buttons

Turns on and off auxiliary equipment as labeled. AUX 7 socket is the Spa Pump Relay Socket.

POOL and **SPA HEATER** Buttons

Turns the heater on and off. The switch on the heater must be on, the heater thermostat should be turned to max., and the filter pump must be running for heater to fire.

SOLAR Button

Activates optional JVA (valve actuator) plugged into the "solar JVA" socket, and activates optional relay plugged into the "solar pump" socket.

Sheet #7255, Rev. G

IMPORTANT INSTALLATION INSTRUCTIONS:

1. Installation must be by a qualified electrician and must comply with all national, state, and local codes.
2. Power Center must be mounted at least five (5) feet away from the inside edge of the pool.
3. Install to provide drainage of compartments for electrical components.
4. After wiring, install panels over wiring compartments and keep Power Center door closed.
5. For indoor or outdoor use.

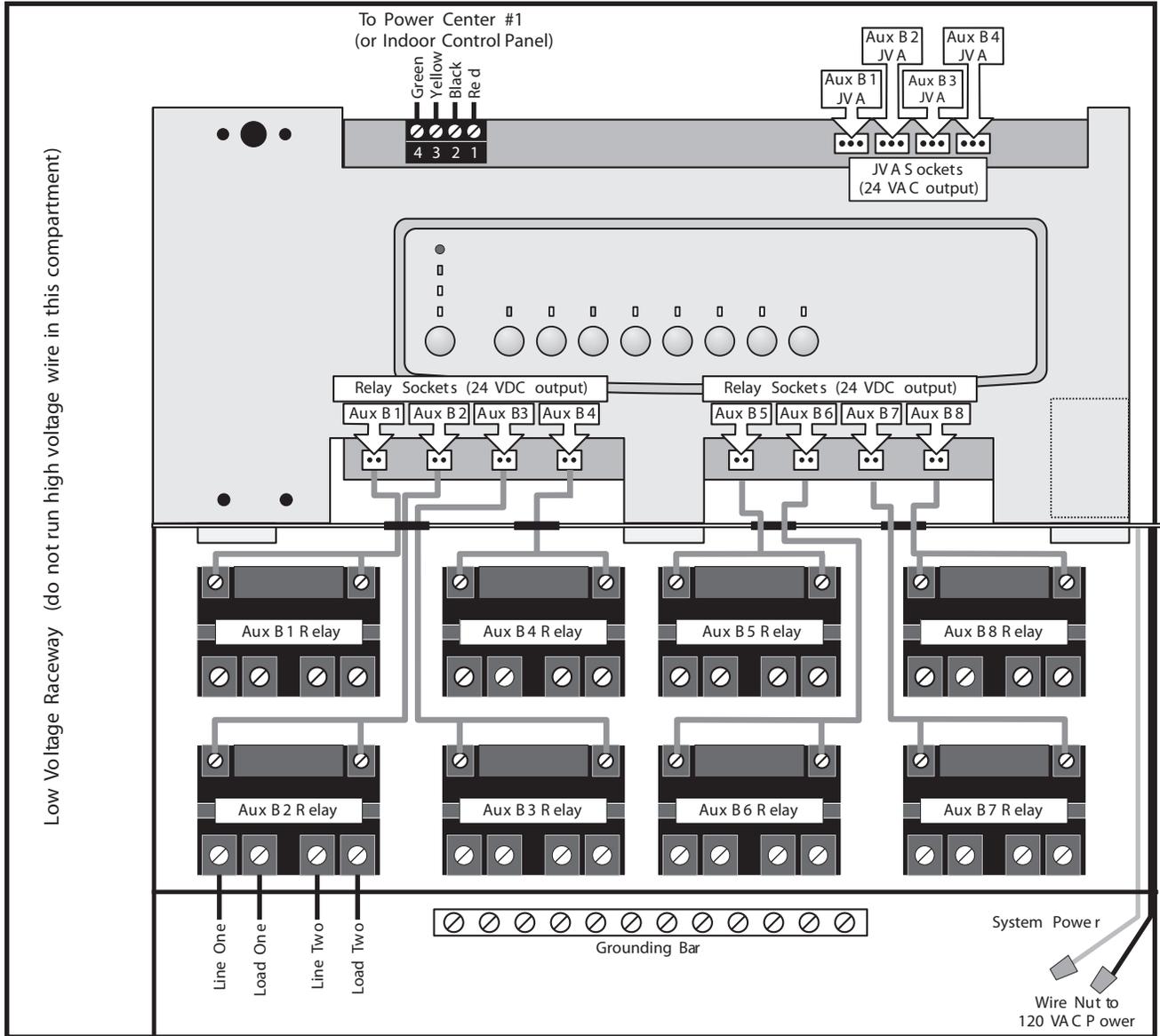
For technical information, call Jandy Pool Products, Inc., at 707-776-8200, ext. 260.



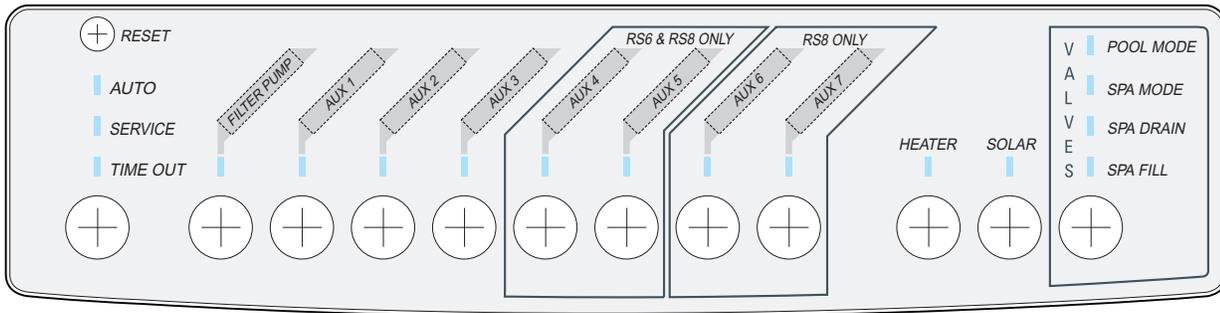
6000 Condor Drive • Moorpark, CA USA 93021
707.776.8200 • Fax 707.763.7785
Litho in USA © Jandy Pool Products, Inc. 0711

! CAUTION	! WARNING	! AVERTISSEMENT
Read Installation Manual completely before installing. This product must be wired in accordance with the Installation Manual.	To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times. Water temperature in excess of 100°F/38°C may be injurious to your health.	Pour réduire le risque de blessures, ne pas permettre aux enfants d'utiliser ce produit à moins qu'ils soient supervisés de près en tout temps. Des températures de l'eau supérieures à 38°C/100°F peuvent présenter un danger pour la santé.
! ATTENTION		
Lire la notice technique.		

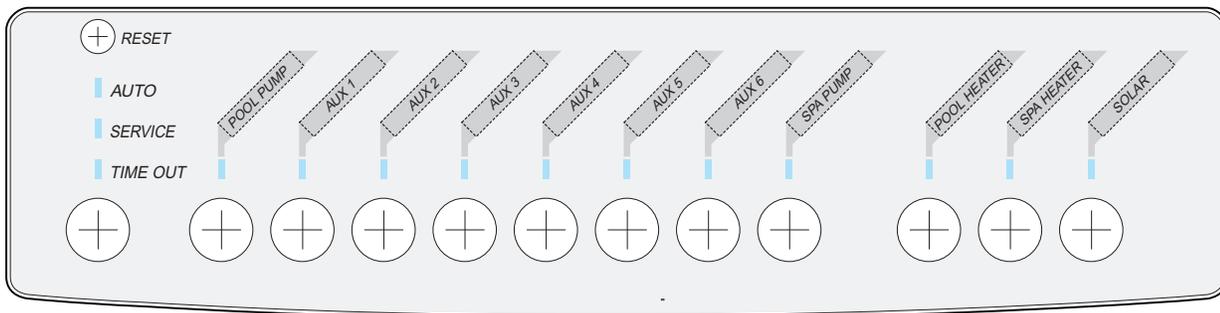
9.3 AquaLink RS Auxiliary Power Center



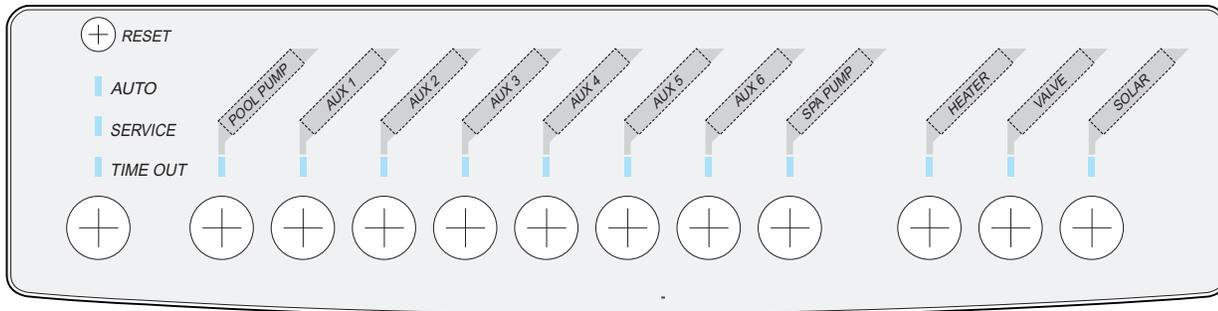
Section 10. Power Center Bezel



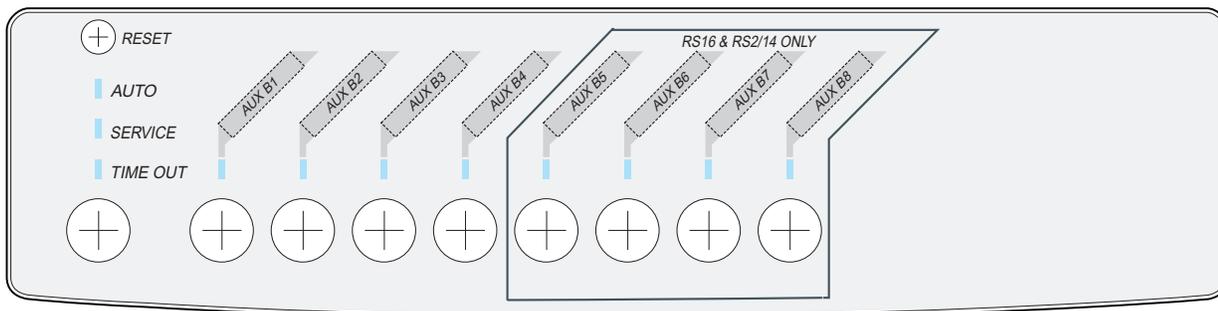
Pool/Spa Combination and Pool/Spa Only, Part # 6762



Dual Equipment, Part # 6782



Dual Equipment with Shared Heater, Part # 7024



Auxiliary, Part # 7209

Figure 25. Power Center Bezel Options

Notes

Notes

Notes

LIMITED WARRANTY

Thank you for purchasing Jandy® pool and spa products. Jandy Pool Products, Inc. warrants all parts to be free from manufacturing defects in materials and workmanship for a period of one (1) year from the date of retail purchase, with the following exceptions:

- AquaLink® RS units installed with Jandy Surge Protection Kits will be covered for two (2) years.
- Never Lube® valves are warranted for the life of pool and/or spa on which they were originally installed.
- AquaPure® Electronic Chlorine Generator Electrolytic Cells carry a five (5) year limited warranty on a prorated basis.

This warranty is limited to the first retail purchaser, is not transferable, and does not apply to products that have been moved from their original installation sites. The liability of Jandy Pool Products, Inc. shall not exceed the repair or replacement of defective parts and does not include any costs for labor to remove and reinstall the defective part, transportation to or from the factory, and any other materials required to make the repair. This warranty does not cover failures or malfunctions resulting from the following:

1. Failure to properly install, operate or maintain the product(s) in accordance with our published Installation, Operation and Maintenance Manuals provided with the product(s).
2. The workmanship of any installer of the product(s).
3. Not maintaining a proper chemical balance in your pool and/or spa [pH level between 7.2 and 7.8, Total Alkalinity (TA) between 80 to 120 ppm, Total Dissolved Solids (TDS) less than 2000 not including salt ppm].
4. Abuse, alteration, accident, fire, flood, lightning, rodents, insects, negligence or acts of God.
5. Scaling, freezing, or other conditions causing inadequate water circulation.
6. Operating the product(s) at water flow rates outside the published minimum and maximum specifications.
7. Use of non-factory authorized parts or accessories in conjunction with the product(s).
8. Chemical contamination of combustion air or improper use of sanitizing chemicals, such as introducing sanitizing chemicals upstream of the heater and cleaner hose or through the skimmer.
9. Overheating; incorrect wire runs; improper electrical supply; collateral damage caused by failure of O-Rings, DE grids, or cartridge elements; or damage caused by running the pump with insufficient quantities of water.

LIMITATION OF LIABILITY:

This is the only warranty given by Jandy Pool Products, Inc. No one is authorized to make any other warranties on behalf of Jandy Pool Products, Inc. **THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY. JANDY POOL PRODUCTS, INC. EXPRESSLY DISCLAIMS AND EXCLUDES ANY LIABILITY FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT OR PUNITIVE DAMAGES FOR BREACH OF ANY EXPRESSED OR IMPLIED WARRANTY.** This warranty gives you specific legal rights. You may also have other rights that vary by state or province.

WARRANTY CLAIMS:

For prompt warranty consideration, contact your dealer and provide the following information: proof of purchase, model number, serial number and date of installation. The installer will contact the factory for instructions regarding the claim and to determine the location of the nearest designated service center. If the dealer is not available, you can locate a service center in your area by visiting www.jandy.com or by calling our technical support department at (707) 776-8200 extension 260. All returned parts must have a Returned Material Authorization number to be evaluated under the terms of this warranty.

