Balboa
System PN 55601

System Model # VSP-VS520Z-YCAH

Software Version # 43

EPN # 3055

Base PCBA - PN 55602
PCB VS500Z - PN 22972 Rev C or D

Base Panels
VL2XX Series
VL4XX Series
See page 8 and 9.

Aux Panel
VX10 – PN 55608 (required for blower operation)

Balboa water group

System Revision History

System PN	EPN	Date	Requested By	Changes Made
55601	3055	11.04.2008	Balboa	New System
55601	3055	11.10.2008	Balboa	Change P2 1Spd to P2 2 Spd.
55601	3055	12.02.2008	Balboa	Various Corrections.

55601_97_C

Basic System Features and Functions

Power Requirements
- 240VAC, 60Hz, 48A, Class A GFCI-protected service (Circuit Breaker rating = 60A max.)
- 4 wires [hot, hot (optional), neutral, ground]

System Outputs

Setup 1 (As Manufactured)
- 240V Pump 1, 2-Speed
- 240V Pump 2, 2-Speed
- 240V Blower
- 120V Ozone *
- 12V Spa Light
- 120V AV (Stereo)
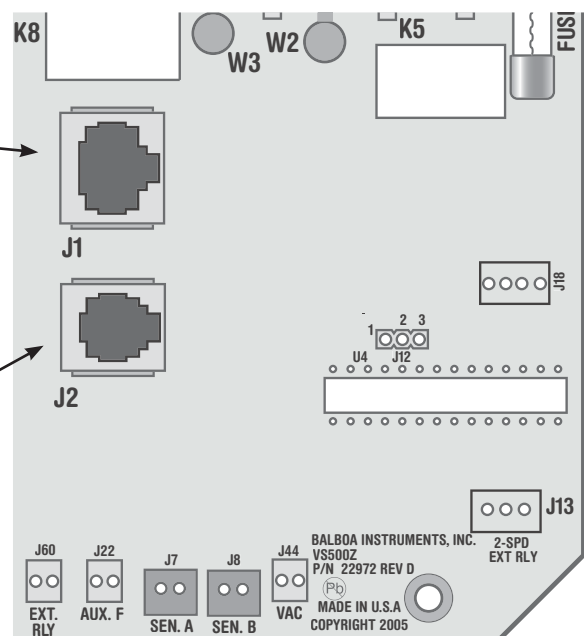- 240V 5.5kW Heater **

Optional Devices
- 120V Circ Pump *

* Ozone and Circ Pump must be same voltage.

** Heater wattage is rated at 240V. When running 120V to heater, output is approximately 25%.

Additional Options

- Main Panel

- IR Receiver Module
  Not compatible with this model

- MoodEFX Lighting
  Connects to Spa Light terminal J20

- FiberEFX Lighting
  Connects to Spa Light terminal J20

- Aux Panel (blower button)

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Any time you change a DIP Switch, other than A1, you must reset Persistent Memory for your new DIP Switch Settings changes to take effect. If you do not reset Persistent Memory, your system may function improperly.

To reset Persistent Memory:
- Power down by disconnecting power source from spa.
- Put a jumper across J43, covering both pins. (See illustration below)
- Power up by connecting power source to spa.
- Wait until "*Pr*" is displayed on your panel.
- Power down again.
- Remove jumper from J43 (May also move to cover 1 pin only)
- Power up again.

About Persistent Memory and Time of Day Retention:
This system uses memory that doesn't require a battery to store a variety of settings. What we refer to as Persistent Memory stores the filter settings, the set temperature, and the heat mode.

Persistent Memory is not used for Time of Day. Only models with a Serial Deluxe panel installed (VS5xxDZ and GS5xxDZ) can display the time. However, during power loss to the spa, the system will lose the correct time, and reset to 12:00 PM when power is restored.
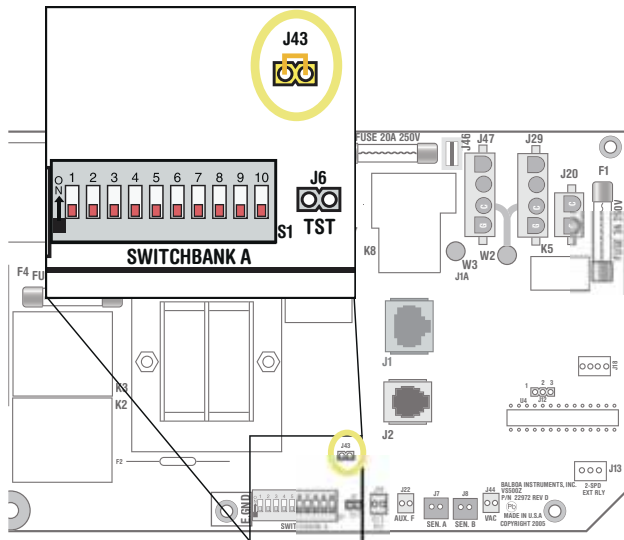
J43 on VS5xxZ and VS300 Series Main Board Shown.

Power Up Display Sequence
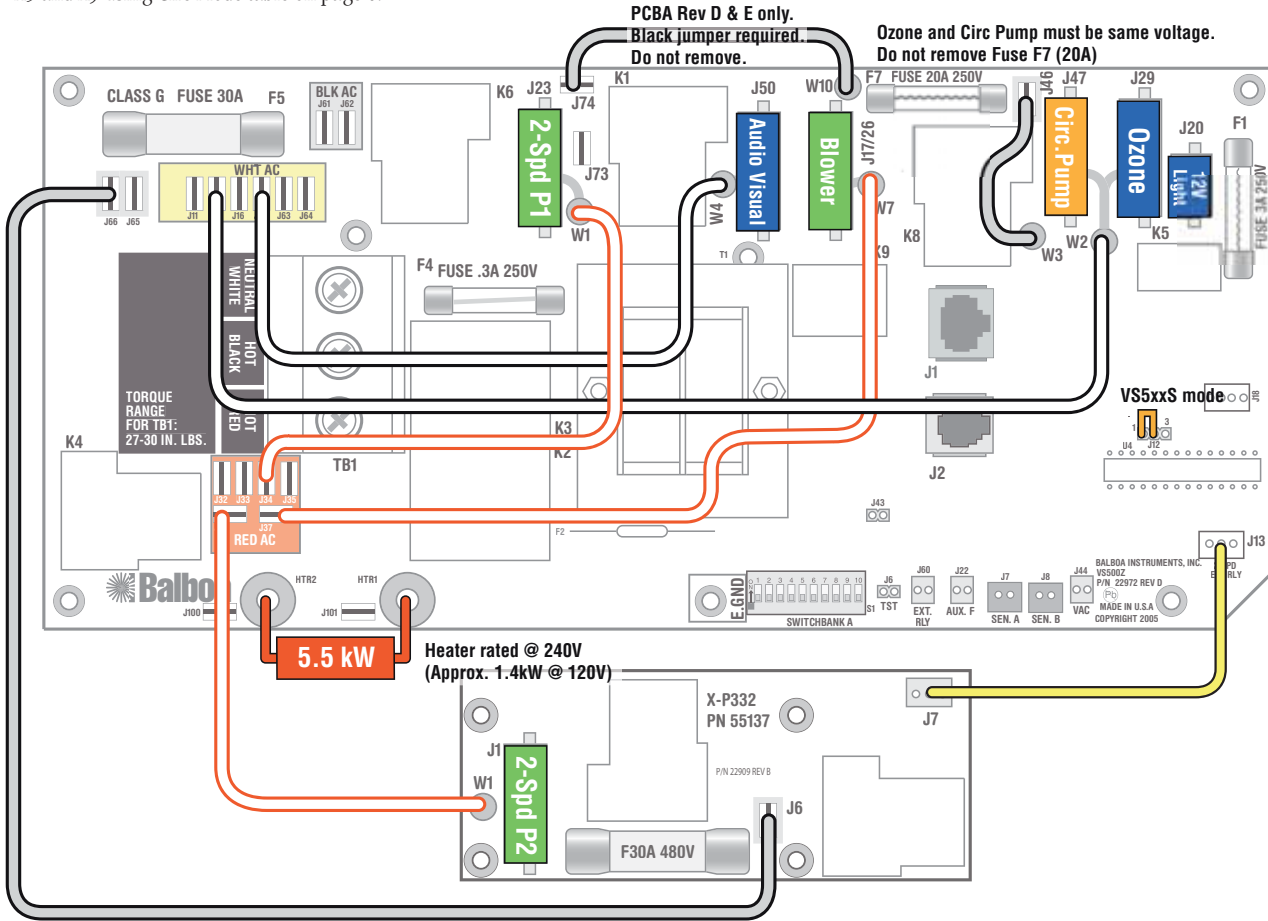Upon power up, you should see the following on the display:
- Three numbers in a row, which are the SSID (the System Software ID). The third display of these numbers is the Software Version, which should match the version of your system. For example, if these three numbers are *100 67 38*, that is a VS511SZ at version 38.
- Displayed next is: "*24*" (indicating the system is configured for a heater between 3 and 6 kW) or "*12*" (indicating the system is configured for a heater effectively* between 1 and 3 kW). "*24*" should appear for all VS models running at 240VAC. "*12*" should appear for all VS models running at 120VAC, as well as all GS models. (*A heater which is rated at 4 kW at 240VAC will function as a 1 kW heater at 120VAC.)
- "*Pr*" will appear to signal the start of Priming Mode.

At this point, the power up sequence is complete. Refer to the Reference Card for the VS or GS System model of your spa for information about how the spa operates from this point on, including how to adjust the Time of Day if using a Serial Deluxe style panel.
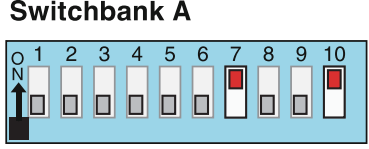
Setup 1 (As Manufactured)

- 240V Pump 1, 2-Speed
- 240V Pump 2, 2-Speed
- 120V Circ Pump (Optional)
  To enable Circ Pump, adjust DIP switches A5 and A9 using Circ Mode table on page 6.

- 240V Blower
- 120V Ozone
- 12V Spa Light
- 120V A\V (Stereo)

- 240V 5.5kW Heater
- VL2XX Main Panel (A3 must be on)
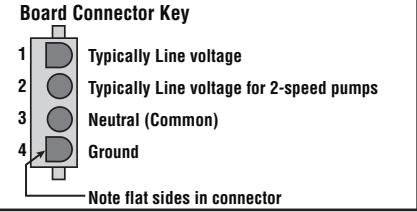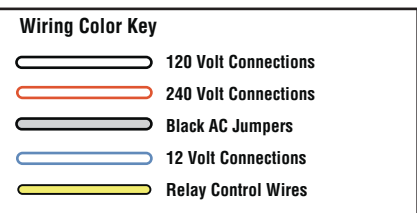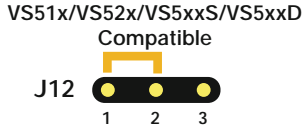- VL4XX Main Panel (A3 must be off)
- VX10 Aux Panel

PCBA Rev D & E only.
Black jumper required.
Do not remove.

Ozone and Circ Pump must be same voltage.
Do not remove Fuse F7 (20A)

Heater rated @ 240V
(Approx. 1.4kW @ 120V)

WARNING: Main Power to system should be turned OFF BEFORE adjusting DIP switches.
WARNING: Persistent Memory (J43) must be RESET to allow new DIP switch settings to take effect. (See Persistent Memory page)
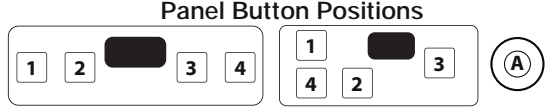

SSID #
100
97
43

Switchbank A

A1, Test Mode OFF
A2, See Table 1
A3, Duplex Panel
A4, Aux Freeze
A5, 2-speed P1

A6, 60 Hz
A7, Standard Mode only
A8, Degrees F
A9, Non-Circ Mode
A10, See Table 1

VS51x/VS52x/VS5xxS/VS5xxD
Compatible

J12   1 2 3

J43   Memory Reset

Wiring Color Key

————	120 Volt Connections
————	240 Volt Connections
————	Black AC Jumpers
————	12 Volt Connections
————	Relay Control Wires

Board Connector Key

1 Typically Line voltage
2 Typically Line voltage for 2-speed pumps
3 Neutral (Common)
4 Ground

Note flat sides in connector

Panel Button Assignments
1=Pump 2   4=Light
2=Pump 1   Aux=J17/26
3=Temp

Panel Button Positions

1   2   3   4

1   3
4   2   A

DIP Switches and Jumpers Definitions

SSID 100 97 43   Base Model VS520Z

DIP Switch Key

A1 Test Mode (normally OFF)

A2+A10 Control amp draw requirements (See Table 1)

A3 "ON" position: use Mini Panel ⬤○○○○
    "OFF" position: use Digital Duplex or Light Duplex panel

A4 Aux Freeze (must be OFF)

A5+A9 Pump 1 speeds and Circ Modes:

A5	A9	Circ Mode	Pump 1 Speed
OFF	OFF	Non-circ	2-speed
ON	OFF	Circ "acts like Pump 1 low" (filters/polls/ect)	1-speed
OFF	ON	24 hours with 3°F shut-off	1-speed
ON	ON	24 hours with 3°F shut-off	2-speed

A6 "ON" position: 50Hz operation
    "OFF" position: 60Hz operation

A7 "ON" position: Standard mode only
    "OFF" position: Std/Ecn/Sleep mode changes allowed

A8 "ON" position: temperature is displayed in degrees Celsius
    "OFF" position: temperature is displayed in degrees Fahrenheit

Note: Panel layout is always Pump 2, Pump 1, Temp, Light, with optional Blower or Pump 3 on 1-button Aux Panel.**

** J2 connector on main board must be a 6-pin connector to use Aux Panel. IR Receiver is not compatible.

| Table 1		# of Hi-Speed Pumps/Blower Before Heat Disabled
A2	A10	
OFF	OFF	0
ON	OFF	1
OFF	ON	2
ON	ON	3

Alert:
2-speed Pump 2 is required, uses X-P332 expander board.
To add Blower or 1-speed Pump 3, use J17/26 and 1-button Aux Panel.

Jumper Key

J12 **Factory set. DO NOT MOVE.**
    Jumper must be on Pins 1 and 2 for VS51xZ/VS52xZ/VS5xxSZ/VS5xxDZ software.
    Jumper must be on Pins 2 and 3 for VS50xZ software.

J43 When jumper is placed on 2 pins during power-up, system will reset persistent memory.
    Leave on 1 pin only to enable persistent memory feature.

WARNING:
•Setting DIP switches incorrectly may cause abnormal system behavior and/or damage to system components.
•Refer to Switchbank illustration on Wiring Configuration page for correct settings for this system.
•Contact Balboa if you require additional configuration pages added to this tech sheet.

Panel Button Positions

A3:OFF [1] [2] ⬛ [3] [4]   [1] ⬛ [3] (A)
                                   [4] [2]

A3:ON ⬛ ①②③④   (A)
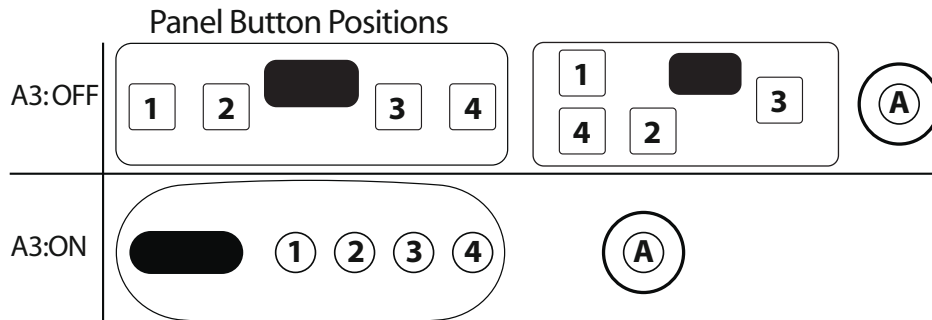
Panel Button Assignments

1=Pump 2	3=Temp	Aux=J17/26
2=Pump 1	4=Light	

Ozone Connections

Ozone Connector Voltage: The VS500Z circuit board is factory configured to deliver a preset voltage (120V or 240V) to the on-board ozone connector (J29). See the ratings table on the wiring diagram attached to the cover of the enclosure for the configured voltage. For 240V output W2 connects to Red AC and for 120V output W2 connects to White AC.

The voltage to the ozone connector can be changed in the field if required. W2 just needs to be set for the required voltage.
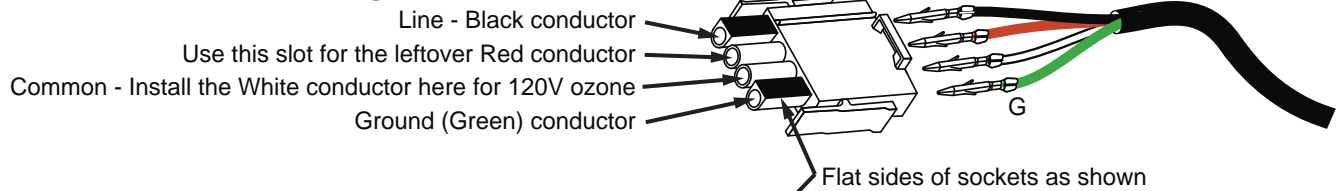
WARNING: Changing the voltage of the ozone connector also effects the voltage supplied to the circ pump connector (J47). Any equipment controlled by that connector may be damaged if the wrong voltage is selected.

Balboa Ozone Generator: If the board is set up to operate a 120V ozone generator, the connector on the ozone generator is likely to be configured correctly, but should be compared to the illustration below.
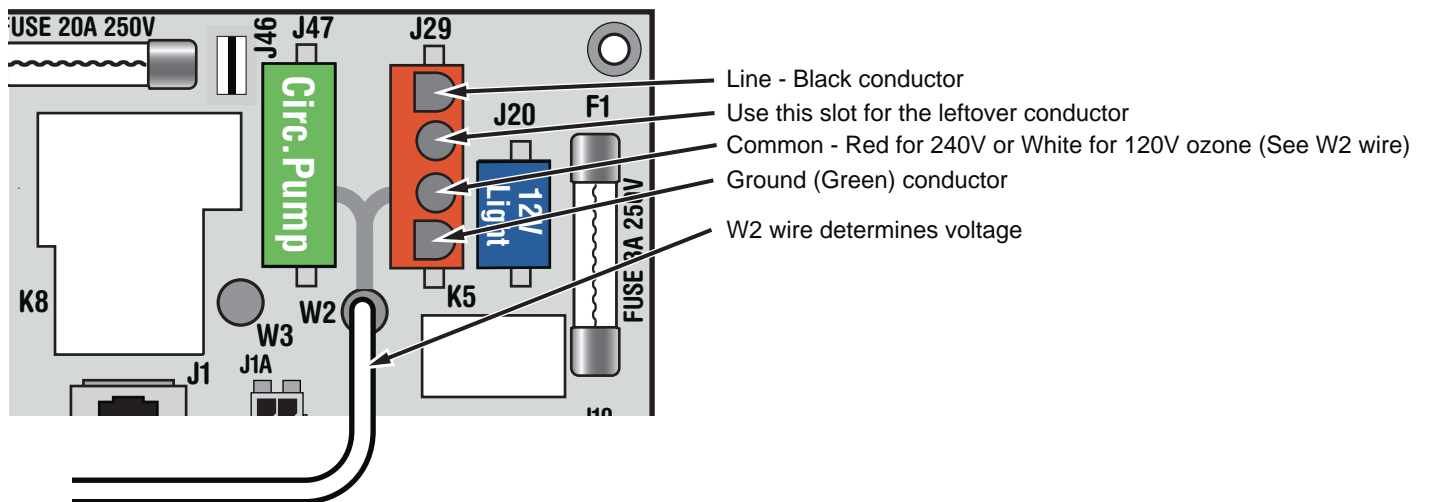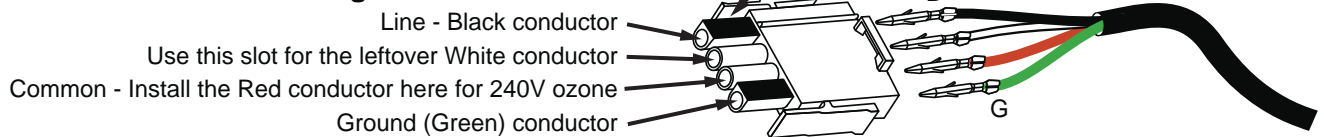
If a 240V ozone generator is required, be sure the red wire in the ozone cord is positioned in the connector next to the green ground wire as described below.

Note: A special tool is required to remove the pins from the connector body once they are snapped in place. Check with your Balboa Account Manager for information on purchasing a pin-removal tool.

Balboa Ozone connector configuration for 120V 60Hz

Line - Black conductor
Use this slot for the leftover Red conductor
Common - Install the White conductor here for 120V ozone
Ground (Green) conductor

B

G

Flat sides of sockets as shown

Balboa Ozone connector configuration for 240V 60Hz

Line - Black conductor
Use this slot for the leftover White conductor
Common - Install the Red conductor here for 240V ozone
Ground (Green) conductor

B

G

FUSE 20A 250V
J46 J47 J29
Circ.Pump
J20 F1
12V Light
FUSE 3A 250V
K8 K5
W2
W3
J1 J1A

Line - Black conductor
Use this slot for the leftover conductor
Common - Red for 240V or White for 120V ozone (See W2 wire)
Ground (Green) conductor
W2 wire determines voltage

Duplex Panel Configurations

VL200 (LCD Lite Digital)
PN 52312 with Overlay PN 11127
• Connects to Main Board terminal J1
• DIP Switch A3 must be on

VL240 (MVP240)
PN 55569 with Overlay PN 11764 (Gray Plastic)
PN 53636 with no O/L (White Plastic)
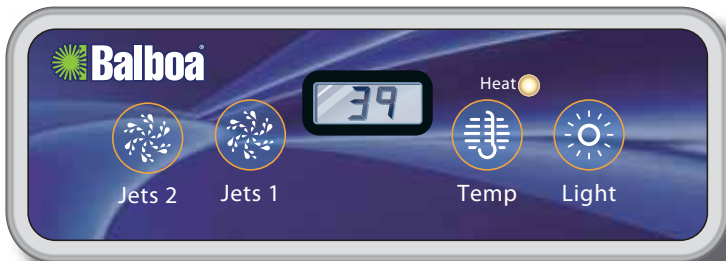• Connects to Main Board terminal J1
• DIP Switch A3 must be on

VL260 (MVP260)
Overlay PN 11725
PN 55049 with White Plastic
PN 55050 with Gray Plastic
PN 55051 with Clear Plastic
• Connects to Main Board terminal J1
• DIP Switch A3 must be on

VL400
PN 55129 with Overlay PN 11822
• Connects to Main Board terminal J1
• DIP Switch A3 must be off

VL401 (LCD Lite Digital)
PN 54251-01 with Overlay PN 11671
• Connects to Main Board terminal J1
• DIP Switch A3 must be off

Duplex Panel Configurations

VL402 (LCD Super Duplex)
PN 54107 with Overlay PN 10764
• Connects to Main Board terminal J1
• DIP Switch A3 must be off

VL403 (LED Lite Digital)
PN 54104-01 with Overlay PN 10752
• Connects to Main Board terminal J1
• DIP Switch A3 must be off

VL404 (LED Digital Duplex)
PN 51248 with Overlay PN 10418
• Connects to Main Board terminal J1
• DIP Switch A3 must be off

DUPLEX

AUX

VX10
PN 55608 with Overlay PN 40107
• Required for Blower Operation
• Connects to Main Board terminal J2