Balboa Instruments
System PN 55370-01

System Model # VSP-VS504SZ-DCAJ
Software Version # 43
EPN # 2808

Base PCBA - PN 54638-01
PCB VS500Z - PN 22972 Rev C or D

Base Panels
VL701S (Serial Standard) – PN 52298-01
<table>
<thead>
<tr>
<th>System PN</th>
<th>EPN</th>
<th>Date</th>
<th>Requested By</th>
<th>Changes Made</th>
</tr>
</thead>
<tbody>
<tr>
<td>55370-01</td>
<td>2808</td>
<td>08.27.2008</td>
<td>Balboa</td>
<td>Software update to version 43.</td>
</tr>
</tbody>
</table>
Basic System Features and Functions

Power Requirements
- 240VAC, 60Hz, 40A, Class A GFCI-protected service (Circuit Breaker rating = 50A max.)
- 4 wires [hot, hot, neutral, ground]

System Outputs
Setup 1 (As Manufactured)
- 240V Pump 1, 2-Speed
- 240V Pump 2, 1-Speed
- 240V Ozone *
- 12V Spa Light
- 120V AV (Stereo)
- 240V 4.0kW Heater **

Optional Devices
- 240V Circ Pump *

Additional Options
- Full Feature Dolphin Remote and Spa-only Dolphin Remote
- IR Receiver Module
  Connects to terminal J1 or J2
- MoodEFX Lighting
  Connects to Spa Light terminal J20
- FiberEFX Lighting
  Connects to Spa Light terminal J20

* Ozone and Circ Pump must be same voltage.
** Heater wattage is rated at 240V. When running 120V to heater, output is approximately 25%.
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 “RST” 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.

**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: “244” (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). “244” 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.
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)

**Switchbank A**

<table>
<thead>
<tr>
<th>SSID #</th>
<th>100</th>
<th>93</th>
<th>43</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Test Mode OFF</td>
<td>A6, 60 Hz</td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td>See Table 1</td>
<td>A7, Exp Board Equip Disabled</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>J 17/26 Pump Enabled</td>
<td>A8, Degrees F</td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td>Aux Freeze</td>
<td>A9, Non-Circ Mode</td>
<td></td>
</tr>
<tr>
<td>A5</td>
<td>2-speed P1</td>
<td>A10, See Table 1</td>
<td></td>
</tr>
</tbody>
</table>

**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

**Panel Button Assignments**

<table>
<thead>
<tr>
<th>Panel Button</th>
<th>Panel Button Positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = Mode</td>
<td>4=Light</td>
</tr>
<tr>
<td>2 = Temp Up</td>
<td>5 = Pump 1</td>
</tr>
<tr>
<td>3 = Temp Down</td>
<td>6 = Pump 2</td>
</tr>
<tr>
<td>4 = Light</td>
<td>7=Unused</td>
</tr>
</tbody>
</table>

**Panel Button Positions**

1. J12 Memory Reset
2. J43 Memory Reset
DIP Switches and Jumpers Definitions

SSID 100 93 43  Base Model VS503SZ-VS504SZ-VS514SZ

DIP Switch Key

A1  Test Mode (normally OFF)
A2+A10  Control amp draw requirements (See Table 1)
A3  “ON” position: J17/26 Enabled for 1-speed Pump only.
   “OFF” position: J17/26 Disabled.
A4  Aux Freeze (must be OFF)
A5+A9  Pump 1 speeds and Circ Modes:
<table>
<thead>
<tr>
<th>A5</th>
<th>A9</th>
<th>Circ Mode</th>
<th>Pump 1 Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>Non-circ</td>
<td>2-speed</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>Circ “acts like Pump 1 low” (filters/polls/ect)</td>
<td>1-speed</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>24 hours with 3°F shut-off</td>
<td>1-speed</td>
</tr>
<tr>
<td>ON</td>
<td>ON</td>
<td>24 hours with 3°F shut-off</td>
<td>2-speed</td>
</tr>
</tbody>
</table>
A6  “ON” position: 50Hz operation
   “OFF” position: 60Hz operation
A7  “ON” position: Expander Board Enabled for Blower or 1-speed Pump.
   “OFF” position: Expander Board Disabled
A8  “ON” position: temperature is displayed in degrees Celsius
   “OFF” position: temperature is displayed in degrees Fahrenheit

When using a Blower, use X-B expander board. When using a 1-speed Pump 3, use X-P or X-P231, depending on amperage requirements.

* Panel with button layout is not compatible.

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 Assignments

1=Mode  5=Pump 1
2=Temp Up  6=Pump 2 (when A3 is ON)
3=Temp Down  7=Exp Board (when A7 is ON)
4=Light

Aux Panel Information

Supports 2-button aux panel

VX20
When A3 is ON
| 5 6 |

VX20
When A3 is OFF
| 5 7 |

Supports 4-button aux panel

VX40S
| 5 6 4 7 |
VL701S (Serial Standard)
PN 52298-01 with No Overlay (Example shown)
* Connects to Main Board terminal J1*

* Panels with back-lighting (bulbs installed) should never be plugged into J2. Use J1 only. If the backlight bulbs are removed, then both J1 and J2 may be used.