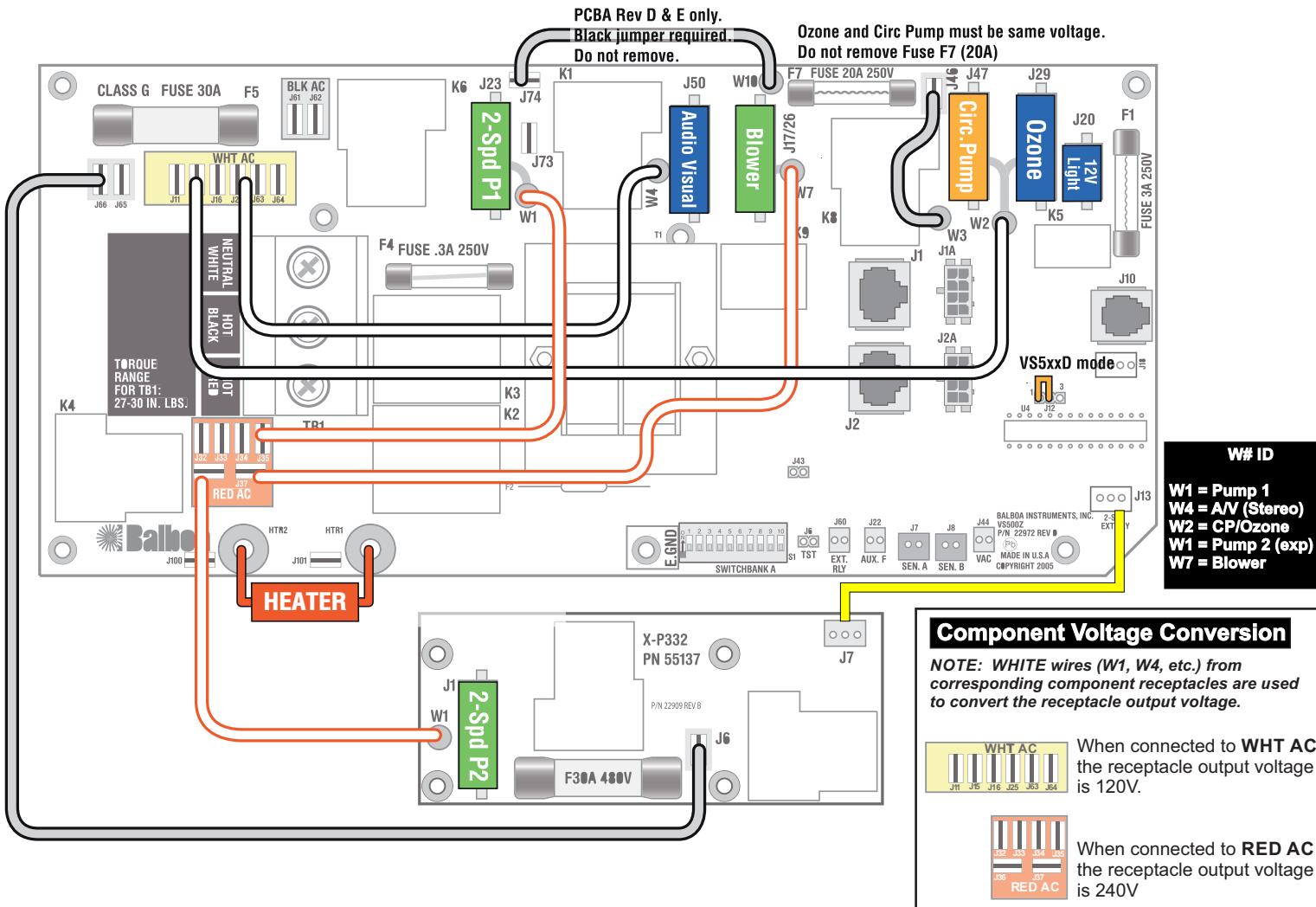


VS520DZ Wiring Configuration and DIP Settings

Setup (As Shipped)

- 240V Pump 1, 2-Speed
- 240V Pump 2, 2-Speed
- 240V Blower
- 120V Ozone
- 12V Spa Light
- 120V A/V (Stereo)
- 240V Heater
- 120V Circ Pump (Optional)
- Support VL801D, VL802D Panels



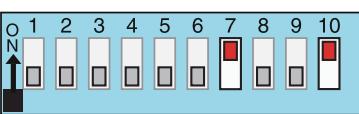
WARNING: Main Power to system should be turned OFF BEFORE adjusting DIP switches.

WARNING: Persistent Memory (J43) must be RESET to allow new DIP switch settings to take effect. (See Persistent Memory page)

SSID #

100
94
43

Switchbank A



A1, Test Mode OFF
A2, See Table 1
A3, N/A
A4, Aux Freeze
A5, 2-speed P1

A6, 60 Hz
A7, J17/26 Enabled
A8, Degrees F
A9, Non-Circ Mode
A10, See Table 1

VS51x/VS5xxS/VS5xxD Compatible



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=Time
2=Mode/Prog
3=Temp Up
4=Temp Down
5=Light
6=Pump 1
7=Pump 2
8=J17/26

Panel Button Positions



VS520DZ DIP Switches and Jumpers Definitions

SSID 100 94 43

DIP Switch Key

- A1 Test Mode (normally OFF)
- A2+A10 Control amp draw requirements (See Table 1)
- A3 N/A (must be OFF)
- 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/etc)	1-speed
OFF	ON	24 hours with 3°F shut-off	1-speed
ON	ON	24 hours with 3°F shut-off	2-speed

Table 1 # of Hi-Speed Pumps/Blower Before Heat Disabled

A2 A10

OFF	OFF	0
ON	OFF	1
OFF	ON	2
ON	ON	3

- A6 "ON" position: 50Hz operation
"OFF" position: 60Hz operation
- A7 "ON" position: J17/26 equipment enabled
"OFF" position: J17/26 equipment disabled
- A8 "ON" position: temperature is displayed in degrees Celsius
"OFF" position: temperature is displayed in degrees Fahrenheit

Jumper Key

J12 Factory set. DO NOT MOVE.

Jumper must be on Pins 1 and 2 for VS51xZ/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.

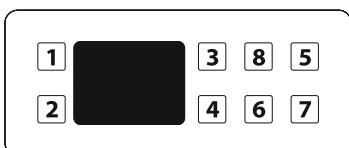
WARNING:

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



Panel Button Assignments

1=Time	5=Light
2=Mode/Prog	6=Pump 1
3=Temp Up	7=Pump 2
4=Temp Down	8=J17/26 (when A7 is ON)

Aux Panel Information

Supports 2-button aux panel

VX20



Supports 4-button aux panel

VX40D

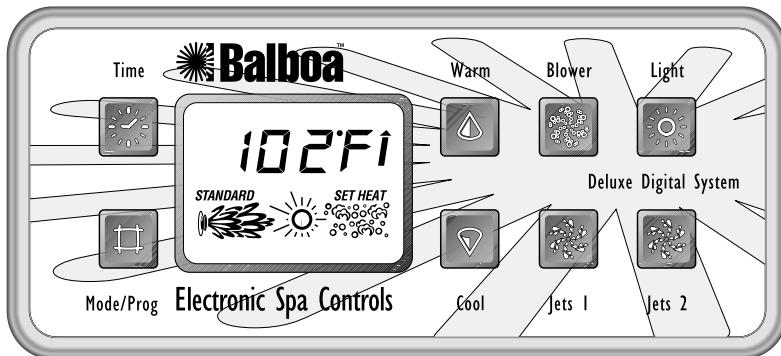


DELUXE Reference Card

Don't Panic! No Programming is Necessary!

Initial Start-up

When your spa is powered up, it begins running in an economy mode. This setting is designed for periods of little or no spa use, but the spa continues to filter twice a day to maintain water quality. Press the  pad to switch the spa to standard mode which will automatically heat and maintain the water at 100°F or your desired set temperature.



Control panel pads

Temperature Adjustment (80°F - 104°F)

Press either pad once, and the LCD will display the temperature which has been set, as well as the words "SET HEAT." Each time either of these pads is pressed again, the set temperature will increase or decrease. After three seconds, the LCD will automatically display the current spa temperature.

Jets 1

Press this pad to operate pump 1. The operating sequence for pump 1 is: low speed (small jet icon blinks); high speed (small jet icon is solid); then off. If left running, the low speed will automatically turn off after 4 hours; the high speed will turn off after 30 minutes. The low speed will run when the heater is turned on, when a filter cycle is activated, or when a freeze condition is detected. When the low speed turns on automatically, it cannot be deactivated from the panel; however, the high speed may be started.

Systems with a circulation pump: Pump 1 has only one speed and the small jets icon is always solid. The pump will turn off if the water temperature is 2°F above the set temperature. It turns on again at 1°F below the set temperature. It always comes on during a filter cycle.

Automatic Features

Preset Filter Cycles

Your spa will automatically filter itself twice each day. The low speed of pump 1 and the ozone generator (if installed) will run the duration of each filter cycle.

Filter 1

The first filter cycle is automatically activated at 8:00 PM and operates the low speed of pump 1 and the ozone generator (if installed) until 10:00 PM. Again, if the heat enable feature is on, the spa will heat to the set temperature in the economy mode. The blower will run for 30 seconds, and the high speed of pump 2 will run for 5 minutes.

Jets 2

Press the "Jets 2" pad to operate pump 2. Press the pad to turn on the low speed (large jet icon blinks). If equipped, press the pad again to turn on the high speed (large jet icon is solid), and again to turn off the pump. The low speed and the high speed (if installed) will turn off after 30 minutes.

Blower

This pad turns the blower on and off. If left on, the blower will automatically turn off after 30 minutes.

Light

Your spa light has three settings. Press the pad once for brightest intensity and a second time for medium intensity. Press the pad a third time for the dimmest setting and a final time to turn the spa light off. After 4 hours, the light will automatically turn off.

Economy & Standard Modes

Press this pad to switch between modes. **Standard mode** **maintains the set temperature at all times.** Economy mode heats the water only during filter cycles. See the Optional Filter Cycle Programming section for more heater options.

Filter 2

The second filter cycle is automatically activated at 8:00 AM and will operate the low speed of pump 1 and the ozone generator (if installed) until 10:00 AM. If the heat enable feature is on, the spa will heat to the set temperature in the economy mode.

Systems with a circulation pump: If your spa has a circulation pump and an ozone generator, each will run 24 hours per day to constantly maintain the spa water. Also, once a day, the blower will run for 30 seconds and the high speed of pump 1 and pump 2 will run for 5 minutes.

System Programming

Setting the Time of Day

When the spa is first powered up, the words "SET TIME" will flash on the display. To set the time, press  , then  or . After  or  is pressed once, the time will begin changing in one-minute increments. Press either pad to stop the time from changing. Press  to enter your correct time into the system.

Optional Filter Cycle Programming

While you are not required to set filter cycles, if you want to change them, press    within 3 seconds. "SET START FILTER 1" will appear on the display.

Press  or  to reset the filter start time.

When "SET HEAT" is on the display, press  (on) to warm the water during filtering, or press  (off) to disable the heater.

Press  to see "SET STOP FILTER 1" and adjust the time with the  or  pads, as done above.

Press  to see "SET START FILTER 2" and proceed as above.

Pressing  will enter the new filter cycle times into the system and display the current water temperature.

Locking the Panel

Press   (blower)  within 3 seconds. When locked, the display will show the temperature you have chosen, along with the lock symbol. All pads are frozen except the  pad.

Diagnostic Messages

Message	Meaning	Action Required
	No message on display. Power has been cut off to the spa.	The control panel will be disabled until power returns. Spa settings will be preserved until next power up.
--	Temperature unknown.	After the pump has been running for 2 minutes, the current water temperature will be displayed.
DHH	"Overheat" - The spa has shut down.* One of the sensors has detected 118°F/47.8°C at the heater.	DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. Once the heater has cooled, reset by pushing any button. If spa does not reset, shut off the power to the spa and call your dealer or service organization.
DHS	"Overheat" - The spa has shut down.* One of the sensors has detected that the spa water is 110°F/43.5°C.	DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. At 107°F/41.7°C, the spa should automatically reset. If spa does not reset, shut off the power to the spa and call your dealer or service organization.
SnA	Spa is shut down.* The sensor that is plugged into the Sensor "A" jack is not working.	If the problem persists, contact your dealer or service organization. (May appear temporarily in an overheat condition.)
SnB	Spa is shut down.* The sensor that is plugged into the Sensor "B" jack is not working.	If the problem persists, contact your dealer or service organization. (May appear temporarily in an overheat condition.)
SnS	Sensors are out of balance. If alternating with spa temperature, it may just be a temporary condition. If flashing by itself, spa is shut down.*	If the problem persists, contact your dealer or service organization.
HFL	A significant difference between temperature sensors has been detected. This could indicate a flow problem.	If the water level is normal, make sure all pumps have been primed. If problem persists, contact your dealer or service organization.
LF	Persistent low flow problems. (Displays on the fifth occurrence of HFL message within 24 hours.) Heater is shut down, but other spa functions continue to run normally.	Follow action required for HFL message. Heating capability of the spa will not reset automatically; you may press any button to reset.
dr	Possible inadequate water, poor flow, or air bubbles in detected in the heater. Spa is shut down for 15 minutes.	If water level is normal, make sure all pumps have been primed. Press any button to reset. This message will reset within 15 minutes. If problem persists, contact your dealer or service organization.
drY	Inadequate water detected in heater. (Displays on third occurrence of dr message.) Spa is shut down.*	Follow action required for dr message. Spa will not automatically reset. Press any button to reset manually.
ICE	"Ice" - Potential freeze condition detected.	No action required. All equipment will automatically activate regardless of spa status. The equipment stays on 4 minutes after the sensors detect that the spa temperature has risen to 45°F/7.2°C or higher. An optional freeze sensor may be added to protect against extraordinary freeze conditions. Auxiliary freeze sensor protection is advisable in colder climates. See your dealer for details.

* - Even when spa is shut down, some equipment will turn on if freeze protection is needed.

Unlocking the Panel

Press   (blower)  within 2 seconds. The lock symbol will disappear and all panel pads will work again.

Locking the Temperature

While setting your spa water temperature, after you have pressed  or , press   (blower)  within 3 seconds to activate the lock. When locked, the center display will show the spa temperature along with the lock symbol.

Unlocking the Temperature

Press  or  then   (blower)  within 2 seconds.

Freeze Protection

If the high-limit sensor detects 40°F at the heater, then all equipment is automatically activated to provide freeze protection. This is a normal spa function; no corrective action is necessary. The equipment stays on until the sensor detects 45°F at the heater. Freeze protection is enabled regardless of the status of the spa. In colder climates, an optional additional freeze sensor may be added to protect against freeze conditions. See your dealer for details.

Warning! Shock Hazard! No User Serviceable Parts.

Do not attempt service of this control system. Contact your dealer or service organization for assistance. Follow all owner's manual power connection instructions. Installation must be performed by a licensed electrician and all grounding connections must be properly installed.