

MXBP501X Tech Sheet

Customer: Maax Spas
Part Number: 56549-04 800 Incoloy

Custom Box Overlay ☒
Box Overlay Part Number 40547

UL System Model: BP501-MXBP501X-AU
Software Version ID: M100_201 V36.0
Software Version: 36.0
File Name: BP501_36.0_MXBP501X_CHGUV.hex
Configuration Signature: 8222f070

Eng. Project Number: 4912

Control Panels (See later pages for more information):

spaTouch™ 2	Any version (version 2.0 or later required for bba™ 2 fully integrated functionality)
Icon spaTouch™	Any version (version 3.36 or later required for bba™ 2 fully integrated functionality)
Menued spaTouch™	Any version (version 2.8 or later required for bba™ 2 integrated functionality)
TP800	Version 3.1 and later (Version 3.13 or later required for bba™; version 4.11 or later required for bba™ 2 integrated functionality)
TP600	Version 2.7 and later



System Revision History

Part #	EPN	Date	Originator	Changes Made
56549	4143	09-25-13	Customer	New BP501-based system with optional expander board.
56549	4143	11-05-13	Customer	Updated tech sheet and wiring diagram to show 120V option for Setup 7.
56549-01	4208	02-06-14	Customer	Balboa is to install external relay board 51264. Make Filter 2 default to On and 2 hours. Update to latest software version, adding topside-intergrated bba™ support.
56549-02	4672	01-28-16	Customer	Update to latest software version and default to Rest Mode.
56549-03	4823	12-06-16	BWG	Updated to latest software version, adding topside-intergrated bba™ 2 support. Released to production.
56549-04	4912	06-21-17	Customer	Add “Change UV” reminder every 540 days, and remove all other reminders. Release to production.

bba™ & bba™2 (Balboa Bluetooth Amp) connection is documented seperately.

bba™ is only integrated into graphic display panels (TP800, TP900 and spaTouch™). With TP600 the Aux button operation of bba™ must be used.

bba™2 is only integrated into graphic display panels (TP800, TP900 and spaTouch™). bba™2 does not support Aux button operation.

Note: Except when used with custom panels that have been modified to restrict BBA inputs, this system itself allows all BBA inputs to be selected when using all other graphic display panels.

Basic Functions Setup 1 - 7

Power Requirements:

240VAC, 50/60Hz*, 48A, Class A GFCI-protected service (Circuit Breaker = 60A max.),
4 wires [hot, hot, neutral, ground]

120/240VAC, 60Hz, 16/40A, Class A GFCI-protected service (Circuit Breaker = 20 /50A max.) - Setup 7 ONLY,
3 or 4 wires [hot, hot (optional), neutral, ground].

* BP systems automatically detect 50Hz vs 60Hz. However, power frequency (50Hz vs 60Hz) is just one of many differences between North American (UL) and CE power, and it is because of these other differences that different BP systems must be used for UL vs CE territories. Also, there are a few countries that use CE power but 60 Hz (such as South Korea) which need CE systems, and a few countries that use UL power but 50 Hz which need UL systems.

HiPot Testing Note:

Disconnect slip terminal with green wires from J52 prior to performing HiPot test. Failure to disconnect may cause a false failure of the test. Reconnect terminal to J52 after successful completion of HiPot test.

System Outputs:

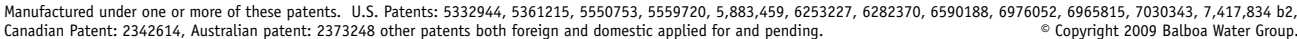
Pump 1	240VAC*	2-Speed	12A max	15-minute timer (120-minute timer for P1 Low) This is the heater pump. Must deliver 20 GPM through heater
Pump 2	240VAC	2-Speed 1-Speed in Setups 2 & 6 Unused in Setups 4 & 7	12A max	15-minute timer – <u>requires</u> expander board to be installed
Pump 3	240VAC	1-Speed Used in Setup 3	12A max	15-minute timer
Blower	240VAC	1-Speed Used in Setups 1, 2 & 4	4A max	15-minute timer
Ozone	240VAC*		.5A max	Slaved to Pump 1 Low
Spa Light	10VAC	On/Off	1A max	60-minute timer.
A/V (Stereo)	120VAC	Hot	4A max	Always on
Heater	5.5kW @ 240VAC max			

*Pump 1 and Ozone must be the same voltage.

With 120VAC power input (for Setup 7 only), Ozone must be set to 120VAC by moving wires attached to J50 and J51 to area 1 (Neutral).

Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending. © Copyright 2009 Balboa Water Group.






Setup Reference Table

Setup #	Circ Pump	Pump 1	Pump 2	Pump 3	Blower	Temp Scale
1	None	2-Speed	2-Speed	None	1-Speed	°F
2	None	2-Speed	1-Speed	None	1-Speed	°F
3	None	2-Speed	2-Speed	1-Speed	None	°F
4	None	2-Speed	None	None	1-Speed	°F
5	None	2-Speed	2-Speed	None	None	°F
6	None	2-Speed	1-Speed	None	None	°F
7	None	2-Speed	None	None	None	°F

System (and any replacement board) is shipped in Setup 7

As shown on additional wiring diagram section:



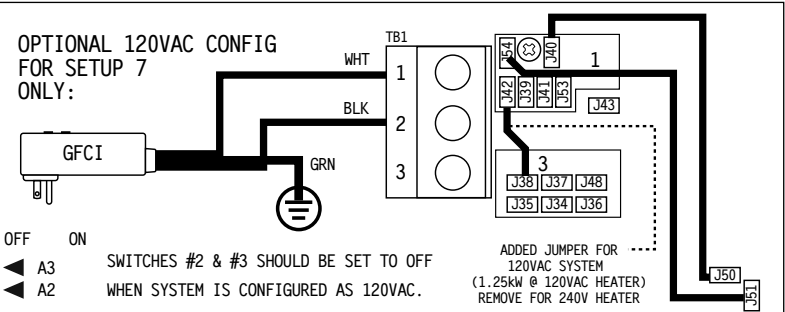
MXBP501X PN 56549-04

06-21-17

INSTEAD OF SETUP #7,
THIS SYSTEM IS
CONFIGURED
IN SETUP #:

SETUP #	CIRC PUMP	PUMP 1	PUMP 2	PUMP 3	BLOWER	TEMP SCALE
1	NONE	2-SPEED	2-SPEED	NONE	1-SPEED	°F
2	NONE	2-SPEED	1-SPEED	NONE	1-SPEED	°F
3	NONE	2-SPEED	2-SPEED	1-SPEED	NONE	°F
4	NONE	2-SPEED	NONE	NONE	1-SPEED	°F
5	NONE	2-SPEED	2-SPEED	NONE	NONE	°F
6	NONE	2-SPEED	1-SPEED	NONE	NONE	°F
7	NONE	2-SPEED	NONE	NONE	NONE	°F

OPTIONAL 120VAC CONFIG
FOR SETUP 7
ONLY:



Changing Software Setups with spaTouch™ Icon-Driven Panels

Test Menu Access (S1, Switch 1 ON) *Service Technician ONLY.*

DANGER! HIGH VOLTAGE WILL BE ACCESSIBLE! SERVICE TECHNICIAN ONLY!

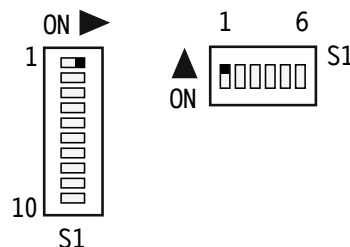
While the system is running, move DIP Switch 1 (on S1 on the Main circuit board) to ON.

The system will enter Test Mode.

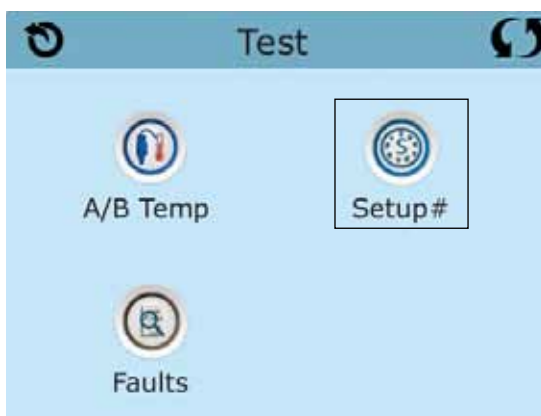
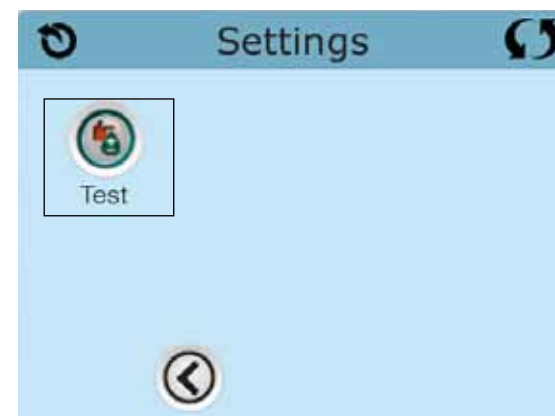
Moving DIP Switch 1 to OFF will exit Test Mode.

To Change Software Setups:

While in Test Mode, press the indicated icons to move from screen to screen.



The example screens shown here are from the spaTouch 1 Icon-Driven Panel, but the screens on the spaTouch 2 Panel are similar. The main difference is that the spaTouch 2 display is wider.



Once on the Setup Selection screen, press the Up or Down icon to select the desired Setup Number, then press the Check Mark icon to confirm and to have the spa restart.

After the system restarts, you may see a message that "The settings have been reset"; this is normal after changing Setups with DIP Switch 6 in the OFF position. Press "Clear" to dismiss this message.



Changing Software Setups with TP800 / TP900 / spaTouch™ Menued Panel

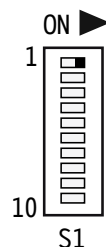
Test Menu Access (S1, Switch 1 ON) *Service Technician ONLY.*

DANGER! HIGH VOLTAGE WILL BE ACCESSIBLE! SERVICE TECHNICIAN ONLY!

While the system is running, move DIP Switch 1 (on S1 on the Main circuit board) to ON.

The system will enter Test Mode.

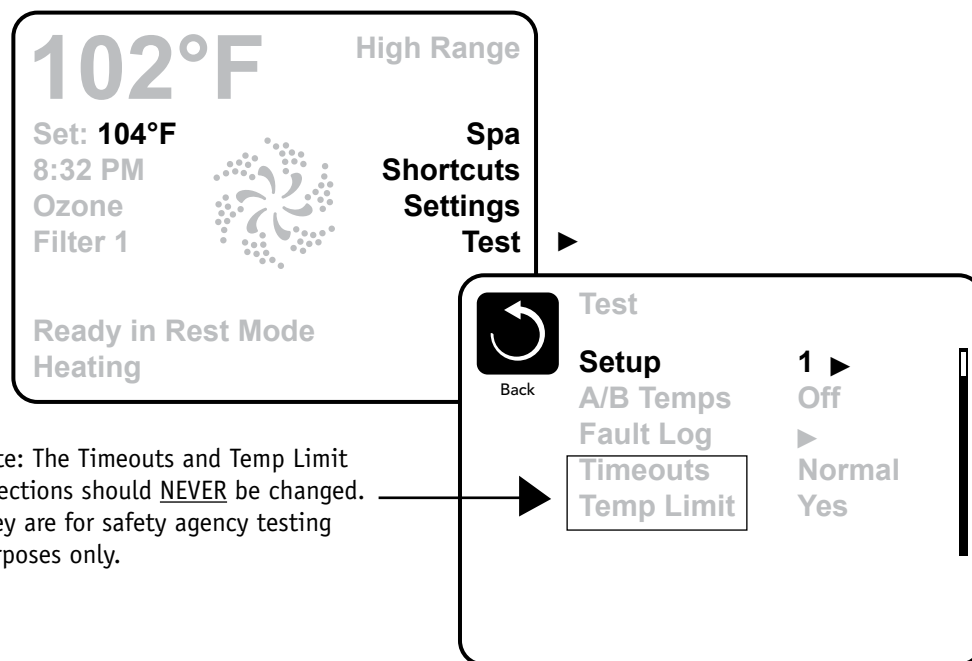
Moving DIP Switch 1 to OFF will exit Test Mode.



Software Setups

Under the TEST Menu, the Setup screen will allow changing the Setup from 1 to any number established by the Manufacturer.

Changing the Setup may require wiring changes as well.



Note: The Timeouts and Temp Limit selections should NEVER be changed. They are for safety agency testing purposes only.

Changing Software Setups with TP600 / TP400

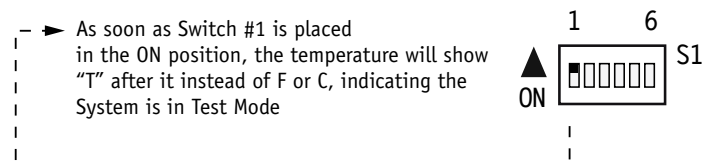
Test Menu Access (S1, Switch 1 ON) *Service Technician ONLY.*

DANGER! HIGH VOLTAGE WILL BE ACCESSIBLE! SERVICE TECHNICIAN ONLY!

While the system is running, move DIP Switch 1 (on S1 on the Main circuit board) to ON.

The system will enter Test Mode.

Moving DIP Switch 1 to OFF will exit Test Mode.



Software Setups

Under the TEST Menu, the Setup screen will allow changing the Setup from 1 to any number established by the Manufacturer.

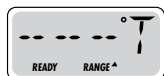
Changing the Setup may require wiring changes as well.

You will have 1 minute to complete the setup change after you manually exit Priming Mode. (Once familiar with the process, the Setup change should take less than 15 seconds.)



When the panel displays RUN PMPS PURG AIR, press any Temperature button ONCE to exit Priming Mode.

You should see "---T" where the T indicates the system is in Test Mode.



Continued on Next Page.

Changing Software Setups with TP600 / TP400 Continued

Again, **You will have 1 minute** to complete the setup change after you manually exit Priming Mode.

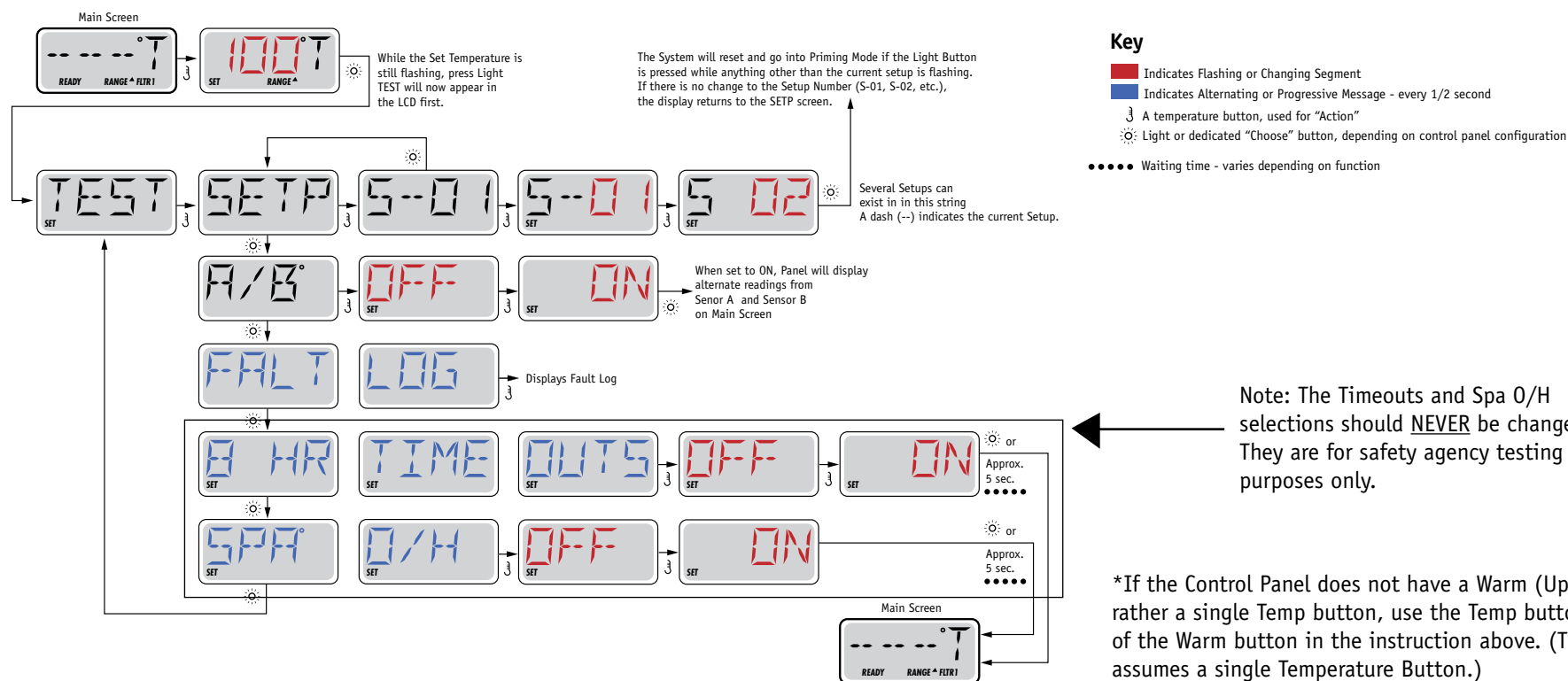
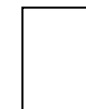
Immediately after exiting Priming Mode, press this sequence of buttons: Warm*, Light, Warm, Warm, Warm, Warm. Continue to press Warm until the display shows the Setup Number (S-01, S-02, etc.) you want to switch to. When the correct setup number is showing, press Light once, and the system will reset, using the newly-selected Setup from that point on.

Move DIP Switch 1 to the OFF position to take the spa out of Test Mode. °F or °C will replace °T.

Using a permanent marker, write the Setup number on the Setup label mounted inside the system lid (right). This is very important to any service person in the future who may need to replace a circuit board or system and needs to change the Setup on a replacement part while in the field.

NOTE: Changing the Setup may require wiring changes as well - refer to the wiring diagram or wiring diagram addendum.

THIS SYSTEM IS
CONFIGURED AS
SETUP #



Equipment Expansion

Expansion Features

Control Connection

Relay 1/2 (J108)

Default	Fuse
Pump 2	30A
2 Speed in Setups 1, 3, & 5	
1 Speed in Setups 2 & 6	
Unused in Setups 4 & 7	

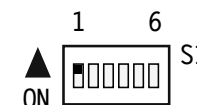
Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending. © Copyright 2009 Balboa Water Group.



DIP Switch Functions

Fixed-function DIP Switches

- | | |
|----|--|
| A1 | Test Mode (normally Off). |
| A2 | In "ON" position, add one high-speed pump (or blower) with Heater. |
| A3 | In "ON" position, add two high-speed pumps (or 1 HS Pump and Blower) with Heater. |
| A5 | In "ON" position, enables Special Amperage Rule B. See Special Features section under Configuration Options for functionality with your system.
In "OFF" position, enables Special Amperage Rule A. |
| A6 | Persistent memory reset (Used when the spa is powering up to restore factory settings as determined by software configuration). |



A2 and A3 work in combination to determine the number of high-speed devices and blowers that can run before the heat is disabled. i.e. A2 and A3 in the ON position will allow the heater to operate with up to 3 high-speed pumps (or two HS Pumps and Blower) running at the same time. Heat is disabled when the fourth high-speed pump or blower is turned on.







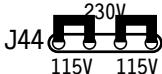



Note: A2/A3 all off = No heat with any high-speed pump or blower.

Assignable DIP Switches

- | | |
|----|---|
| A4 | In "ON" position, enables a 5-minute cooldown for some gas heaters (Cooling Time B).
In "OFF" position, enables a 1-minute cooldown for electric heaters (Cooling Time A). |
|----|---|

Undesignated switches are not assigned a function.

Jumper Definitions

J109	GFCI Test/Trip Enable/Disable Note: This feature must be enabled in software as well.	J109 
J30	Do Not Use	
J31	Non Applicable on UL models (Used on CE models only)	J31 
J29	Heater Disable Switch Connection. If J29 is shorted by any means, the heater will not run until J29 is no longer shorted. If J29 is shorted during power-up “J29” will appear on the panel. The message can be dismissed with a button press, and is the only control panel notification of J29 being shorted. No message is displayed if J29 is shorted after power-up, but the heater will not run until J29 is no longer shorted. J29 expects a switch closure (not a voltage) as the command signal. In some areas, a local power company may offer discounts based on voluntary “power shedding” devices that may be installed in conjunction with the spa.	J29 
J25, J26, J27	Heater Type Settings. Note: Factory Configured do not change.	J25  J26  J27 
J44	Jumper on center two pins (230V) when no neutral wire is used (240V-dedicated). Two Jumpers installed; one on left 2 pins and one on right 2 pins (115V) when neutral wire is used.	J44     230V 115V 115V

Warning!

Setting DIP switches or jumpers 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.

Replacement Parts

PCBA:

Main PCBA:	56550-04
Expander PCBA:	55137

HEATER(s):

Plug + Click Heater Kit:	58306 5.5kW 800Inc
Temp Sensor Kit:	53605

CABLES:

N/A

FUSES:

Part Number	Amperage	Location
30136	30A	F5, F1 (Expander)
20600	3A	F2, F4
21581	3/10A	F6
30122	10A	F3

BP501 Configuration Options

General Features

Feature	Default	
Pump 1 in Filter Cycle (Circ Only)	No	
Pump 1 Low Timer	<i>120 Minutes</i>	Applies in non-circ Setups (configurations) only
General Pump Timer	15 Minutes	
Blower Timer	15 Minutes	
Mister Timer	15 Minutes	
Light Timer	<i>60 Minutes</i>	
Circ (when enabled)	Programmable + Polling	
Cleanup Cycle	<i>30 Minutes</i>	
Cleanup as Preference setting	<i>Yes</i>	
Ozone	With Heater Pump*	
Ozone Suppression	OFF	
Pump Purge	<i>30 Seconds</i>	
Blower Purge	30 Seconds	
Mister Purge	5 Seconds	
Purge Type	Serial - Pumps at lowest speed	

* The heater Pump can be either a Circ Pump or Pump 1 Low.

Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending. © Copyright 2009 Balboa Water Group.

BP501 Configuration Options

Temperature Features

Feature Default

Temperature Display

°F

All temperatures must be specified in °F. The system converts °F to °C dynamically. If Celsius is required for default settings, choose a desired °C value that (after rounding) corresponds to a Fahrenheit value.

°C	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
°F	39	41	43	45	46	48	50	52	54	55	57	59	61	63	64	66	68	70	72
°C	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
°F	73	75	77	79	81	82	84	86	88	90	91	93	95	97	99	100	102	104	

Hi-Range Min. Set Temp

80°F

Hi-Range Max. Set Temp

104°F

Hi-Range Default Temp*

100°F

Lo-Range Min. Set Temp

50°F

Lo-Range Max. Set Temp

99°F

Lo-Range Default Temp*

70°F

Freeze Threshold

44°F

Freeze Type

Rotating - Pumps at Lowest Speed

Temp Lock Type

Temp + Settings

**May be changed by end-user (if enabled)*

Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending.

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BP501 Configuration Options

Time Features

Feature	Default
Time Format*	12 Hour
Filter 1 Start Hour*	20:00 (8:00 PM)
Filter 1 Duration*	2 Hours
Filter Cycle 2 Default*	ON
Filter 2 Start Hour*	08:00 (8:00 AM)
Filter 2 Duration*	2 Hours
Light Cycle	Disabled
Light Cycle Default*	OFF
Light Cycle Start Hour*	21:00 (9:00 PM)
Light Cycle Duration*	15 Minutes
Cooling Time A	1 Minute
Cooling Time B	5 Minutes

**May be changed by end-user (if enabled)*

Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending. © Copyright 2009 Balboa Water Group.

BP501 Configuration Options

Reminder Features

Feature	Default
Reminders Shown*	No
Check pH	OFF
Check Sanitizer	OFF
Clean Filter	OFF
Test GFCI	OFF
Drain Water	OFF
Change Cartridge	OFF
Clean Cover	OFF
Treat Wood	OFF
Change Filter	OFF
Change UV	540 Days

Note: Resetting Persistent Memory (by powering up with DIP switch A6 ON, or by changing Setups) will reset all Reminder counters.

**May be changed by end-user (if enabled)*

Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending. © Copyright 2009 Balboa Water Group.

Special Features

Default

No Limitation

No Limitation

Disabled

Disabled

Enabled

7 Days

Yes

Always Input Voltage

Disabled

Rest Mode

High Range

TP800 Panel Configuration

Button Layout Table

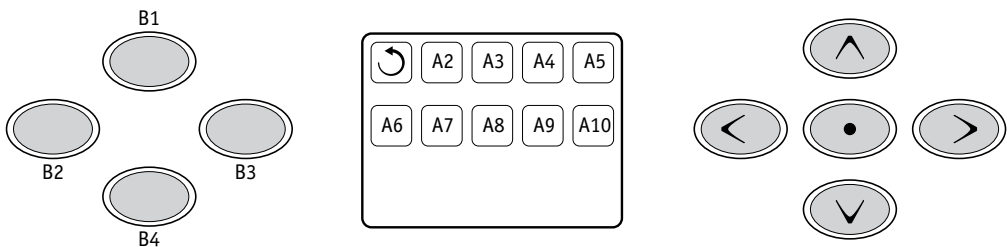
Feature #	Setups 1 & 2	Setup 3 *	Setup 4	Setups 5 & 6	Setup 7
A1	N/A	N/A	N/A	N/A	N/A
A2	Jets 1	Jets 1	Jets 1	Jets 1	Jets 1
A3	Jets 2	Jets 2	Blower	Jets 2	Light 1
A4	Blower	Jets 3	Light 1	Light 1	Invert
A5	Light 1	Light 1	Invert	Invert	Undefined
A6	Invert	Invert	Undefined	Undefined	Undefined
A7	Undefined	Undefined	Undefined	Undefined	Undefined
A8	Undefined	Undefined	Undefined	Undefined	Undefined
A9	Undefined	Undefined	Undefined	Undefined	Undefined
A10	Undefined	Undefined	Undefined	Undefined	Undefined
A11	N/A	N/A	N/A	N/A	N/A
A12	N/A	N/A	N/A	N/A	N/A
A13	Undefined	Undefined	Undefined	Undefined	Undefined
A14	Undefined	Undefined	Undefined	Undefined	Undefined
A15	Undefined	Undefined	Undefined	Undefined	Undefined
A16	Undefined	Undefined	Undefined	Undefined	Undefined
B1	Jets 1	Jets 1	Jets 1	Jets 1	Jets 1
B2	Jets 2	Jets 2	Undefined	Jets 2	Undefined
B3	Blower	Undefined	Blower	Undefined	Undefined
B4	Light 1	Light 1	Light 1	Light 1	Light 1

* Setup 3 uses AX10A3 Aux panel for Jets 3.

Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending. © Copyright 2009 Balboa Water Group.

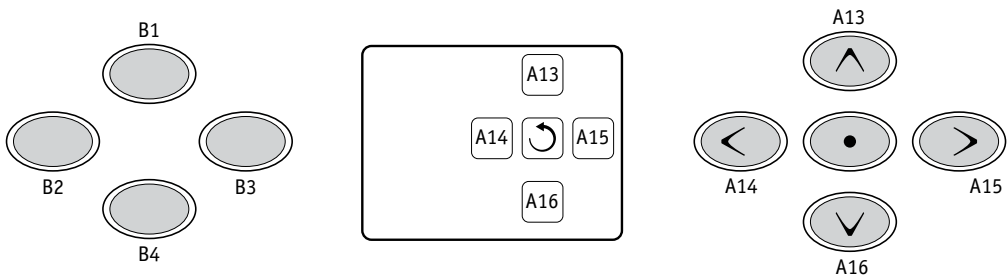
TP800 Panel Configuration

Spa Screen



Note: Button B2 is ALWAYS unused on TP800 when used with this sytsem. A custom overlay will be required.

Shortcuts Screen



Note: Buttons 11 and 12 are not used in this configuration.
Button 1 is fixed.

TP600 Panel Configuration

Button Layout Table

Button #	Setups 1 & 2	Setups 3*, 5 & 6	Setup 4	Setup 7
1	Jets 1	Jets 1	Jets 1	Jets 1
2	Jets 2	Jets 2	Undefined	Undefined
3	Blower	Undefined	Blower	Undefined
4	Up	Up	Up	Up
5	Light 1	Light 1	Light 1	Light 1
6	Down	Down	Down	Down
LED 1	Jets 1	Jets 1	Jets 1	Jets 1
LED 2	Jets 2	Jets 2	Undefined	Undefined
LED 3	Light 1	Light 1	Light 1	Light 1
LED 4	Heat On	Heat On	Heat On	Heat On

* Setup 3 uses AX10A3 Aux panel for Jets 3.



TP600

55676-XX

No Overlay

BP501 Configuration Options

Auxilliary Panel Features on Bank 1*

Feature	Default
Aux Button A1	Jets 1
Aux Button A2	Jets 2
Aux Button A3	Jets 3 in Setup 3 Blower in Setups 1, 2 & 4 Undefined in Setups 5, 6 & 7
Aux Button A4	Light

*Bank 1 consists of J5 on the Main Circuit Board.

Aux Connection Splitter PN 25257 may be required.

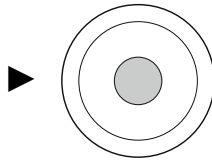
Buttons that are assigned to equipment that is not defined in a Setup will not do anything in that Setup.

BP501 Configuration Options

Auxilliary Panel Features

AX10 Panels on Bank 1*

A1, AX10A1	No O/L	52803
A2, AX10A2	No O/L	52804
A3, AX10A3	No O/L	52805
A4, AX10A4	No O/L	52806

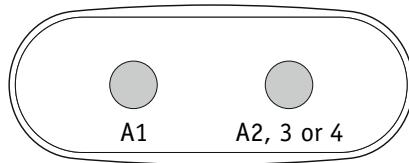


Call Customer Service for additional information about Auxiliary Panels.

*Bank 1 consists of J5 on the Main Circuit Board.
Aux Connection Splitter PN 25257 may be required.

AX20

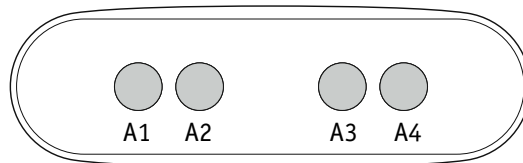
AX20 A1A2	No O/L	52800
AX20 A1A3	No O/L	52801
AX20 A1A4	No O/L	52802



AX20 Auxiliary Panel plugged into Bank 1 will operate A1 + A2, A3 or A4.

AX40

AX40	No O/L	52799
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AX40 Auxiliary Panel plugged into Bank 1 will operate A1 + A2, A3 and A4.