BP501G3 Tech Sheet

Customer: Balboa Water Group

Part Number: 56582-01 800 Incoloy

56583-01 825 Incoloy 56584-01 Titanium

Custom Box Overlay

Box Overlay Part Number N/A

UL System Model: BP501-BP501G3-BU
Software Version ID: M100_201 V25.0

Software Version: 25.0

File Name: BP501_25.0_BP501G3_TP9.hex

Configuration Signature: 749FE6DA

Eng. Project Number: 4576

Control Panels (See later pages for more information):

TP900 Version 3.1 and later (Version 3.13 or later required for bba™)
TP800 Version 3.1 and later (Version 3.13 or later required for bba™)

TP600 Version 2.7 and later (TP600CE may be used)

TP400T Version 2.7 and later
TP400W Version 2.7 and later





System Revision History

Part #	EPN	Date	Originator	Changes Made
56582 56583 56584	4195	01-15-14	BWG	BP501G3 initial draft. Adds GFCI Trip (but not GFCI Automatic Test). Updated to latest software version, adding topside-intergrated bba™ support.
56582-01 56583-01 56584-01	4503	04-08-15	BWG	Add TP900 support.
56582-01 56583-01 56584-01	4576	08-12-15	BWG	Clarify that all pumps can be 12V max.

 $bba^{\scriptscriptstyle\mathsf{TM}}$ (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.

Basic Functions Setup 1 - 8

Power Requirements:

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

120/240VAC, 50/60Hz*, 16/40A, Class A GFCI-protected service (Circuit Breaker = 20 /50A max.) - Setup 8 ONLY, 3 or 4 wires [hot, hot (optional), neutral, ground].

System Ouputs:

Pump 1	240VAC*	2-Speed	12A max	15-minute timer
		This is the h Must deliver	eater pump 20 GPM thro	ugh heater
Pump 2	240VAC	2-Speed	12A max	15-minute timer
		1-Speed in S Unused in Se	etups 3, 4, 8 etups 6 & 8	. 7
Pump 3	240VAC	1-Speed	12A max	15-minute timer
		Used in Setu	ıps 1 & 3 only	<i>y</i>
Blower	240VAC	1-Speed Used in Setu	4A max ips 2, 4, & 6	15-minute timer
0zone	240VAC*		.5A max	Slaved to Pump 1 low
Spa Light	10VAC	0n/0ff	1A max	240-minute timer.
A/V (Stereo)	120VAC	Hot	4A max	Always on
Heater	5.5kW @ 240	OVAC max		

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.

With 120VAC power input (for Setup 8 only), Pump 1 and Ozone must be set to 120VAC by moving wires attached to J50 and J51 to area 1 (Neutral).

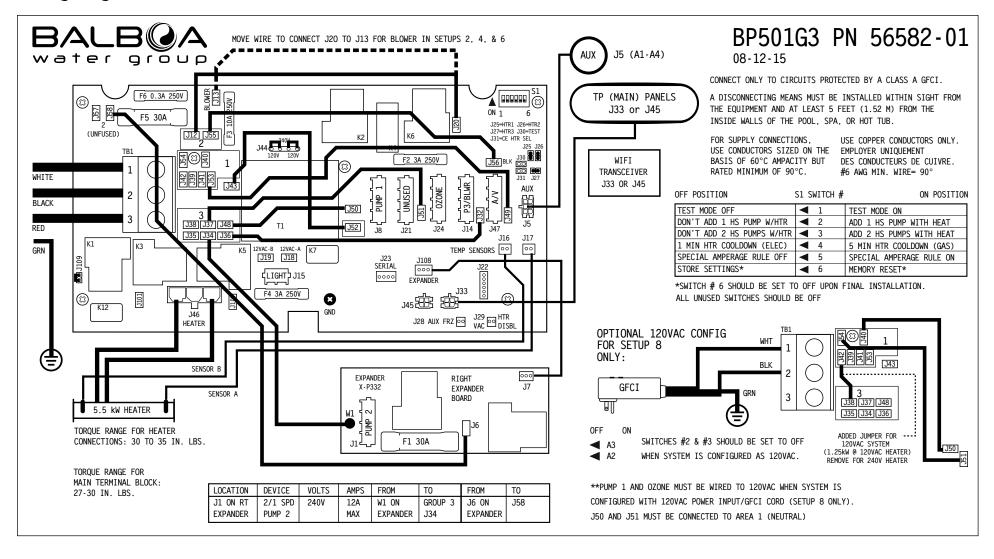


^{*}BP systems automatically detect 50Hz vs 60Hz.

^{*}Pump 1 and Ozone must be the same voltage.

Hardware Setup

Wiring Diagram



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.



Setup Reference Table

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

System (and any replacement board) is shipped in Setup 1

As shown on additional wiring diagram section:

INSTEAD OF SETUP #1,	SETUP #	CIRC PUMP	PUMP 1	PUMP 2	PUMP 3	BLOWER	TEMP SCALE
THIS SYSTEM IS	1	NONE	2-SPEED	2-SPEED	1-SPEED	NONE	°F
CONFIGURED	2	NONE	2-SPEED	2-SPEED	NONE	1-SPEED	°F
IN SETUP #:	3	NONE	2-SPEED	1-SPEED	1-SPEED	NONE	°F
	4	NONE	2-SPEED	1-SPEED	NONE	1-SPEED	°F
	5	NONE	2-SPEED	2-SPEED	NONE	NONE	°F
	6	NONE	2-SPEED	NONE	NONE	1-SPEED	°F
	7	NONE	2-SPEED	1-SPEED	NONE	NONE	°F
	8	NONE	2-SPEED	NONE	NONE	NONE	°F

LOCATION	DEVICE	VOLTS	MAX AMPS	FROM	T0
J8	2-SP PUMP 1	240V**	12A MAX	J50	J48-AREA 3
J14	1-SP PUMP 3	240V	12A MAX	J32	J36-AREA 3
J14	BLOWER OPT	240V	4A MAX	J32	J36-AREA 3
J15	SPA LIGHT	10V	1A		
J21					
J24	OZONE	240V**	1A		
	OZONE LINE 1	CONNECTIO	ON	J51	J37-AREA 3
J47	TV / AV	120V	2A	J49	J53-AREA 1
J46	HEATER	240V	5.5 kW		



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

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

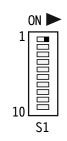
DANGER! HIGH VOLTAGE WILL BE ACCESSIBLE! SERVICE TECHNICIAN ONLY!

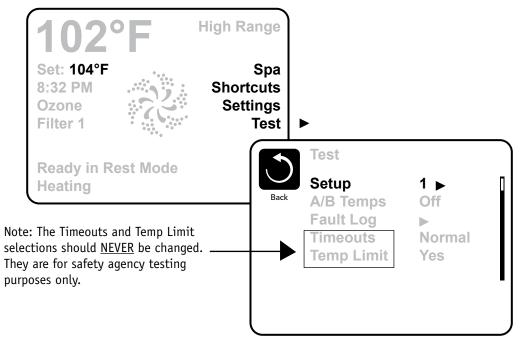
While the system is running, move DIP Switch 1 (on S1 on the Main circuit board) to ON. The system will enter Test Mode.

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.







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.

As soon as Switch #1 is placed in the ON position, the temperature will show "T" after it instead of F or C, indicating the System is in 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

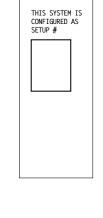
Again, You will have 1 minute to complete the setup change after you manually exit Priming Mode.

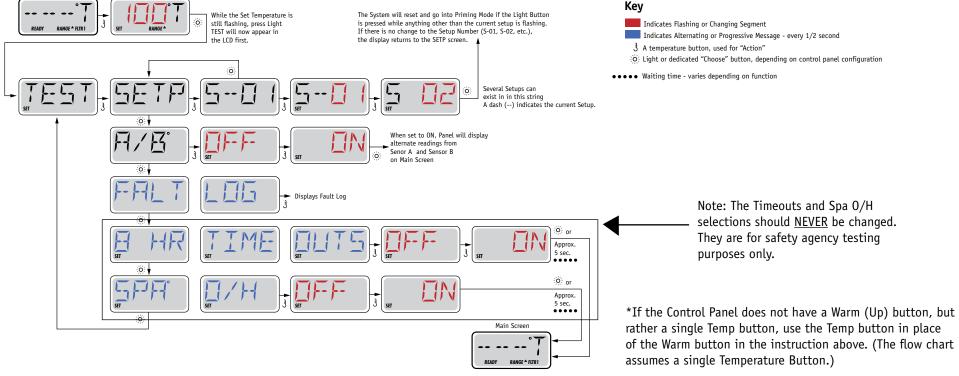
Immediately after exiting Priming Mode, press this sequence of buttons: Warm*, Light, Warm, Warm, Warm, Warm. Continue to press Warm until the diplay shows the Setup Number (S-01, S-02, etc.) you want to switch to. When the correct setup number is showing, press Light once, and the system will reset,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





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.



Main Screen

Equipment Expansion

Expansion Features Control Connection

Template 56377 10-05-12

Default Fuse

Relay 1/2 (J108)

2/1-Speed Pump 2

30A



DIP Switch Functions

Fixed-fuction 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.	J29 💍
J25, J26, J27	In some areas, a local power company may offer discounts based on voluntary "power shedding" devices that may be installed Heater Type Settings. Note: Factory Configured do not change.	in conjunction with the spa. J27 J25 J26
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 3 3 3 3 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: 56585-01 Expander PCBA: 55137

HEATER(s):

Plug + Click Heater Kit: 58306 5.5kW 800Inc

58307 5.5kW 825Inc

58308 5.5kW Titanium

Temp Sensor: 30344

CABLES: 21302 Jumper 120V Heater

FUSES:

 Part Number
 Amperage
 Location

 30136
 30A
 F5, F1 (Expander)

 20600
 3A
 F2, F4

 21581
 3/10A
 F6

 30122
 10A
 F3



General Features

Feature	Default	
Pump 1 in Filter Cycle (Circ Only)	No	
Pump 1 Low Timer	30 Minutes	Applies in non-circ Setups (configurations) only
General Pump Timer	15 Minutes	
Blower Timer	15 Minutes	
Mister Timer	15 Minutes	
Light Timer	240 Minutes	
Circ (when enabled)	Programmable + Polling	
Cleanup Cycle	30 Minutes	
Cleaup as Preference setting	Yes	
0zone	With Heater Pump*	
Ozone Suppression	OFF	
Pump Purge	60 Seconds	
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.

Temperature Features

Feature Default

Temperature Display

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	<i>52</i>	54	55	<i>57</i>	59	61	63	64	66	68	70	72	
°C	23	24	25	26	27	28	29	30	31	<i>32</i>	33	34	<i>35</i>	36	37	38	39	40		
°F	73	<i>75</i>	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°
Hi-Range Default Temp*	100°
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)

Time Features

Feature	Default
Time Format*	12 Hour
Filter 4 Chart Harry	20.00 (0.00 PM)
Filter 1 Start Hour*	20:00 (8:00 PM)
Filter 1 Duration*	2 Hours
Filter Cycle 2 Default*	OFF
Filler Cycle 2 Derault	UFF
Filter 2 Start Hour*	08:00 (8:00 AM)
Filter 2 Duration*	15 Minutes
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)

Reminder Features

Feature	Default
Reminders Shown*	Yes
Check pH	0FF
Check Sanitizer	0FF
Clean Filter	30 Days
Test GFCI	65 Days
Drain Water	100 Days
Change Cartridge	OFF
Clean Cover	0FF
Treat Wood	0FF
Change Filter	365 Days

BALB (A) Water group

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

Special Features

Feature Default

Special Amperage Rule A No Limitation

Special Amperage Rule B No Limitation

Drain Mode Disabled
Demo Mode Disabled
GFCI Trip Enabled
Automatic GFCI Test Disabled

Ozone Slaved to Heater Pump Yes

Dual Voltage Heater Always Input Voltage

Safety Suction Disabled



TP900 Panel Configuration

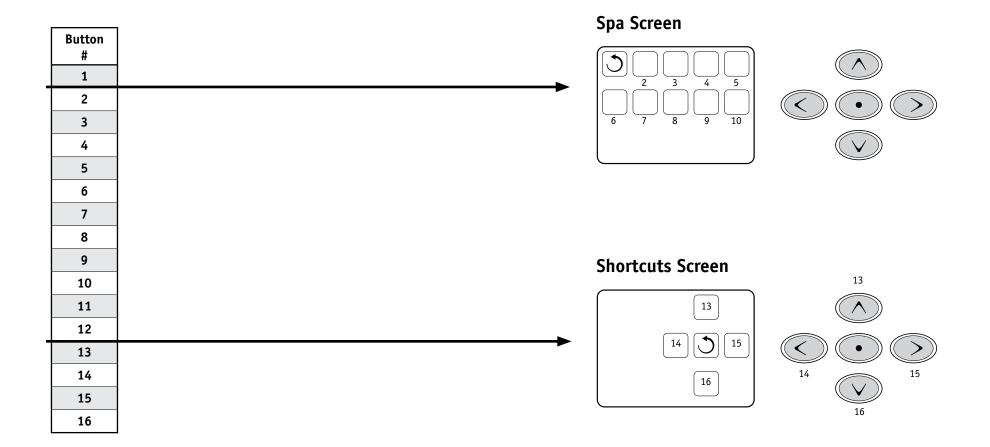
Button Layout Table

Feature	Setups 1 & 3	Setups 2 & 4	Setups 5 & 7	Setup 6	Setup 8
#					
A1	N/A	N/A	N/A	N/A	N/A
A2	Jets 1	Jets 1	Jets 1	Jets 1	Jets 1
А3	Jets 2	Jets 2	Jets 2	Blower	Light 1
A4	Jets 3	Blower	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	Jets 1	Jets 1	Jets 1	Jets 1	Jets 1
A14	Jets 2	Jets 2	Jets 2	Blower	Undefined
A15	Jets 3	Blower	Undefined	Undefined	Undefined
A16	Light 1	Light 1	Light 1	Light 1	Light 1

A Circ Icon will appear when a Circ Pump is configured.



TP900 Panel Configuration



56582-01/56583-01/56584-01_97_C 08-12-15

Template 56377 10-05-12

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TP800 Panel Configuration

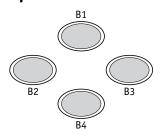
Button Layout Table

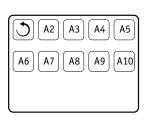
Feature #	Setups 1 & 3	Setups 2 & 4	Setups 5 & 7	Setup 6	Setup 8
A1	N/A	N/A	N/A	N/A	N/A
A2	Jets 1	Jets 1	Jets 1	Jets 1	Jets 1
А3	Jets 2	Jets 2	Jets 2	Blower	Light 1
A4	Jets 3	Blower	Light 1	Light 1	Invert
A5	Light 1	Light 1	Invert	Invert	Undefined
A6	Invert	Invert	Undefined	Undefined	Undefined
A7	Undefined	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	Jets 2	Blower	Undefined
В3	Jets 3	Blower	Undefined	Undefined	Undefined
B4	Light 1	Light 1	Light 1	Light 1	Light 1

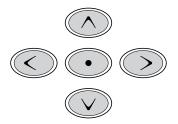


TP800 Panel Configuration

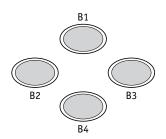
Spa Screen

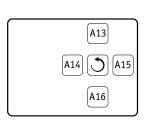


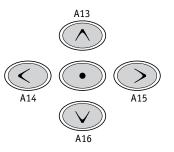




Shortcuts Screen







Note: Buttons 11 and 12 are not used in this configuration.

Button 1 is fixed.

Panel Part Number 50204-XX

Overlay Part Number N/A

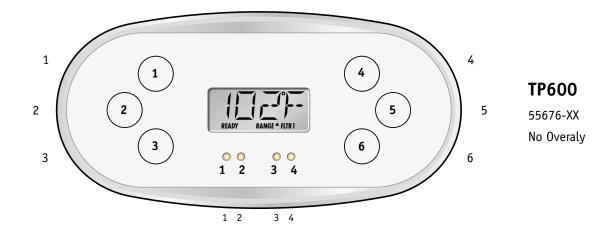


TP600 Panel Configuration

Button Layout Table

Template 56377 10-05-12

Button #	Setups 5 & 7	Setup 6	Setup 8	Setups 1 & 3	Setups 2 & 4
1	Jets 1	Jets 1	Jets 1	Jets 1	Jets 1
2	Jets 2	Blower	Undefined	Jets 2	Jets 2
3	Invert	Invert	Invert	Jets 3	Blower
4	Up	Up	Up	Up	Up
5	Light 1	Light 1	Light 1	Light 1	Light 1
6	Down	Down	Down	Down	Down
LED 1	Jets 1	Jets 1	Jets 1	Jets 1	Jets 1
LED 2	Jets 2	Blower	Undefined	Jets 2	Jets 2
LED 3	Light 1	Light 1	Light 1	Light 1	Light 1
LED 4	Heat On	Heat On	Heat On	Heat On	Heat On



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.

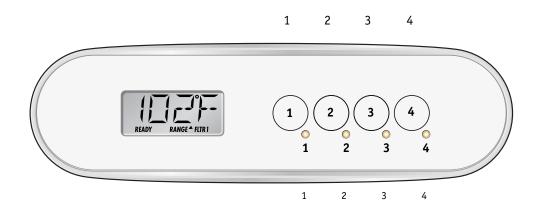


TP400 Panel Configuration

Button Layout Table for TP400T

Button #	Setups 5 & 7	Setup 6	Setup 8
1	Temperature	Temperature	Temperature
2	Jets 1	Jets 1	Jets 1
3	Light 1	Light 1	Light 1
4	Jets 2	Blower	Undefined
LED 1	Heater ON	Heater ON	Heater ON
LED 2	Jets 1 ON	Jets 1 ON	Jets 1 ON
LED 3	Light ON	Light ON	Light ON
LED 4	Jets 2 ON	Blower ON	Undefined

TP400T is not supported in Setups 1-4 (that have either Pump 3 or both Pump 2 and Blower).



TP400T

50260-XX

Includes overlay PN 12511.

Button Layout Table for TP400W

	J
Button #	All Setups
1	Up
2	Down
3	Light 1
4	Jets 1
LED 1	Heater ON
LED 2	Undefined
LED 3	Light ON
LED 4	Jets 1 ON

Use the TP400W for setups that only have one pump (No Blower or Pump 2 or Pump 3).

TP400W

50259-XX

Includes overlay PN 12510.

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 2014 Balboa Water Group.



Auxilliary Panel Features on Bank 1*

Feature	Default
Aux Button A1	Jets 1
Aux Button A2	Jets 2
Aux Button A3	Jets 3 in Setups 1 & 3 Blower in Setups 2, 4 & 6 Undefined in Setups 5, 7 & 8
Aux Button A4	Light

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

Aux Connection Splitter PN25257 may be required.

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

Template 56377 10-05-12



Auxilliary Panel Features

AX10 Panels on Bank 1*

A1, AX10A1 No 0/L 52803
A2, AX10A2 No 0/L 52804
A3, AX10A3 No 0/L 52805 ▶
A4, AX10A4 No 0/L 52806



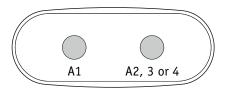
Call Customer Service for additional information about Auxiliary Panels.

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

Aux Connection Splitter PN25257 may be required.

AX20

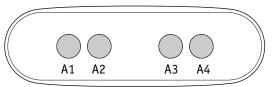
AX20 A1A2 No 0/L 52800 AX20 A1A3 No 0/L 52801 AX20 A1A4 No 0/L 52802



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

AX40

AX40 No 0/L 52799



AX40 Auxiliary Panel plugged into Bank 1 will operate A1 + A2, A3 and A4.

