BP200G1 Tech Sheet

Balboa Water Group Customer:

Part Number: 59190-01 3.0kW 800 Incoloy

3.0kW 825 Incolov 59368 59192-01 2.0kW 800 Incoloy 59405 2.0kW 825 Incolov

59257-01 Remote Heater System -- Heater is sold separately

Custom Box Overlay Box Overlay Part Number N/A

CE System Model For 2.0KW: BP2-BP200G1-RCA-2.0KW BP2-BP200G1-RCA-3.0KW CE System Model For 3.0KW:

CE System Model For Remote: BP2-BP200G1-RCA Software Version ID: M100 235 V52.0

Software Version: 52.0

File Name: BP200 52.0 BP200G1.hex

Configuration Signature: EB1605F2

Eng. Project Number: 5323

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 (Version 2.12 or later required for bba™/bba™2 On/Off control via menu)

TP500 Any version

TP400T CE Version 2.7 and later (TP400T US should not be used) (Version 2.12 or later required for bba™/bba™2 On/Off control via menu) Version 2.7 and later (TP400W US should <u>not</u> be used) (Version 2.12 or later required for bba[™]/bba[™]2 On/Off control via menu) TP400W CE



System Revision History

Part #	EPN	Date	Originator	Changes Made
59190 59192	5205	04-15-19	BWG	Generic BP200G1 system, supporting all the Setups the BP200 board can do without an expander board.
59257	5205	06-05-19	BWG	Added PN for version with remote heater support. Remote heater is sold separately.
59190-01 59192-01 59257-01	5270	09-03-19	BWG	Update software for full TP500 compatibility.
ıı .	"	10-10-19	BWG	Add line 3 info to 2/3x16A conversion instructions box.
59368	"	10-17-19	BWG	Added new 3.0kW 825 Incoloy system PN.
59405	5323	12-20-19	BWG	Added new 2.0kW 825 Incoloy system PN.

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

Template 56377 10-05-12

bba[™] is integrated into graphic display panels (TP800, TP900 and spaTouch[™]). With TP600/TP500/TP400, use the "BT" entry on the menu to toggle bba[™] power On/Off. bba[™]2 is integrated into graphic display panels (TP800, TP900 and spaTouch[™]). With TP600/TP500/TP400, use the "BT" entry on the menu to toggle bba[™]2 power On/Off.



Basic Functions Setup 1 - 3

Power Requirements:

Single Service [3 wires (line, neutral, ground)] 230VAC, 50/60Hz*, 1b, 16A, (Circuit Breaker rating = 20A max.) Single Service [3 wires (line, neutral, ground)]

230VAC, 50/60Hz*, 1b, 32A, (Circuit Breaker rating = 40A max.)

2-out-of-3-Service [4 wires (line 1, line 2, no line 3, neutral, ground)]

230VAC line-to-neutral**, 50/60Hz*, 2/3b, 16A, (Circuit Breaker rating = 20A max each phase line.)

HiPot Testing Note:

Disconnect slip terminal with green wires from J6 prior to performing HiPot test. Failure to disconnect may cause a false failure of the test. Reconnect terminal to J6 after successful completion of HiPot test.

NOTE: 2-out-of-Service is simply 3-Service (single common) with one of the three lines unused. The third line could be used for a slave heater if desired, or left for a use not related to the spa at all.

IMPORTANT - Service must include a neutral wire, with a line to neutral voltage of 230VAC.



^{*}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.

^{** 3-}phase service measured line-to-line will read about 400V, but BP systems do not use it line-to-line.

Basic Functions Setup 1 - 3

System Ouputs:

Pump 1 230VAC 2-Speed 12A max 15-minute timer (30-minute timer for P1 Low in non-circ Setup 2 only)

This is the heater pump in Setup 2. Must deliver 20 GPM through heater

1 Speed in Setup 1 Unused in Setup 3

Circ Pump 230VAC 1-Speed 2A max Programmable Filtration Cycles + Polling

This is the heater pump in Setups 1 & 3. Must deliver 20 GPM through heater

Ozone 230VAC .5A max Slaved to Circ Pump in Circ Setups and to Pump 1 Low in Non-Circ Setups

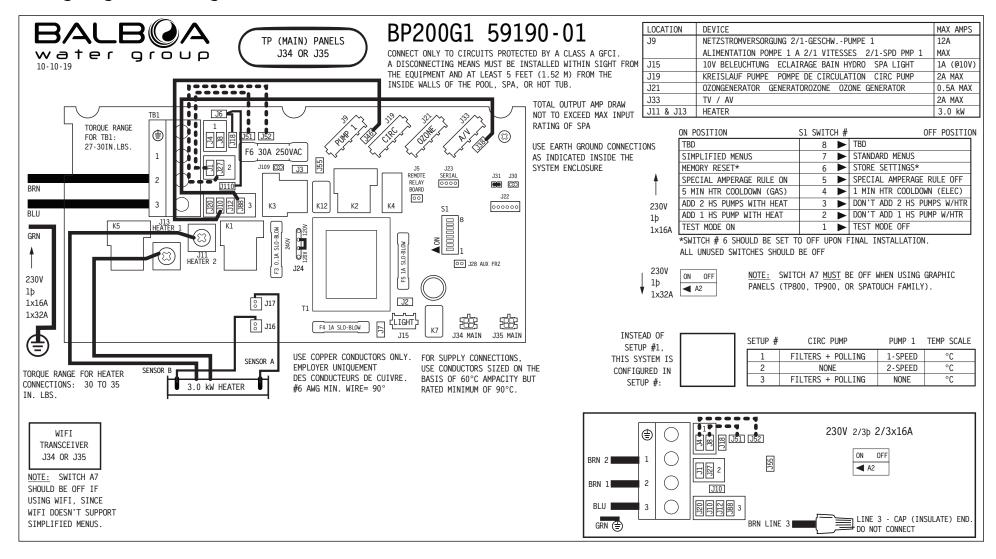
Spa Light 10VAC On/Off 1A max 240-minute timer.

A/V (Stereo) 230VAC Hot 2A max Always on

Heater 3.0kW @ 240VAC max

Hardware Setup

Wiring Diagram for Integral Heater Version

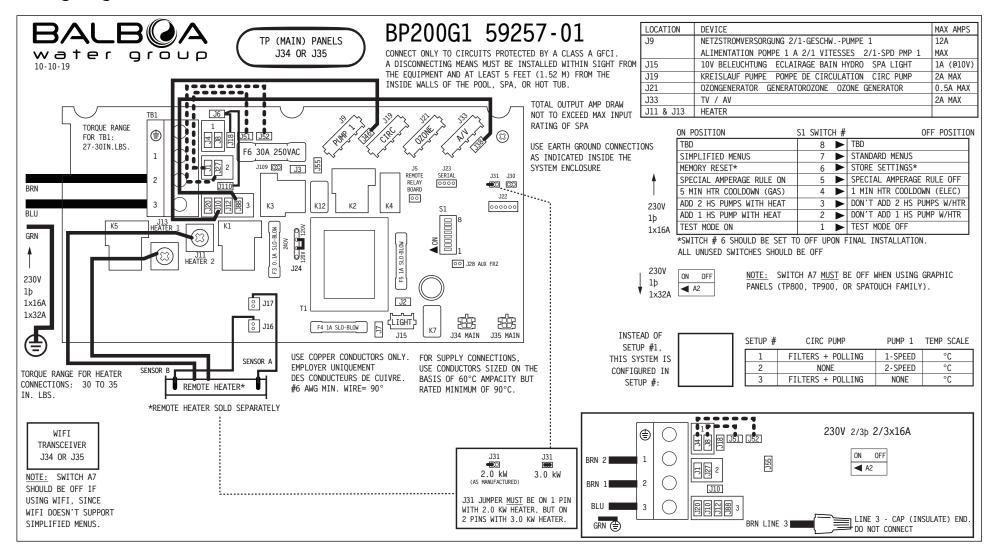


Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending. © Copyright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



Hardware Setup

Wiring Diagram for Remote Heater Version



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	Temp Scale
1	1 Programmable Filtration + Polling		°C
2	None	2-Speed	°C
3	Programmable Filtration + Polling	None	°C

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



Changing Software Setups with spaTouch™ Icon-Driven Panels

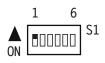
Test Menu Access (S1, Switch 1 ON) Service Technician ONLY.

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.

ON 1 10 S1



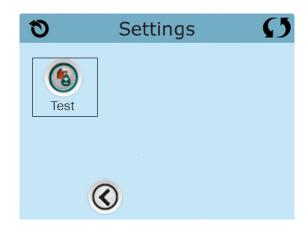
wider.

To Change Software Setups:

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



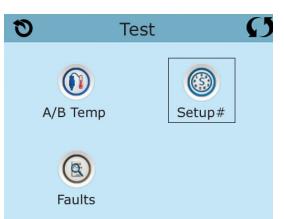




The example screens shown here are from the

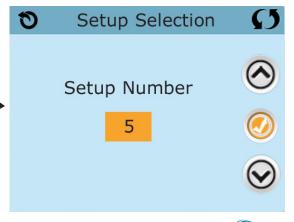
spaTouch 1 Icon-Driven Panel, but the screens on the spaTouch 2 Panel are similar. The main

difference is that the spaTouch 2 display is



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.





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.

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

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

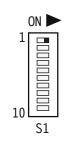
DANGER! HIGH VOLTAGE WILL BE ACCESSIBLE! SERVICE TECHNICIAN ONLY!

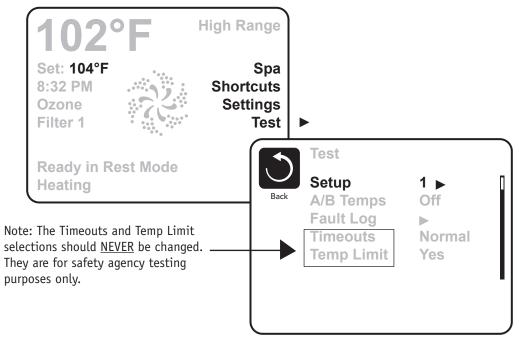
While the system is running, move DIP Switch 1 (on S1 on the Main circuit board) to ON. The system will enter Test Mode.

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 / TP500 / 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 / TP500 / TP400 Continued

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

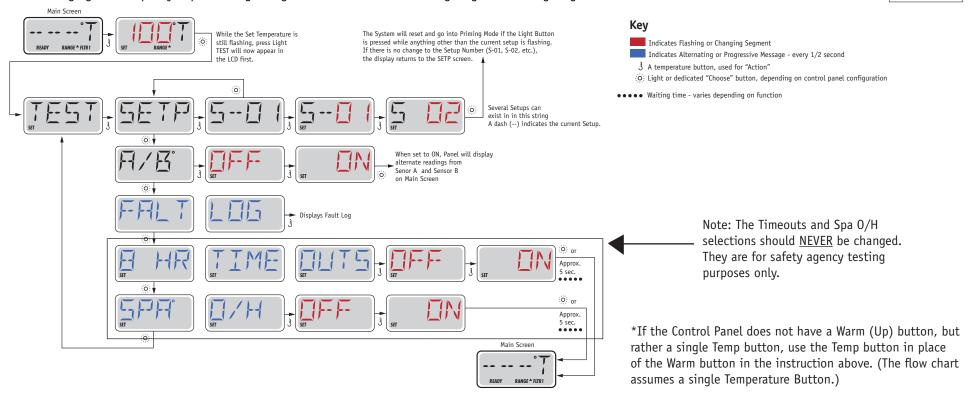
NOTE: WHerever the below says Warm or Temp followed by Light, on the TP500 press Menu instead of Warm or Temp followed by light. And whenever the chart below says Light, on the TP500 press Menu insead of Light.

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. © Copyright 2009 Balboa Water Group.



THIS SYSTEM IS

CONFIGURED AS SETUP #

Equipment Expansion

Expansion Features Control Connection

Default

None

Fuse

Relay 1 (J5)

None



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).

8 0N S1

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).

A7 In "ON" position, Simplified Menus on TP400/TP500/TP600. <u>Do not</u> use graphic panels (TP800, TP900, or spaTouch™ family) with Simplified Menus.

In "OFF" position, Regular Menus on TP400/TP500/TP600. This setting is compatible with all panels.

Undesignated switches are not assigned a function.



Jumper Definitions

J109	Non Applicable on CE models	J109 🏻	
J30	Do Not Use		
J31	dumper on E pins with a stoky of inquer neater	nper setting varies by system model	J31 for 2kW models
	whi	ch is shown to the right of the jumper. ${\sf J}$	of the for 3kW models

Jumper must be on center two pins (240V) for CE Systems.



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.

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.



Replacement Parts

PCBA:

Main PCBA: 59191-01 3.0kW Models

59193-01 2.0kW Models

Expander PCBA: N/A

HEATER(s):

Heater: 58419 3.0kW 800 Inc -- for integral heater only

58450 3.0kW 825 Inc -- for integral heater only 58427 2.0kW 800 Inc -- for integral heater only 58454 2.0kW 825 Inc -- for integral heater only

Temp Sensor Kit: 30344KIT 12-inch sensor -- for integral heater only

30382KIT 24-inch sensor -- for integral heater only

CABLES: N/A

FUSES:

 Part Number
 Amperage
 Location

 30136
 30A
 F6

 26983
 1A
 F4, F5

 24514
 0.1A SL0
 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	
Cleanup 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.

°C

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	<i>15</i>	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°F
Hi-Range Default Temp*	100°l
Lo-Range Min. Set Temp	50°F
Lo-Range Max. Set Temp	99°F
Lo-Range Default Temp*	70°F

Freeze Threshold 44°F in Setups 1 & 2; 48°F in Setup 3
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*	24 Hour
Filter 1 Start Hour*	20:00 (8:00 PM)
Filter 1 Duration*	2 Hours
FIL. 0 1 0 D 5 114	0.55
Filter Cycle 2 Default*	OFF
Filter 2 Start Hour*	08:00 (8:00 AM)
Filter 2 Duration*	15 Minutes
Links Cools	Disabled
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	OFF
Drain Water	100 Days
Change Cartridge	OFF
Clean Cover	0FF
Treat Wood	0FF
Change Filter	365 Days



^{*}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 Not Applicable for CE Models

Automatic GFCI Test Disabled

Ozone Slaved to Heater Pump Yes

Dual Voltage Heater Always Input Voltage

Safety Suction Disabled

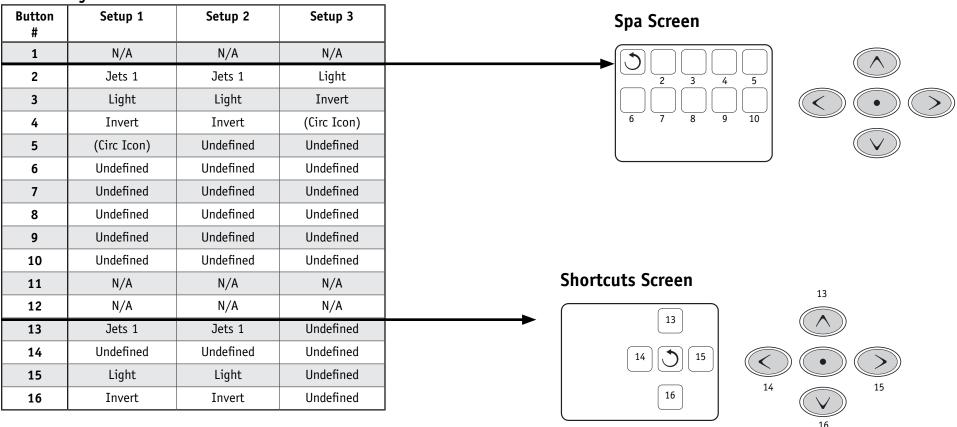
Menu Style Standard Menus when DIP switch A7 is OFF.

Simplified Menus when DIP switch A7 is ON..



TP900 Panel Configuration

Button Layout Table



A Circ Icon will appear when a Circ Pump is configured



TP800 Panel Configuration

Button Layout Table

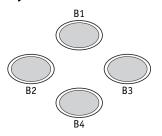
Feature #	Setup 1	Setup 2		
A1	N/A	N/A		
A2	Jets 1	Jets 1		
А3	Light 1	Light 1		
A4	Invert	Invert		
A5	(Circ Icon)	Undefined		
A6	Undefined	Undefined		
A7	Undefined	Undefined		
A8	Undefined	Undefined		
A9	Undefined	Undefined		
A10	Undefined	Undefined		
A11	N/A	N/A		
A12	N/A	N/A		
A13	Undefined	Undefined		
A14	Undefined	Undefined		
A15	Undefined	Undefined		
A16	Undefined	Undefined		
B1	Jets 1	Jets 1		
B2	Undefined	Undefined		
В3	Undefined	Undefined		
B4	Light 1	Light 1		

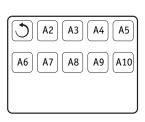
TP800 is not officially supported in Setup 3.

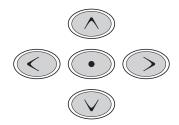


TP800 Panel Configuration

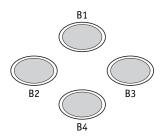
Spa Screen

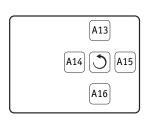


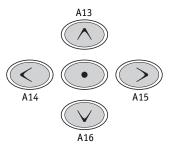




Shortcuts Screen







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

Button 1 is fixed.



TP600 Panel Configuration

Button Layout Table

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

TP600 is not officially supported in Setup 3.



TP600

55676-XX

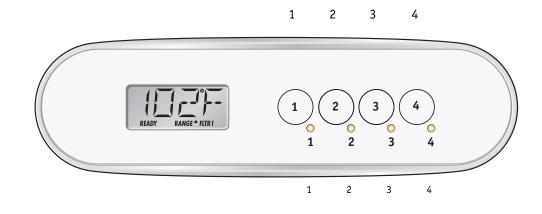
No Overlay



TP400 Panel Configuration

Button Layout Table for TP400T

Button #	Setup 1 & 2	Setup 3
1	Temperature	Up
2	Jets 1	Down
3	Light 1	Light 1
4	Undefined	Undefined
LED 1	Heater ON	Heater ON
LED 2	Jets 1 ON	Undefined
LED 3	Light ON	Light ON
LED 4	Undefined	Undefined



Button Layout Table for TP400W

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

TP400W CE

50259-XX

Includes overlay PN 12510.

TP400T CE

50260-XX

Includes overlay PN 12511.

