BP1900G1 Tech Sheet

Customer:	Balboa Water Group
Part Number:	56610 800 Incoloy 3kW
	56611 825 Incoloy 3kW
	56612 Titanium 3kW
Custom Box Overlay	
Box Overlay Part Number	N/A
CE System Model:	BP21-BP1900G1-RCA3.0K
Software Version ID:	M100_226 V22.0
Software Version:	22.0
File Name:	BP1900_22.0_BP1900G1.hex
Configuration Signature:	D3BDC3E2
Eng. Project Number:	4305
Base PCBA:	56613
Control Panels:	
TP800	Version 3.1 and later (Version 3.13 or later required for bba^{M})
TP600CE	Version 2.7 and later - TP600 (non-CE) should not be used
TP400T	Version 2.7 and later
TP400W	Version 2.7 and later





System Revision History

Part #	EPN	Date	Originator	Changes Made
ZT000101	4305	05-06-14	BWG	Stripped-down version of BP2100 board, with the same Setups as in BP601G1, plus 3 additional Setups (with Circ pump plus 2-Speed Pump 1), but with multiple services supported. No remote support, no real-time clock, and no low speed Pump 2 on main board.
56610 56611 56612	4305	07-08-14	BWG	Release to production.

bba™ (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 1-9

Power Requirements:

Single Service [3 wires (line, neutral, ground)]
230VAC, 50/60Hz*, 1þ, 32A, (Circuit Breaker rating = 40A max.)
Dual Service [5 wires (line 1, neutral 1, line 2, neutral 2, ground)]
230VAC, 50/60Hz, 2þ, 16A, (Circuit Breaker rating = 20A max each phase line.)

3-Service [5 wires (line 1, line 2, line 3, neutral, ground)] 400VAC, 50/60Hz*, 3b, 16A, (Circuit Breaker rating = 20A max each phase line.)

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

*BP systems automatically detect 50Hz vs 60Hz.

Migrating from BP601G1:

If you are migrating from the BP601G1 model to this BP1900G1 model:

- The first 6 Setups are the same as the 6 Setups in the BP601G1.
- The remiaining 3 Setups are new Setups that allows a 2-Speed Pump1 to be used along with a Circ Pump (which is not possible on the BP601G1).



Basic Functions Setup 1-9

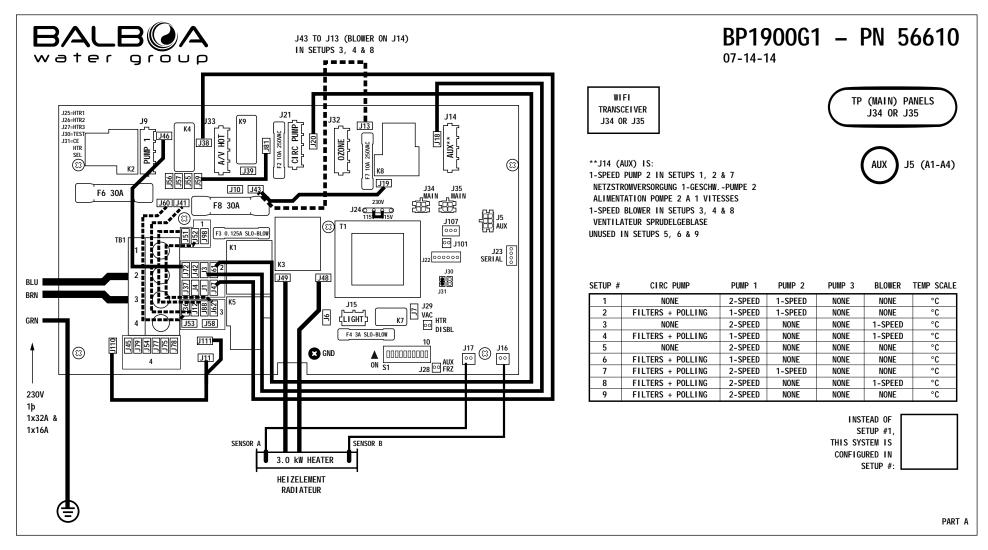
System Ouputs:

Pump 1	230VAC	1 Speed in S Pump size is in Setups 1,	•	ps 2, 4, 6 n service available (16A vs. 32A), other equipment installed, and if A5 is set to ON for Special Amperage Rule B. the heater pump.
Pump 2	230VAC			nax 15-minute timer n service available (16A vs. 32A), other equipment installed, and if A5 is set to ON for Special Amperage Rule B.
Blower	230VAC	1-Speed Used in Setu	4A max p 3, 4 & 8	15-minute timer
Circ Pump	230VAC		2A max eater pump i 20 GPM thro	Programmable Filtration Cycles + Polling n Setups 2, 4, 6 - 9. ugh heater
Ozone	230VAC		.5A max	Slaved to Circ Pump in Circ Setups 2, 4, 6 - 9. Independent in Non-Circ Setups 1, 3 & 5.
Spa Light	10VAC	0n/0ff	1A max	240-minute timer.
A/V (Stereo)	230VAC	Hot	4A max	Always on
Heater	3.0kW @ 24	OVAC max		



Hardware Setup

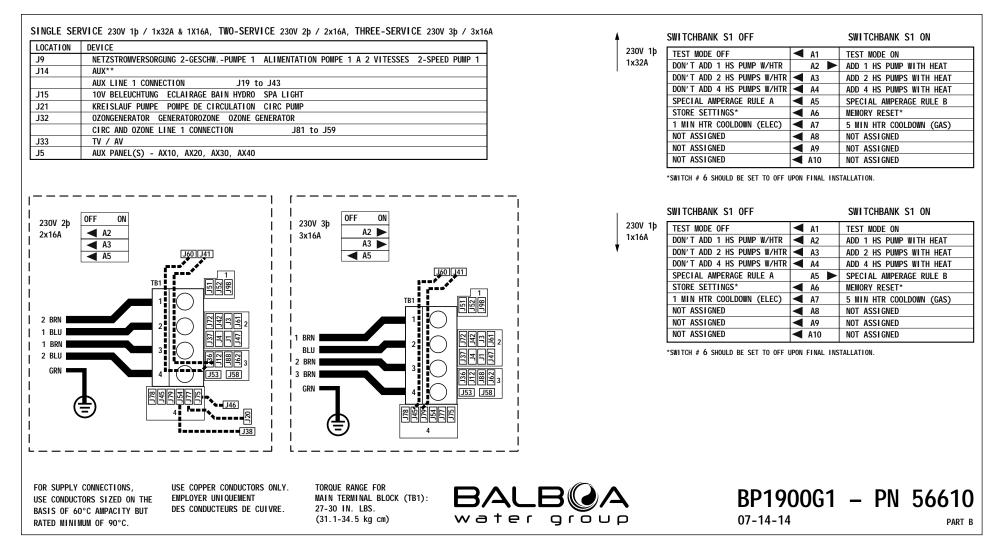
Wiring Diagram





Hardware Setup

Settings



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.



Template 56377 10-05-12

6

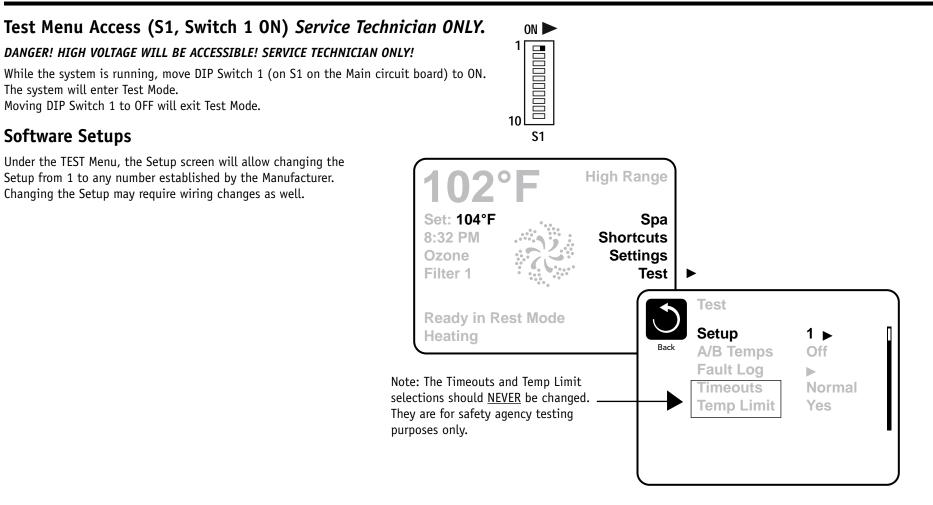
Setup Reference Table

Setup #	Circ Pump	Pump 1	Pump 2	Pump 3	Blower	Temp Scale
1	None	2-Speed	1-Speed	None	None	°C
2	Programmable Filtration + Polling	1-Speed	1-Speed	None	None	°C
3	None	None 2-Speed None None		None	1-Speed	°C
4	Programmable Filtration + Polling	1-Speed	None	None	1-Speed	°C
5	None	2-Speed	None	None	None	°C
6	Programmable Filtration + Polling	1-Speed	None	None	None	°C
7	Programmable Filtration + Polling	2-Speed	1-Speed	None	None	°C
8	Programmable Filtration + Polling	2-Speed	None	None	1-Speed	°C
9	Programmable Filtration + Polling	2-Speed	None	None	None	°C

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



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



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.

8



56610/56611/56612

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.)

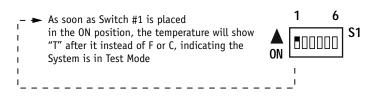


When the panel displays RUN PMPS PURG AIR, press any Temperature button ONCE to exit Priming Mode. You should see "---T" where the T indicates the system is in Test Mode.



Continued on Next Page.





Changing Software Setups with TP600 / TP400 Continued

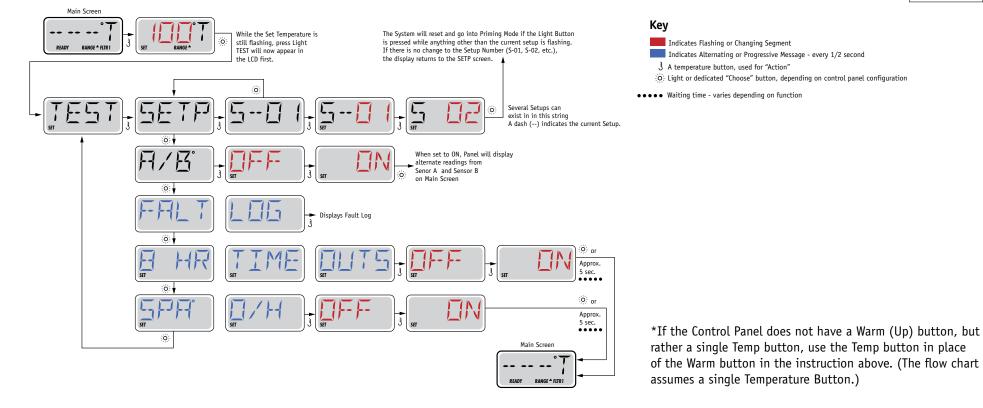
Again, You will have 1 minute to complete the setup change after you manually exit Priming Mode.

Immediately after exiting Priming Mode, press this sequence of buttons: Warm*, Light, Warm, Warm, Warm. 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.



THIS SYSTEM IS

CONFIGURED AS SETUP #

Equipment Expansion

Expansion Features Control Connection

Relay 1 (J101) Relay 7/8 (J107) **Default** Undefined Undefined **Fuse** None None

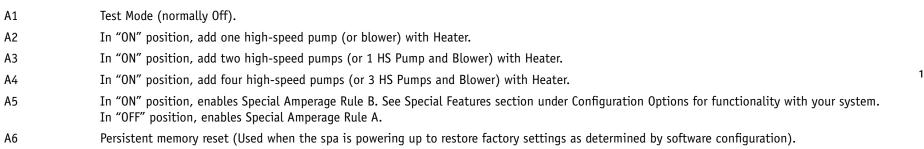
Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending.



Template 56377 10-05-12

DIP Switch Functions

Fixed-fuction DIP Switches



A2, A3, and A4 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 and A4 in the OFF 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/A4 all off = No heat with any high-speed pump or blower.

Assignable DIP Switches

A7 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.

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.



ON 🕨

S1

Jumper Definitions

J109	Not present on BP1900 board.	
J91	Not present on BP1900 board.	
130	Do Not Use	
131	Jumper on 1 pin with 2.0kW or smaller heater Jumper on 2 pins with a 3.0kW or higher heater	J31 🞇
129	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 💍
	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.
l25, J26, J27	Not present on BP1900 board.	
J24	Jumper on center two pins (230V) when heater is running at 240V.	230V
	Two Jumpers installed: one on left 2 pins and one on right 2 pins (115V) when heater is running at 120V.	J24 <u>0 0 0 0</u>

Two Jumpers installed; one on left 2 pins and one on right 2 pins (115V) when heater is running at 120V.



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, © Copyright 2012 Balboa Water Group. Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending.



56610/56611/56612_97_A 07-14-14

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	Applies to all pumps, except Pump 1 low in Non-Circ Setups
Blower Timer	15 Minutes	
Mister Timer	15 Minutes	
Light Timer	240 Minutes	
Circ (when enabled)	Programmable + Polling	I
Cleanup Cycle	30 Minutes	
Cleaup as Preference setting	Yes	
Ozone	With Heater Pump*	
Ozone Suppression	OFF	
Pump Purge	60 Seconds	
Blower Purge	30 Seconds	
Mister Purge	5 Seconds	
Purge Type	Serial - Pumps at lowes	t speed

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

Blue Indicates New Custom Configuration Default (Setup 1)



Temperature Features

Feature	Default
Temperature Display	°C

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	<u>39</u>	40	
°F	73	75	77	79	81	82	84	86	88	90	91	93	95	97	99	100	102	104	
Hi-Ra	ange N	1in. S	Set Tei	mp				80°F											
Hi-Ra	nge N	lax. S	Set Te	mp				104°	F										
Hi-Ra	ange [)efaul	lt Tem	ıp*				100°	F										
Lo-Ra	ange I	1in.S	Set Te	mp				50°F											
Lo-Ra	ange I	lax. S	Set Te	mp				99°F											
Lo-Ra	ange [Defau	lt Tem	ıp*				70°F											
Freez	e Thre	esholo	b					44°F											
Freez	е Тур	5						Rotat	ting -	Pump	s at L	.owest	: Spee	d					
Temp	Lock	Туре						Temp	+ Set	tings									

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

Blue Indicates New Custom Configuration Default (Setup 1)



. .

Time Features

Feature	Default
Time Format*	24 Hour
Filter 1 Start Hour*	20:00 (8:00 PM)
Filter 1 Duration*	2 Hours
Filter Cycle 2 Default*	OFF
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 A	
Cooling Time B	5 Minutes

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

Blue Indicates New Custom Configuration Default (Setup 1)



Reminder Features

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

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

Blue Indicates New Custom Configuration Default (Setup 1)



Special Features Feature

Default

l'atare	Deraate
Special Amperage Rule A	No Limitation
Special Amperage Rule B	1 High Speed Pump Maximum, and also Blower turns off with 1 High Speed Pump
Drain Mode	Disabled
Demo Mode	Disabled
Demo Mode	Disableu
GFCI Trip	Not Applicable for CE Models
Ozone Slaved to Heater Pump	Yes in circ setups No in non-circ setups
Dual Voltage Heater	Always Input Voltage
Safety Suction	Disabled



TP800 Panel Configuration

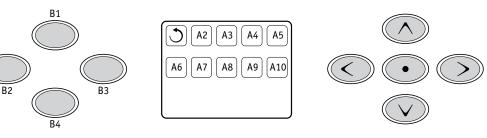
Button Layout Table

Feature #	Setup 1	Setups 2 & 7	Setup 3	Setups 4 & 8	Setup 5	Setups 6 & 9
A1	N/A	N/A	N/A	N/A	N/A	N/A
A2	Jets 1	Jets 1	Jets 1	Jets 1	Jets 1	Jets 1
A3	Jets 2	Jets 2	Blower	Blower	Light 1	Light 1
A4	Light 1	Light 1	Light 1	Light 1	Invert	Invert
A5	Invert	Invert	Invert	Invert	Undefined	(Circ Icon)
A6	Undefined	(Circ Icon)	Undefined	(Circ Icon)	Undefined	Undefined
A7	Undefined	Undefined	Undefined	Undefined	Undefined	Undefined
A8	Undefined	Undefined	Undefined	Undefined	Undefined	Undefined
A9	Undefined	Undefined	Undefined	Undefined	Undefined	Undefined
A10	Undefined	Undefined	Undefined	Undefined	Undefined	Undefined
A11	N/A	N/A	N/A	N/A	N/A	N/A
A12	N/A	N/A	N/A	N/A	N/A	N/A
A13	Undefined	Undefined	Undefined	Undefined	Undefined	Undefined
A14	Undefined	Undefined	Undefined	Undefined	Undefined	Undefined
A15	Undefined	Undefined	Undefined	Undefined	Undefined	Undefined
A16	Undefined	Undefined	Undefined	Undefined	Undefined	Undefined
B1	Jets 1	Jets 1	Jets 1	Jets 1	Jets 1	Jets 1
B2	Undefined	Undefined	Undefined	Undefined	Undefined	Undefined
B3	Jets 2	Jets 2	Blower	Blower	Undefined	Undefined
B4	Light 1	Light 1	Light 1	Light 1	Light 1	Light 1



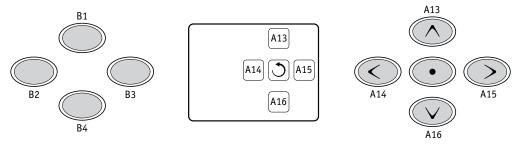
TP800 Panel Configuration

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 & 7	Setups 3, 4 & 8	Setups 5, 6 & 9
1	Jets 1	Jets 1	Jets 1
2	Jets 2	Blower	Undefined
3	Invert	Invert	Invert
4	Up	Up	Up
5	Light 1	Light 1	Light 1
6	Down	Down	Down
LED 1	Jets 1	Jets 1	Jets 1
LED 2	Jets 2	Blower	Undefined
LED 3	Light 1	Light 1	Light 1
LED 4	Heat On	Heat On	Heat On



TP600CE

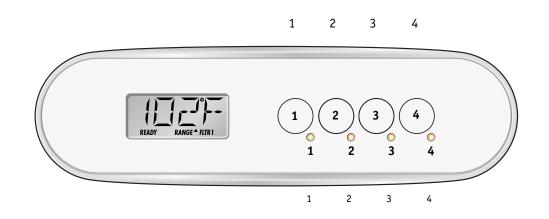
50015-04 or later No Overlay TP600 (non-CE) should not be used.



TP400 Panel Configuration

Button Layout Table for TP400T

Button #	Setups 1, 2 & 7	Setups 3, 4 & 8	Setups 5, 6 & 9
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

50260-02 or later Includes overlay PN 12511.

Button Layout Table for TP400W

Button #All Setups1Up2Down3Light 14Jets 1LED 1Heater ONLED 2UndefinedLED 3Light ONLED 4Jets 1 ON	Bullon Layout lable for			
2Down3Light 14Jets 1LED 1Heater ONLED 2UndefinedLED 3Light ON		All Setups		
3Light 14Jets 1LED 1Heater ONLED 2UndefinedLED 3Light ON	1	Up		
4Jets 1LED 1Heater ONLED 2UndefinedLED 3Light ON	2	Down		
LED 1Heater ONLED 2UndefinedLED 3Light ON	3	Light 1		
LED 2 Undefined · LED 3 Light ON	4	Jets 1		
LED 3 Light ON	LED 1	Heater ON		
LED 4 Jets 1 ON	LED 2	Undefined	•	
IFD 4 Jets 1 ON	LED 3	Light ON	,	
	LED 4	Jets 1 ON		

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

TP400W

50259-01 or later Includes overlay PN 12510.



Auxilliary Panel Features on Bank 1*FeatureDefaultAux Button A1Jets 1

	JC13 1
Aux Button A2	Jets 2 in Setups 1, 2 & 7 Blower in Setups 3, 4 & 8 Undefined in Setups 5, 6 & 9
Aux Button A3	Undefined
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.

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.

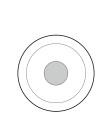


Template 56377 10-05-12

Auxilliary Panel Features

AX10 Panels on Bank 1*

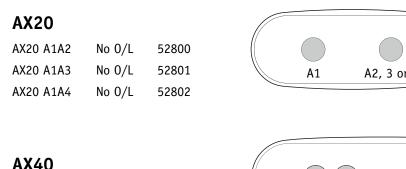
A1, AX10A1 No 0/L 52803 A2, AX10A2 No 0/L 52804 A3, AX10A3 No 0/L 55805 A4, AX10A4 No 0/L 52806



Call Customer Service for additional information about Auxiliary Panels.

Auxiliary Panel Part Number **Overlay Part Number**

*Bank 1 consists of J5 on the Main Circuit Board. Aux Connection Splitter PN25257 may be required.



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

AX40

No 0/L 52799 A2, 3 or 4



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

