BP16P12C Tech Sheet

Balboa Water Group

System Part Numbers:	**56326**	3kW 800 Incoloy Element
	56327	3kW Titanium Element

Compatible Plumbing Kits (Coupling nuts and seals included)

55911	2" Tailpieces (2-Speed Pump 1)
55914	1.5" Tailpieces (2-Speed Pump 1)
55912	1" Tailpiece Inserts (Circ)
55913	One Direct Circ Pump Coupling and one 1" Tailpiece Insert

CE System Model:	BP16-BP16P12C-RCA-3.0KW
Software ID:	M100_205 V6
Software Version:	6.0
Hex File:	BP1600_6.0_BP16P12C.hex
Configuration Signature:	4BBDA9B3
Eng. Project:	3882

Base PCBs / PCBA's:

Power Board: 22117_B / 56329

Logic Board: 22121_E / 56328

Control Panels:

TP600CE	50014-01
TP600 (non-CE) should not be used	
Software Version	2.3 and later
TP400T	50260
Software Version	2.4 and later
TP400W	50259
Software Version	2.4 and later

User Interface and Programming Guide:
http://service.balboa-instruments.com/zz40940_download.zip

System Revision History

Part #	EPN	Date	Originator	Changes Made
56326 and 56327	3882	08-16-12	Balboa	New Revolution system with 2-Speed Pump 1 plus Circ., plus other set-ups that do not require Pump 2 or Blower.

Plumbing Fittings

2" Tailpiece kit PN 55911.

Standard 2" sockets to glue up to 2" PVC pipe.

Not Immediately Available.

1.5" Tailpiece kit PN 55914.

1.5" sockets to glue up to 1.5" PVC pipe with the I.D.
Be sure to orient the fittings so that the insert is at the 12:00 position to prevent trapped air.

1" Circ Pump Insert kit PN 55912.

1" barb fittings for use with 1" tubing.
Be sure to orient the fittings so that the insert is at the 12:00 position to prevent trapped air.

Not Immediately Available.

1" Circ Pump Insert kit PN 55913.

One fitting for direct coupling to the threaded suction of an appropriately-sized circ pump. A 1" barb fitting for use with 1" tubing is used on the other end of the heater.
Be sure to orient the fittings so that the insert is at the 12:00 position to prevent trapped air.

Setup 1-16 (As Manufactured)

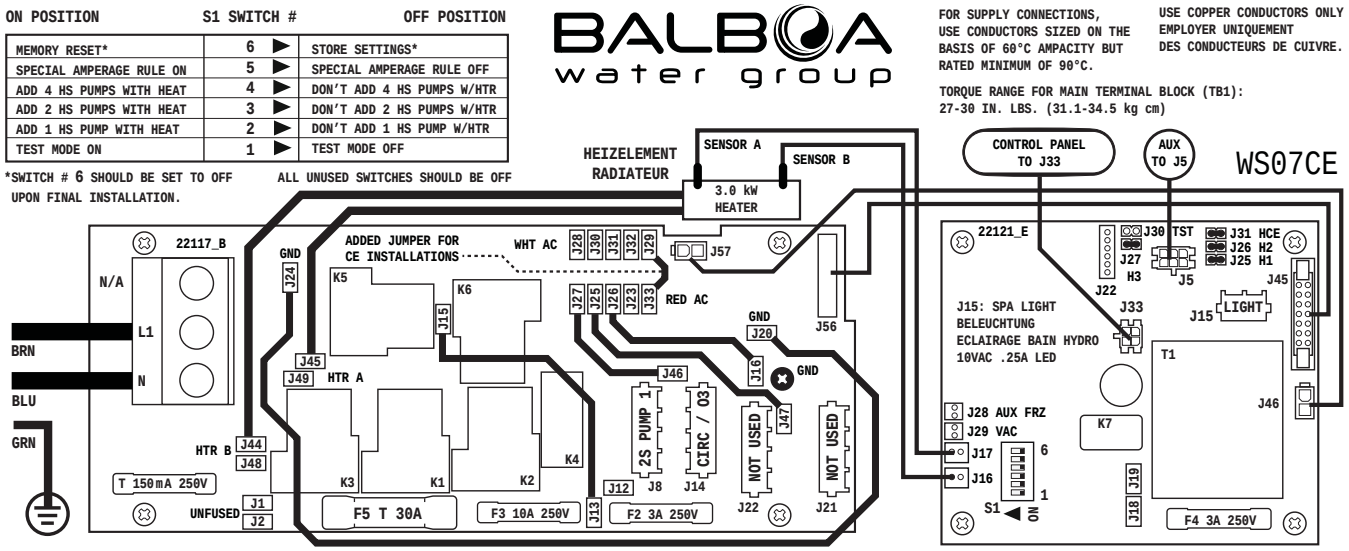
Power Requirements:

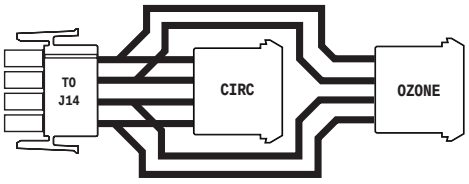
Single Service [3 wires (line, neutral, ground)]
230VAC, 50Hz, 1þ, 16A, (Circuit Breaker rating = 20A max.)

System Ouputs:

Pump 1	230VAC	2-Speed	12A max	30-minute timer for Low Speed, 15 Minutes for High Speed
Circ Pump	230VAC This is the heater pump Must deliver a minimum of 20 GPM through heater	1-Speed	2A max	Programmable Filtration Cycles + Polling
Ozone	230VAC		.5A max	Uses the same relay as the Circ Pump
Spa Light	10VAC	On/Off	1A max	4-Hour timer.
Heater	3kW @ 240VAC			

Wiring Diagram and Settings





Output Splitter Part Number 22934 must be used.

Refer to Page 3 to choose a suitable Plumbing Kit.

Blue indicates changes from the original Setup 1 default

Setup 1-32

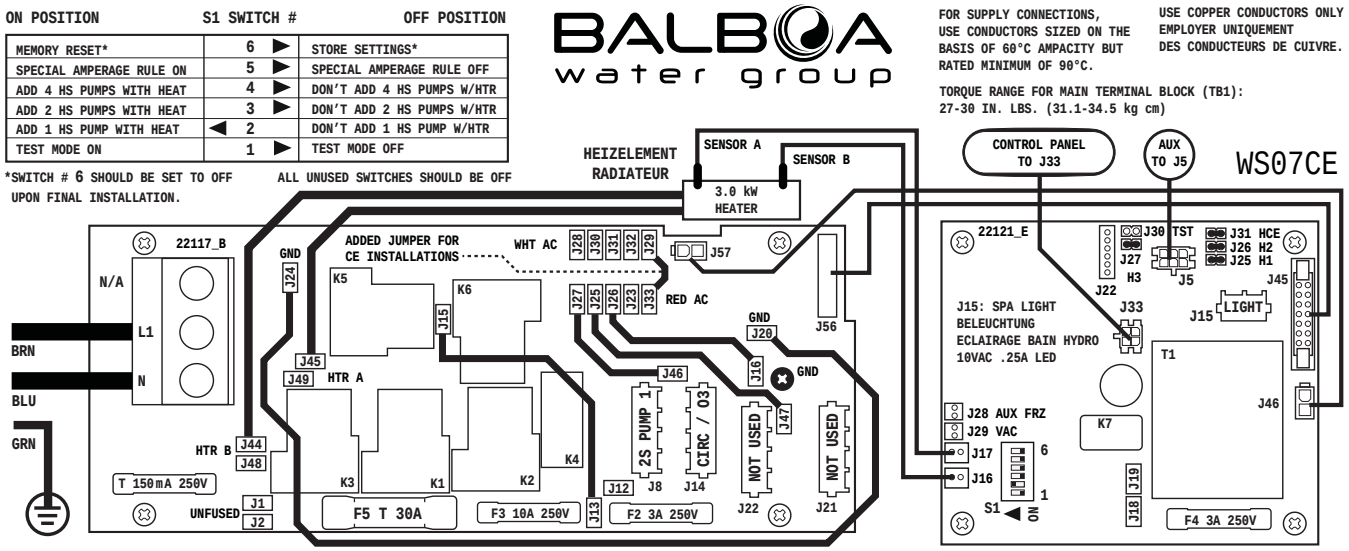
Power Requirements:

Single Service [3 wires (line, neutral, ground)]
230VAC, 50Hz, 1þ, 32A, (Circuit Breaker rating = 40A max.)

System Ouputs:

Pump 1	230VAC	2-Speed	12A max	30-minute timer for Low Speed, 15 Minutes for High Speed
Circ Pump	230VAC	1-Speed	2A max	Programmable Filtration Cycles + Polling This is the heater pump Must deliver a minimum of 20 GPM through heater
Ozone	230VAC		.5A max	Uses the same relay as the Circ Pump
Spa Light	10VAC	On/Off	1A max	4-Hour timer.
Heater	3kW @ 240VAC			
Misc.	J2 & J32	230VAC	3A max	Hot output (Stereo). Fused equipment or in-line fuse required.

Wiring Diagram and Settings

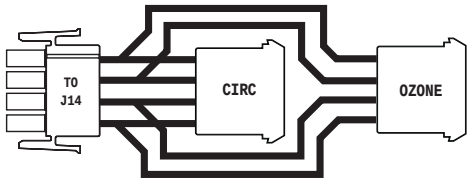


Software Configuration Changes based on Default

Feature	Orig. Setup 1	Changes to
J2 & J32	Hot Output	*Useable*

DIP Switch Option

Add 1 High Speed Pump with Heat	DIP Switch 2 OFF	*DIP Switch 2 ON*



Output Splitter Part Number 22934 must be used.

Refer to Page 3 to choose a suitable Plumbing Kit.

Blue indicates changes from the original Setup 1 default

BALBOA water group

Setup 2-16

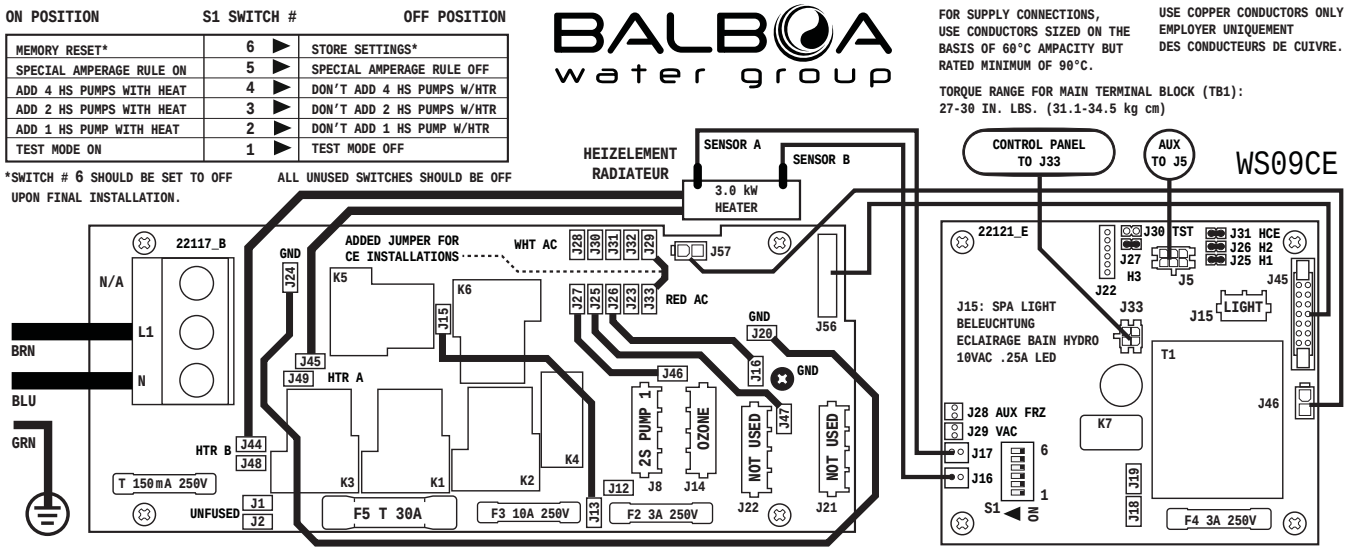
Power Requirements:

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

System Ouputs:

Pump 1	230VAC	2-Speed	12A max	30-minute timer for Low Speed, 15 Minutes for High Speed
	This is the heater pump Must deliver a minimum of 20 GPM through heater			
Ozone	230VAC		.5A max	
Spa Light	10VAC	On/Off	1A max	4-Hour timer.
Heater	3kW @ 240VAC			

Wiring Diagram and Settings



Software Configuration Changes based on Default

Feature	Orig. Setup 1	Changes to
J14	Ozone and Circ*	*Ozone Only*

*Output Splitter 22934 is not needed in this configuration.

Refer to Page 3 to choose a suitable Plumbing Kit.

Blue indicates changes from the original Setup 1 default

Setup 2-32

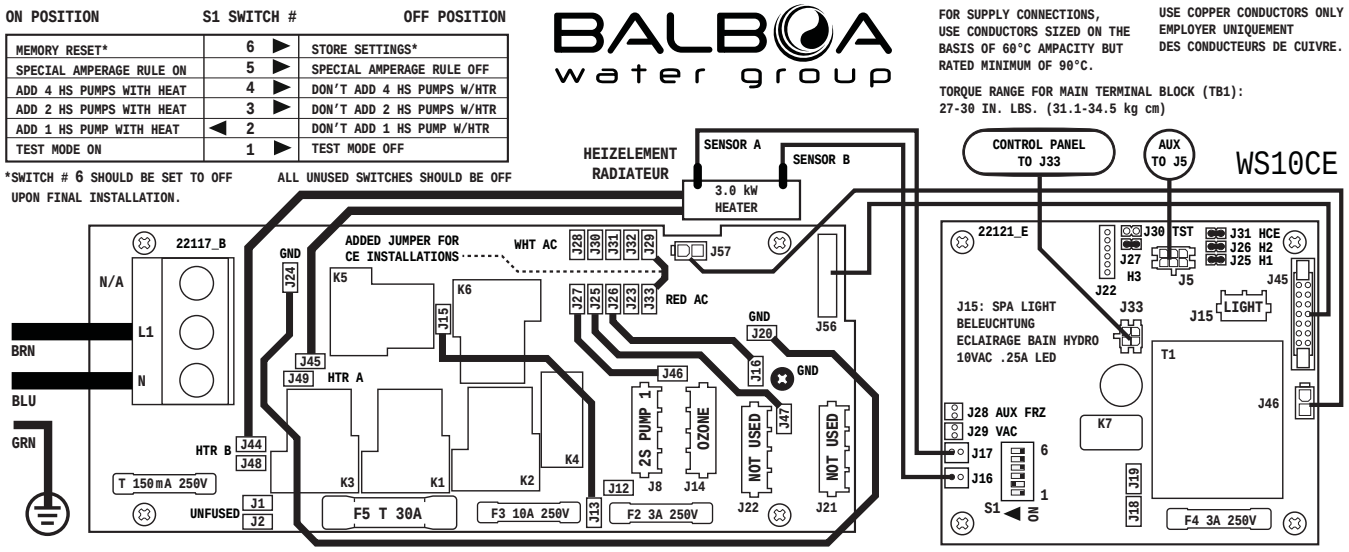
Power Requirements:

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

System Ouputs:

Pump 1	230VAC	2-Speed	12A max	30-minute timer for Low Speed, 15 Minutes for High Speed
	This is the heater pump Must deliver a minimum of 20 GPM through heater			
Ozone	230VAC		.5A max	
Spa Light	10VAC	On/Off	1A max	4-Hour timer.
Heater	3kW @ 240VAC			
Misc.	J2 & J32	230VAC	3A max	Hot output (Stereo). Fused equipment or in-line fuse required.

Wiring Diagram and Settings



Software Configuration Changes based on Default

Feature	Orig. Setup 1	Changes to
J14	Ozone and Circ*	*Ozone Only*
J2 & J32	Hot Output	*Useable*

DIP Switch Option

Add 1 High Speed Pump with Heat . . . . . DIP Switch 2 OFF . . . . . *DIP Switch 2 ON*

*Output Splitter 22934 is not needed in this configuration.

Refer to Page 3 to choose a suitable Plumbing Kit.

Blue indicates changes from the original Setup 1 default

Setup 3-16

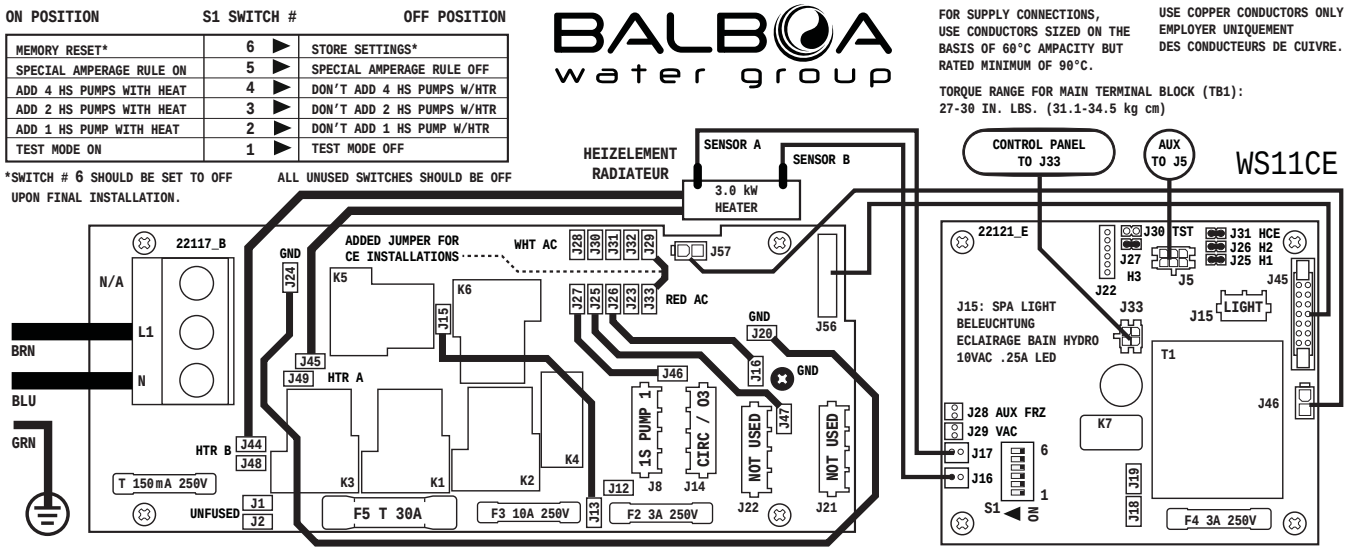
Power Requirements:

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

System Ouputs:

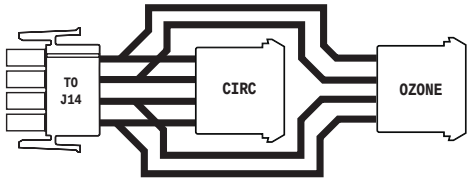
Pump 1	230VAC	1-Speed	12A max	15-minute timer
Circ Pump	230VAC This is the heater pump Must deliver a minimum of 20 GPM through heater	1-Speed	2A max	Programmable Filtration Cycles + Polling
Ozone	230VAC		.5A max	Uses the same relay as the Circ Pump
Spa Light	10VAC	On/Off	1A max	4-Hour timer.
Heater	3kW @ 240VAC			

Wiring Diagram and Settings



Software Configuration Changes based on Default

Feature	Orig. Setup 1	Changes to
Pump 1	2-Speed	*1-Speed*



Output Splitter Part Number 22934 must be used.

BALBOA water group

Refer to Page 3 to choose a suitable Plumbing Kit.

Blue indicates changes from the original Setup 1 default

Setup 3-32

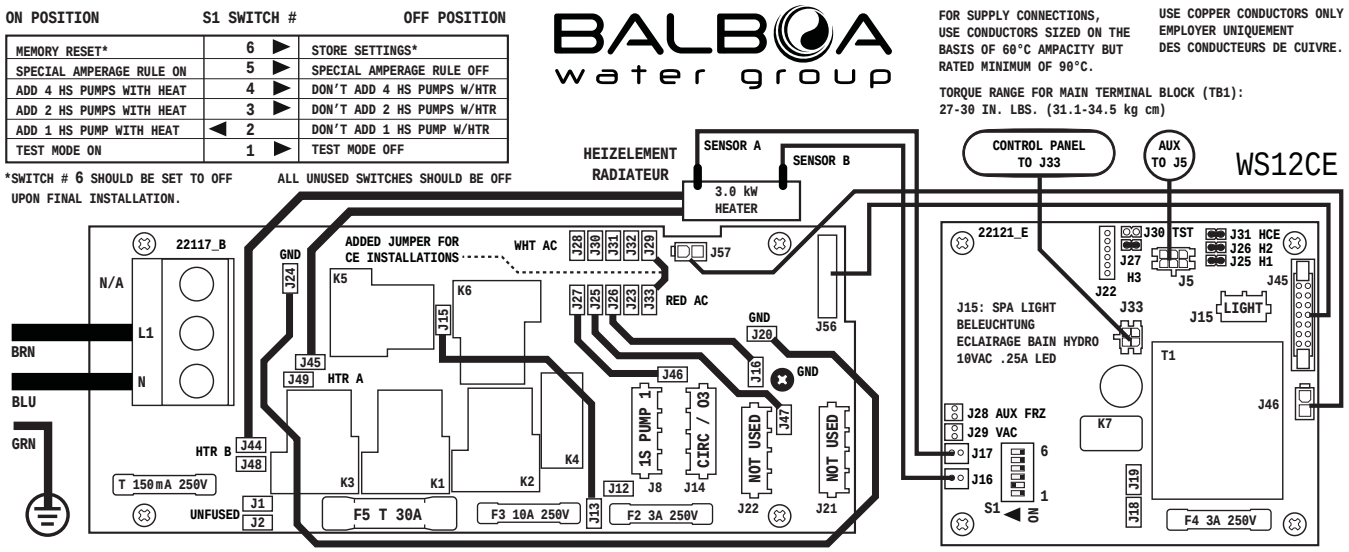
Power Requirements:

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

System Ouputs:

Pump 1	230VAC	1-Speed	12A max	15-minute timer
Circ Pump	230VAC This is the heater pump Must deliver a minimum of 20 GPM through heater	1-Speed	2A max	Programmable Filtration Cycles + Polling
Ozone	230VAC		.5A max	Uses the same relay as the Circ Pump
Spa Light	10VAC	On/Off	1A max	4-Hour timer.
Heater	3kW @ 240VAC			
Misc.	J2 & J32	230VAC	3A max	Hot output (Stereo). Fused equipment or in-line fuse required.

Wiring Diagram and Settings

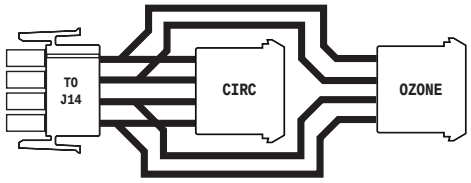


Software Configuration Changes based on Default

Feature	Orig. Setup 1	Changes to
Pump 1	2-Speed	*1-Speed*
J2 & J32	Hot Output	*Useable*

DIP Switch Option

Add 1 High Speed Pump with Heat . . . . . DIP Switch 2 OFF . . . . . *DIP Switch 2 ON*



Output Splitter Part Number 22934 must be used.

Refer to Page 3 to choose a suitable Plumbing Kit.

Blue indicates changes from the original Setup 1 default

BALBOA water group

Setup Changes with DIP Switch 1 ON

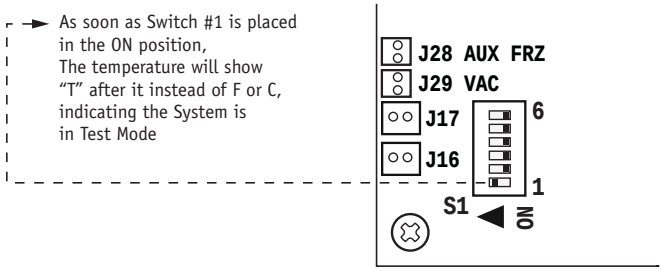
Read and understand these instructions before beginning this process.

Know the Setup Number you want before you power up the spa and wait to power up the spa until you're ready to change the Setup Number.

The system must be in Test Mode, so move Switch 1 to the ON position. The Test Menu will then be available.

Power up the spa, and press any button once to Link the panel. (Note: Switch 1 can be moved to the ON position immediately after power-up, if preferred - Danger! High Voltage will be present!)

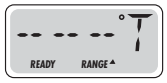
You will have 1 minute to complete the setup change after you manually exit Priming Mode. (Once familiar with the process, the Setup change should take less than 15 seconds.)



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

Move DIP Switch 1 (on S1 on the Logic circuit board) to ON.
The system will enter Test Mode.
Moving DIP Switch 1 to OFF will exit Test Mode.

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.

Setup Changes – Continued

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

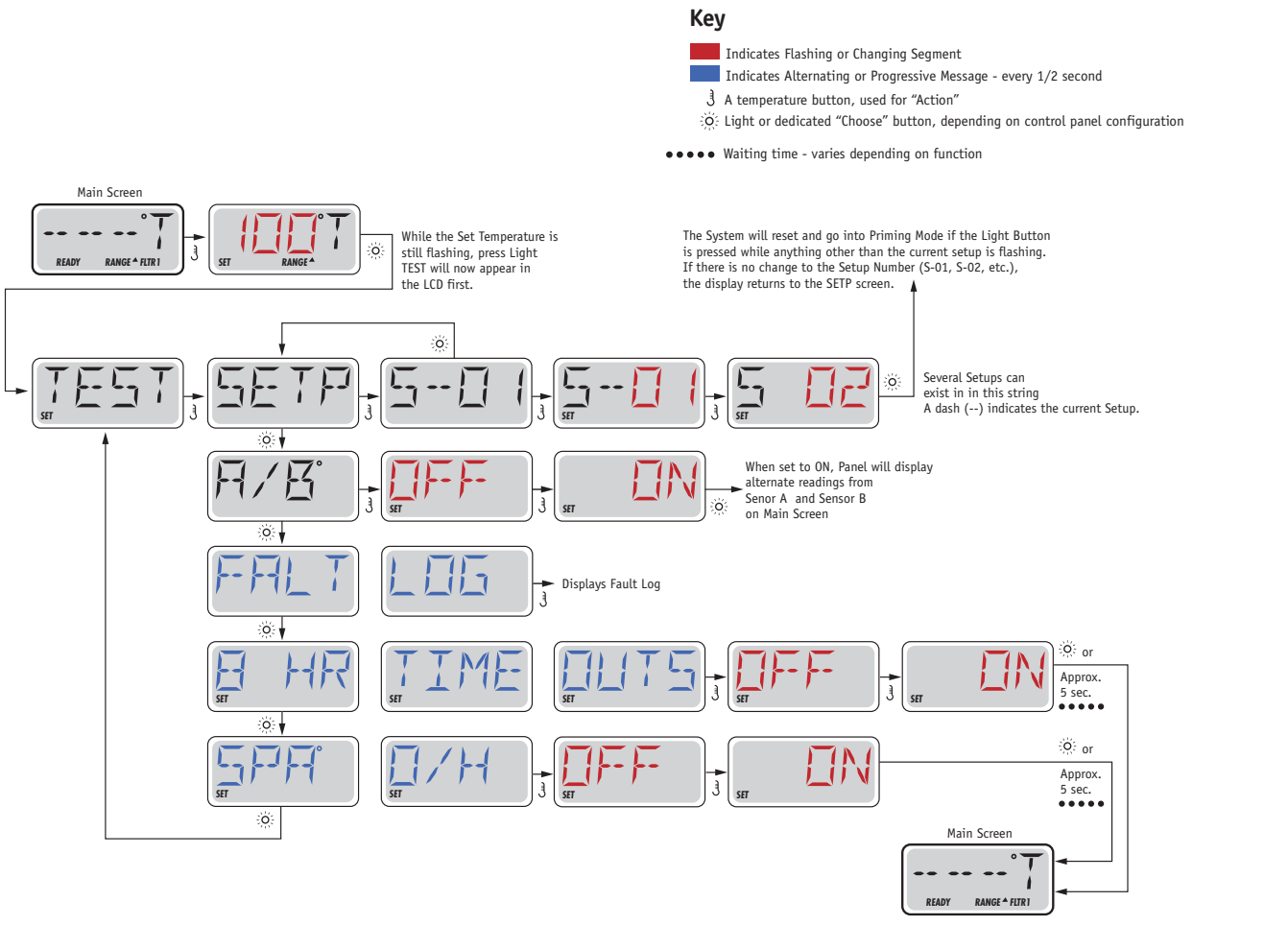
Immediately after exiting Priming Mode, press this sequence of buttons: Warm*, Light, Warm, Warm, Warm, Warm. Continue to press Warm until the diplay shows the Setup Number (S-01, S-02, etc.) you want to switch to. When the correct setup number is showing, press Light once, and the system will reset,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

THIS SYSTEM IS CONFIGURED AS SETUP #

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



*If the Control Panel does not have a Warm (Up) button, but rather a single Temp button, use the Temp button in place of the Warm button in the instruction above. (The flow chart assumes a single Temperature Button.)

IT Electrical System (No Neutral)

The wiring diagram in the system show connections for TN and TT electrical services (Line, Neutral, Ground).

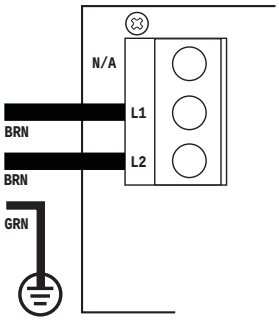
IT Power Requirements:

Single Service [3 wires (line, line, ground)]
230VAC, 50Hz, 1þ, 16A/32A, (Circuit Breaker rating = 20A/40A max.)

Protective Earth Wire (Green/Yellow) must be connected to system ground terminal as marked.

All equipment (pumps, blower, and heater) runs on service line L1 with L2 acting as the return - 230VAC.

Set the DIP switches according to the wiring diagram so that total system current draw never exceeds the rated service input when using a particular setup.

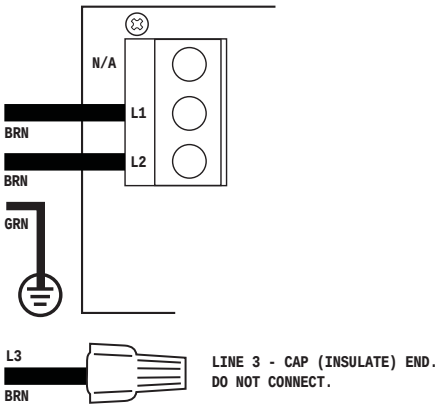


Three Service [4 wires (line, line, line, ground)]
230VAC, 50Hz, 1þ, 16A/32A, (Circuit Breaker rating = 20A/40A max.)

Protective Earth Wire (Green/Yellow) must be connected to system ground terminal as marked.

All equipment (pumps, blower, and heater) runs on service line L1 with L2 acting as the return - 230VAC.

Set the DIP switches according to the wiring diagram so that total system current draw never exceeds the rated service input when using a particular setup.



Refer to Page 3 to choose a suitable Plumbing Kit.

Blue indicates changes from the original Setup 1 default

Configuration Options

General Features

Feature	Default
Pump 1 in Filter Cycle (Circ Only)	No
Pump 1 Low Timer	30 Minutes
General Pump Timer	15 Minutes
Blower Timer	15 Minutes
Mister Timer *(N/A)*	15 Minutes
Light Timer	240 Minutes
Circ	Like P1 Low
Cleanup Cycle	*30 Minutes*
Cleaup as Preference setting	*Yes*
Ozone	Always
Ozone Suppression	OFF
Pump Purge	60 Seconds
Blower Purge	30 Seconds
Mister Purge *(N/A)*	5 Seconds

Blue Indicates New Custom Configuration Default (Setup 1)

Configuration Options

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*	*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
Temp Lock Type	Temp + Settings

Time Features

Feature	Default
Time Format*	*24 Hour*
Filter 1 Start Hour*	8:00 PM (20:00)
Filter 1 Duration*	2 Hours
Filter Cycle 2 Default*	OFF
Filter 2 Start Hour*	8:00 AM (08:00)
Filter 2 Duration*	15 Minutes
Light Cycle	Disabled
Light Cycle Default*	OFF
Light Cycle Start Hour*	9:00 PM (21:00)
Light Cycle Duration*	15 Minutes

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

Blue Indicates New Custom Configuration Default (Setup 1)

Configuration Options

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

Special Features

Feature	Default
Special Amperage Rule A (DIP SW 5 OFF)	No Limitation
Special Amperage Rule B (DIP SW 5 ON)	1 High-Speed Pump**
Drain Mode	Disabled
Demo Mode	Disabled
Automatic GFCI Test	Disabled
Ozone Slaved to Heater Pump	*Yes* in Setups 1 & 3 No in Setup 2

** Editable by end-user*

** Special Amperage Rule B is (DIP Switch 5 ON) is only used with Setup 1-16 (Page 4).
This setting will not allow both Pump 1 High and Pump 2 to run at the same time.

Blue Indicates New Custom Configuration Default (Setup 1)

Configuration Options

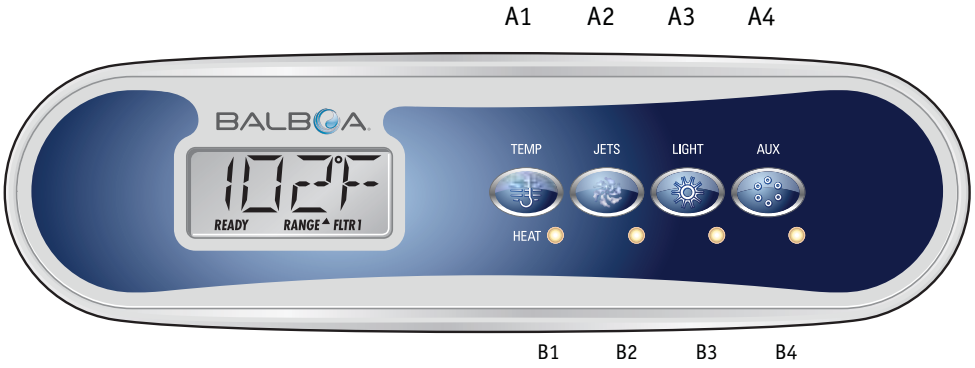
TP400 Control Panel Features

Feature	TP400T	TP400W
Button 1	*Temperature*	Up
Button 2	*Jets 1*	Down
Button 3	*Light 1*	Light 1
Button 4	*Unused*	Jets 1
LED B1	*Heat ON*	Heat ON
LED B2	*Jets 1*	Unused
LED B3	*Light 1*	Light 1
LED B4	*Unused*	Jets 1

TP400T

50260 ▶

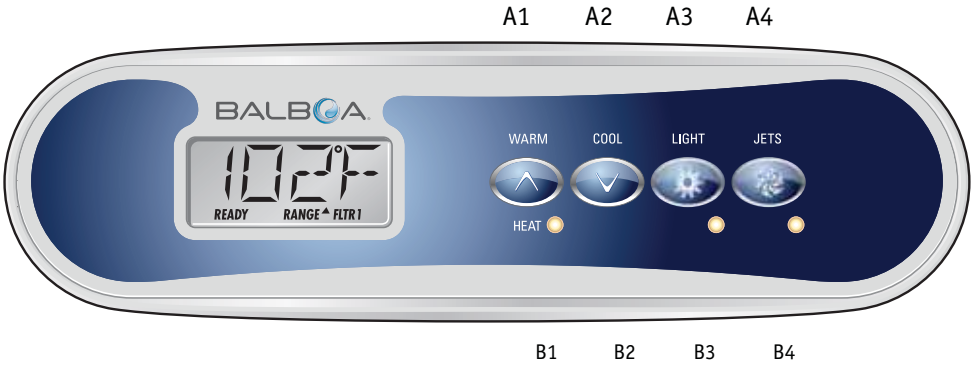
Includes Overlay PN 12511



TP400W

50260 ▶

Includes Overlay PN 12510



Download the User Interface and Programming Guide here:
http://service.balboa-instruments.com/zz40940_download.zip

Blue Indicates New Custom Configuration Default (Setup 1)

Configuration Options

TP600 Control Panel Features

Feature	Default
Button 1	*Jets 1*
Button 2	*Unused*
Button 3	*Flip*
Button 4	*Up*
Button 5	*Light 1*
Button 6	*Down*
LED 1	*Jets 1*
LED 2	*Unused*
LED 3	*Light 1*
LED 4	*Heat ON*

TP600CE

50014-01 ▶

Includes Overlay PN 12101

TP600 (non-CE) should not be used

Download the User Interface and Programming Guide here:
http://service.balboa-instruments.com/zz40940_download.zip

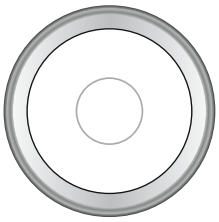
Blue Indicates New Custom Configuration Default (Setup 1)

Configuration Options

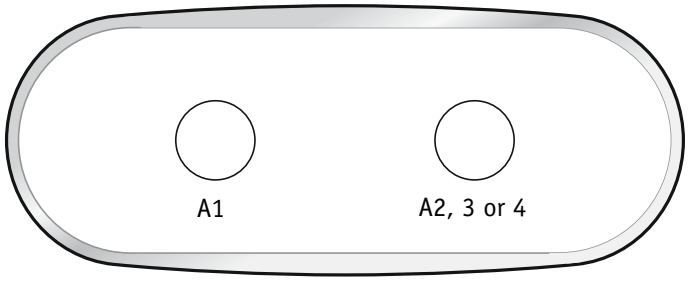
Auxilliary Panel Features

Feature	Default
Aux Button A1	Jets 1
Aux Button A2	Jets 2
Aux Button A3	*Unused*
Aux Button A4	Light

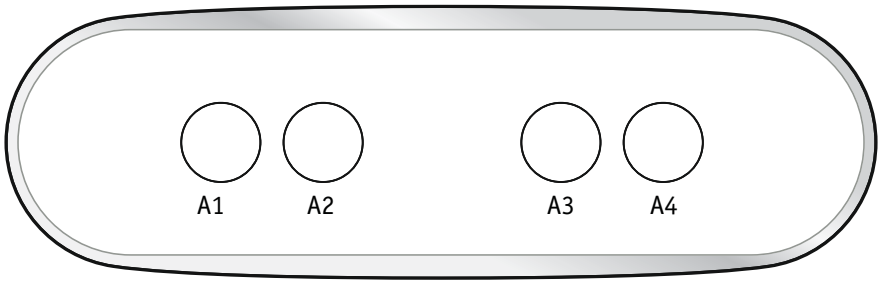
AX10 A1	Jets 1	52683-01
AX10 A2	N/A	
AX10 A3	N/A	
AX10 A4	Light	52766



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



AX40	No O/L	52799



Blue Indicates New Custom Configuration Default (Setup 1)