### **BP25P3BC Tech Sheet**

## DRAFT

Customer:	Balboa Water Group
Part Number:	55963-01
Custom Box Overlay	
Box Overlay Part Number	N/A
UL System Model:	BM25-BP25P3BC-AM
Software Version (SSID):	M100_210 V4
File Name:	BP2500_4.0_BP25P3BC_3.hex
Configuration Signature:	EC32CAB7
Eng. Project Number:	3479
Base PCBA:	55964-01
Bare Board:	22614_A
Control Panels:	
TP901	55995
Software Version	1.2 and later
Auxiliary Panels	
See Page 19	



## **System Revision History**

## DRAFT

Part #	EPN	Date	Originator	Changes Made
55963	3343	03-15-10	BWG	Initial Release Generic BP2500
55963-01	3479	10-12-10	BWG	Add Setups for Circ and three 1-speed pumps. RMA Tester and eFAST compatibility added. Light output changed to 1A.



## **Basic Functions Setup 1**

### **Power Requirements:**

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

### System Ouputs:

Pump 1	240VAC	2-Speed	12A max	15-minute timer for High Speed, 15-Minute timer for Low Speed
Pump 2	240VAC	2-Speed	12A max	15-minute timer
Pump 3	240VAC	2-Speed	12A max	15-minute timer
Blower	240VAC	1-Speed	12A max	15-minute timer
Circ Pump		1-Speed heater pump r 20 GPM thr	2A max ough heater	Programmable Filtration Cycles + Polling
Ozone	120VAC		.5A max	Separate Relay
Spa Light	12VAC	0n/0ff	1A max	240-minute timer.
A/V (Stereo)	120VAC	Hot	5A max	Always on
Heater	5.5kW @ 24	40VAC max		

\*A 120VAC light may allow more than 1A max.

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.



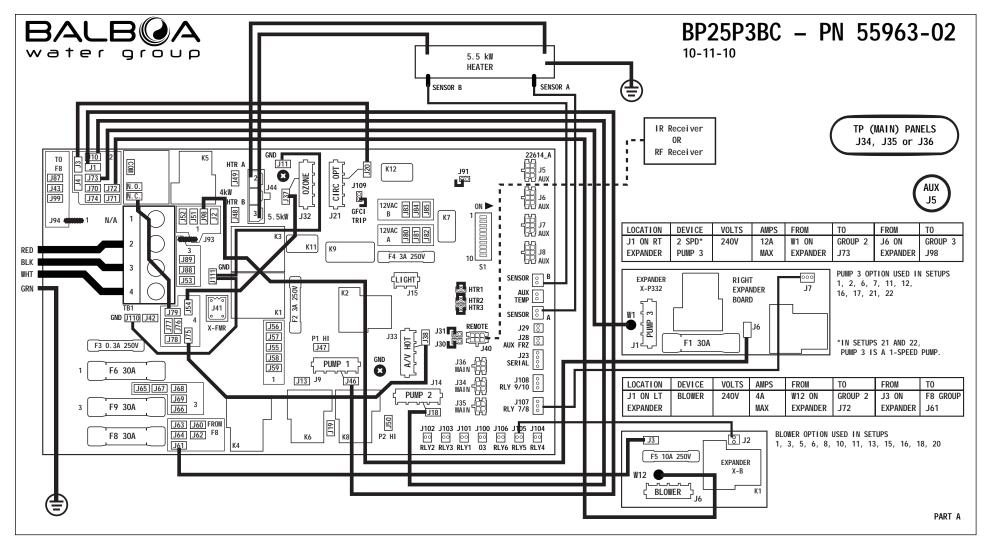
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## Hardware Setup

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#### Wiring Diagram





### Hardware Setup

#### Settings

LOCATION	DEVICE	VOLTS	MAX AMPS	FROM	Т0
J9	2-SP PUMP 1	240V	12A MAX	J46	J1-GROUP 2
J14	2-SP PUMP 2	240V	12A MAX	J18	J10-GROUP 2
J15	SPA LIGHT	12V	1A		
J21	CIRC OPTION	240V	1A MAX	J20	J3-GROUP 2
J32	OZONE	120V	1A	J37	J54-GROUP 4
J33	TV / AV	120V	5A	J38	J75-GROUP 4
J44	HEATER	240V	5.5 kW		

PUMP 1 IS 1-SPEED IN SETUP2 21 AND 22 PUMP 2 IS 1-SPEED IN SETUPS 5, 10, 15, 20, 21 AND 22

CIRC PUMP OPTION PROGRAMMABLE FILTRATION CYCLES + POLLING USED IN SETUPS 1, 2, 3, 4, 5, 11, 12, 13, 14, 15, 21, 22

SETUPS 1-10 ARE IDENTICAL TO SETUPS 11-20, EXCEPT 11-20 DISPLAY TEMPERATURE IN °C

SETUP 21 IS IDENTICAL TO SETUP 22, EXCEPT 22 DISPLAYS TEMPERATURE IN °C

SETUP #	CIRC PUMP	PUMP 1	PUMP 2	PUMP 3	BLOWER	TEMP SCALE	
1	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	2-SPEED	2-SPEED	1-SPEED	°F	SYSTEM WILL BE IN
2	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	2-SPEED	2-SPEED		°F	SETUP #1 UNLESS
3	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	2-SPEED		1-SPEED	°F	MARKED OTHERWISE BELOW
4	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	2-SPEED			°F	
5	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	1-SPEED		1-SPEED	°F	
6		2-SPEED	2-SPEED	2-SPEED	1-SPEED	°F	
7		2-SPEED	2-SPEED	2-SPEED		°F	
8		2-SPEED	2-SPEED		1-SPEED	°F	
9		2-SPEED	2-SPEED			°F	
10		2-SPEED	1-SPEED		1-SPEED	°F	INCTEAD OF
11	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	2-SPEED	2-SPEED	1-SPEED	°C	INSTEAD OF
12	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	2-SPEED	2-SPEED		°C	SETUP #1,
13	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	2-SPEED		1-SPEED	°C	THIS SYSTEM IS
14	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	2-SPEED			°C	CONFIGURED IN
15	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	1-SPEED		1-SPEED	°C	SETUP #:
16		2-SPEED	2-SPEED	2-SPEED	1-SPEED	°C	
17		2-SPEED	2-SPEED	2-SPEED		°C	
18		2-SPEED	2-SPEED		1-SPEED	°C	
19		2-SPEED	2-SPEED			°C	
20		2-SPEED	1-SPEED		1-SPEED	°C	
21	PROGRAMMABLE FILTRATION + POLLING	1-SPEED	1-SPEED	1-SPEED		°F	
22	PROGRAMMABLE FILTRATION + POLLING	1-SPEED	1-SPEED	1-SPEED		°C	

PUMP 1 LOW TIMEOUT IS 15 MINUTES FOR CIRC SYSTEMS. PUMP 1 LOW TIMEOUT IS 120 MINUTES FOR NON-CIRC SYSTEMS.

SWITCHBANK S1 OFF	SWITCHBANK S1 ON	
TEST MODE OFF	▲ A1	TEST MODE ON
DON'T ADD 1 HS PUMP W/HTR	A2 🕨	ADD 1 HS PUMP WITH HEAT
DON'T ADD 2 HS PUMPS W/HTR	🛋 A3	ADD 2 HS PUMPS WITH HEAT
DON'T ADD 4 HS PUMPS W/HTR	🗲 A4	ADD 4 HS PUMPS WITH HEAT
SPECIAL AMPERAGE RULE A	🗲 A5	SPECIAL AMPERAGE RULE A
STORE SETTINGS*	📕 A6	MEMORY RESET*
NOT ASSIGNED	🗲 A7	NOT ASSIGNED
NOT ASSIGNED	🗲 A8	NOT ASSIGNED
NOT ASSIGNED	🗲 A9	NOT ASSIGNED
NOT ASSIGNED	🗲 A10	NOT ASSIGNED

\*SWITCH # 6 SHOULD BE SET TO OFF UPON FINAL INSTALLATION.

USE COPPER CONDUCTORS ONLY. EMPLOYER UNIQUEMENT DES CONDUCTEURS DE CUIVRE. #6 AWG MIN. WIRE =  $90^{\circ}$ 

FOR SUPPLY CONNECTIONS, USE CONDUCTORS SIZED ON THE BASIS OF 60°C AMPACITY BUT RATED MINIMUM OF 90°C.

TORQUE RANGE FOR MAIN TERMINAL BLOCK (TB1): 27-30 IN. LBS. (31.1-34.5 kg cm)

CONNECT ONLY TO CIRCUITS PROTECTED BY A CLASS A GFCI.

A DISCONNECTING MEANS MUST BE INSTALLED WITHIN SIGHT FROM THE EQUIPMENT AND AT LEAST 5 FEET (1.52 M) FROM THE INSIDE WALLS OF THE POOL, SPA, OR HOT TUB.

TOTAL OUTPUT AMP DRAW NOT TO EXCEED MAX INPUT RATING OF SPA USE EARTH GROUND CONNECTIONS AS INDICATED INSIDE THE SYSTEM ENCLOSURE

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BP25P3BC - PN 55963-02

10-11-10

PART B

BALB water group

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

# DRAFT

Setup #	Circ Pump	Pump 1	Pump 2	Pump 3	Blower	Temp Scale	I
1	Programmable Filtration + Polling	2-Speed	2-Speed	2-Speed	1-Speed	°F	1
2	Programmable Filtration + Polling	2-Speed	2-Speed	2-Speed		°F	1
3	Programmable Filtration + Polling	2-Speed	2-Speed		1-Speed	°F	1
4	Programmable Filtration + Polling	2-Speed	2-Speed			°F	1
5	Programmable Filtration + Polling	2-Speed	1-Speed		1-Speed	°F	1
6		2-Speed	2-Speed	2-Speed	1-Speed	°F	1
7		2-Speed	2-Speed	2-Speed		°F	1
8		2-Speed	2-Speed		1-Speed	°F	1
9		2-Speed	2-Speed			°F	I
10		2-Speed	1-Speed		1-Speed	°F	1
11	Programmable Filtration + Polling	2-Speed	2-Speed	2-Speed	1-Speed	°C	
12	Programmable Filtration + Polling	2-Speed	2-Speed	2-Speed		°C	1
13	Programmable Filtration + Polling	2-Speed	2-Speed		1-Speed	°C	1
14	Programmable Filtration + Polling	2-Speed	2-Speed			°C	1
15	Programmable Filtration + Polling	2-Speed	1-Speed		1-Speed	°C	1
16		2-Speed	2-Speed	2-Speed	1-Speed	°C	I
17		2-Speed	2-Speed	2-Speed		°C	1
18		2-Speed	2-Speed		1-Speed	°C	1
19		2-Speed	2-Speed			°C	1
20		2-Speed	1-Speed		1-Speed	°C	1
21	Programmable Filtration + Polling	1-Speed	1-Speed	1-Speed		°F	
22	Programmable Filtration + Polling	1-Speed	1-Speed	1-Speed		°C	1

#### System is shipped in Setup 1

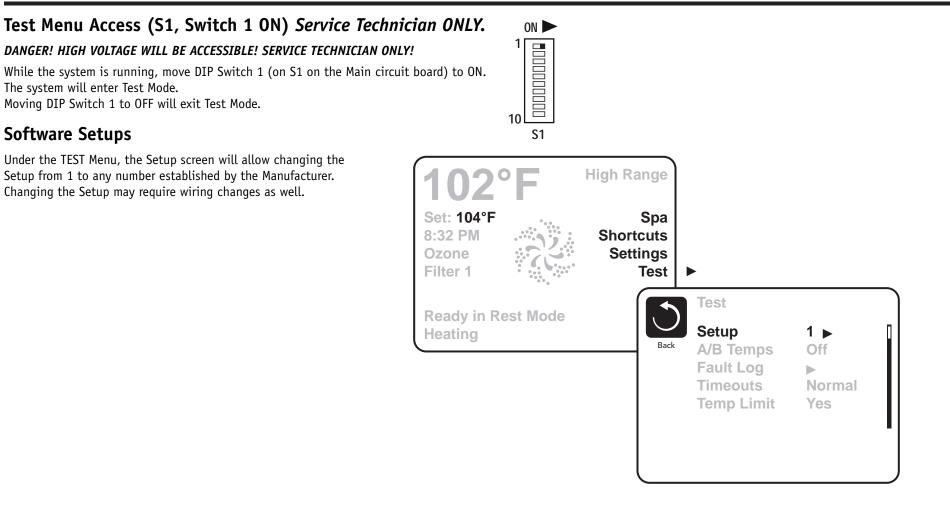
Pump 1 Low timeout is 15 minutes for Circ systems. Pump 1 Low timeout is 120 minutes for Non-Circ systems.

Setups 11-20 are identical to 1-10 except for °C.

Setup 21 is identical to 22 except for °C.



## **Changing Software Setups**





## **Equipment Expansion**

## DRAFT

#### **Expansion Features Control Connection** Default Fuse Relay 1 (J101) Undefined None Relay 2 (J102) Undefined None Relay 3 (J103) Undefined None Undefined Relay 4 (J104) None Relay 5 (J105) Blower 10A Relay 6 (J106) Undefined None Relay 7/8 (J107) Pump 3 30A Relay 9/10 (J108) Undefined 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 40981\_C 02-17-10

## **DIP Switch Functions**

#### **Fixed-fuction DIP Switches**

A1	Test Mode (normally Off).	1
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.	
A4	In "ON" position, add four high-speed pumps (or 3 HS Pumps and Blower) with Heater.	10
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, 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.

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.





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**S**1

## **Jumper Definitions**

J93 J94	Must be sol <b>Note:</b>	dered in place for UL and cUL Single service, 50A or 60A.	J94 🖱 🗩 J93
J109	GFCI Test/Ti <i>Note:</i>	rip Enable This feature must be enabled in software as well.	J109
J91	Real Time C <i>Note:</i>	lock Enable/Disable This Jumper should NOT be shorted when the Control Panel can display time of day.	J91 🖸 🔤
J30 J31	Do Not Use		
J29	Do Not Use		J29 💍
HTR 1, 2, 3	Heater Type	Settings.	
_	Note:	Factory Configured.	

### 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.



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### **General Features** Feature Рι

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vei	rau	ιτ

Pump 1 in Filter Cycle (Circ Only)	No
Pump 1 Low Timer	15 Minutes with Circ
	120 Minutes Non-Circ
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
Ozone	Always
Ozone Suppression	OFF
Pump Purge	60 Seconds
Blower Purge	30 Seconds
Mister Purge	5 Seconds

Blue Indicates New Custom Configuration Default (Setup 1)



## DRAFT

#### Default Feature Temperature Display °F in Setups 1-10 °C in Setups 11-20 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 °F °ſ °F 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

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

**Temperature Features** 

Blue Indicates New Custom Configuration Default (Setup 1)



## DRAFT

### 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*	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

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

Blue Indicates New Custom Configuration Default (Setup 1)



## DRAFT

### **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)



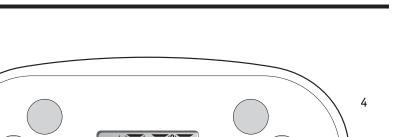
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### Special Features

**Feature** Special Amperage Rule A Special Amperage Rule B **Default** No Limitation No Limitation

Disabled	
Disabled	
Disabled	
No	
No Always Input Voltage	

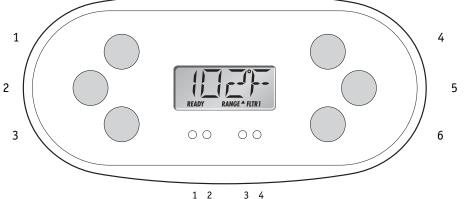




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### **TP600 Panel Features**

Feature	Default
Button 1	Jets 1
Button 2	Jets 2
Button 3	Blower
Button 4	Up
Button 5	Light 1
Button 6	Down



LED 1	Jets 1
LED 2	Jets 2
LED 3	Light
LED 4	Heat

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.



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## **TP900 Panel Configuration**

# DRAFT

### Button Layout Table

1			1	
Button #	Pump 3 & Blower	Pump 3 & NO Blower	NO Pump 3 & Blower	NO Pump 3 & NO Blower
	Setups 1, 6, 11, 16	Setups 2, 12, 21, 22	Setups 3, 5, 8, 10, 13, 15, 18, 20	Setups 4, 9, 14, 19
1	N/A	N/A	N/A	N/A
2	Jets 1	Jets 1	Jets 1	Jets 1
3	Jets 2	Jets 2	Jets 2	Jets 2
4	Jets 3	Jets 3	Blower	Light 1
5	Blower	Light 1	Light 1	Invert
6	Light 1	Invert	Invert	(Circ Icon)
7	Invert	(Circ Icon)	(Circ Icon)	Undefined
8	(Circ Icon)	Undefined	Undefined	Undefined
9	Undefined	Undefined	Undefined	Undefined
10	Undefined	Undefined	Undefined	Undefined
11	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A
13	Jets 1	Jets 1	Jets 1	Jets 1
14	Jets 2	Jets 2	Jets 2	Jets 2
15	Blower	Jets 3	Blower	Undefined
16	Light 1	Light 1	Light 1	Light 1

A Circ Icon will appear when a Circ Pump is configured using Setups 1, 2, 3, 4, 5, 11, 12, 13, 14, 15, 21, 22

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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### Auxilliary Panel Features on Bank 1\*

Feature	Default
Aux Button A1	Jets 1
Aux Button A2	Jets 2
Aux Button A3	Jets 3
Aux Button A4	Light

# Auxilliary Panel Features on Bank 2\*FeatureDefaultAux Button A5Jets 1Aux Button A6Jets 2

Aux Button A6	Jets 2
Aux Button A7	Blower
Aux Button A8	Light

\*Bank 1 consists on J5 and J6 on the Main Circuit Board. Bank 2 consists on J7 and J8 on the Main Circuit Board. Aux Connection Splitter PN4XXXX may be required.

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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BALB A

### **Auxilliary Panel Features**

### AX10 Panels on Bank 1\*

 A1, AX10A1
 No 0/L
 52803

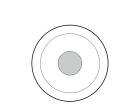
 A2, AX10A2
 No 0/L
 52804

 A3, AX10A3
 No 0/L
 55805

 A4, AX10A4
 No 0/L
 52806

### AX10 Panels on Bank 2\*

A5, AX10A1	No O/L	52803
A6, AX10A2	No O/L	52804
A7, AX10A3	No O/L	52805
A8, AX10A4	No O/L	52806





### Call Customer Service for additional information about Auxiliary Panels.

Auxiliary Panel Part Number \_\_\_\_\_\_ Overlay Part Number \_\_\_\_\_

\*Bank 1 consists on J5 and J6 on the Main Circuit Board. Bank 2 consists on J7 and J8 on the Main Circuit Board. Aux Connection Splitter PN4XXXX may be required.

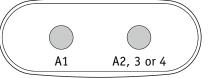
#### AX20

 AX20 A1A2
 No 0/L
 52800

 AX20 A1A3
 No 0/L
 52801

 AX20 A1A4
 No 0/L
 52802

52799



AX20 Auxiliary Panel plugged into Bank 1 will operate A1 + A2, A3 or A4. AX20 Auxiliary Panel plugged into Bank 2 will operate A5 + A6, A7 or A8.

AX40

AX40 No 0/L

A1 A2 A3 A4

AX40 Auxiliary Panel plugged into Bank 1 will operate A1 + A2, A3 and A4. AX40 Auxiliary Panel plugged into Bank 2 will operate A5 + A6, A7 and A8.

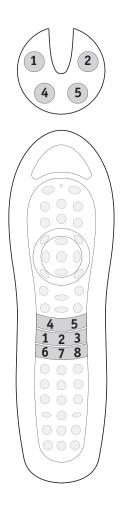
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### **Remote Panel Features**

Feature	Default
Remote Button A1	Jets 1
Remote Button A2	Jets 2
Remote Button A3	Jets 3
Remote Button A4	Blower
Remote Button A5	Light
Remote Button A6	Undefined
Remote Button A7	Undefined
Remote Button A8	Undefined



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#### Remote Panel Part Number

**Overlay Part Number** 

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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