Master Spas
System PN 55862

System Model # GL8-MS8500E-RCA-3.0K

Software Version # 30

EPN # 2615

Base PCBA – PN 55863
PCB GL8000 – PN 22960 Rev B or C
HEX File – 10013930_MS8500E
Configuration Signature – E9FC010D

Base Panels
MP700 – PN 53251-01

Aux Panels
AX10 (Jets 1) – PN 52803
AX10 (Jets 2) – PN 52804
AX10 (Jets 4) – PN 52806

BALBOA
water group

System PN	EPN	Date	Requested By	Changes Made
55862	2615	01.02.2008	Customer	New system

Basic System Features and Functions

Power Requirements

- 230VAC, 1~, 16A or 32A, 50Hz, or 230VAC (Line to Neutral), 3~, 16A, 50Hz

System Outputs

Setup 1 (As Manufactured)

- 230V Pump 1, 2-Speed
- 230V Pump 2, 2-Speed
- 230V Pump 3, 1-Speed
- 230V Pump 4, 1-Speed
- 230V Circ Pump
- 230V Ozone
- 10V Spa Light
- 230V Audio\Visual (Stereo)
- 230V 3.0kW Heater *

*   Heater wattage is rated at 230V.

Additional Options

- Full Feature Dolphin Remote
  and Spa-only Dolphin Remote

- Spa Monitor
  Connects to Main Panel terminal J70, J71, J72, or J73

- IR or RF Dolphin Receiver Modules
  Connects to Remote terminal J20

- Ozone Generator
  Connects to terminal J4

- MoodEFX Lighting
  Connects to Spa Light terminal J10

- FiberEFX Lighting
  Connects to Spa Light terminal J10

- Stereo System
  Connects to A.V. terminal J5

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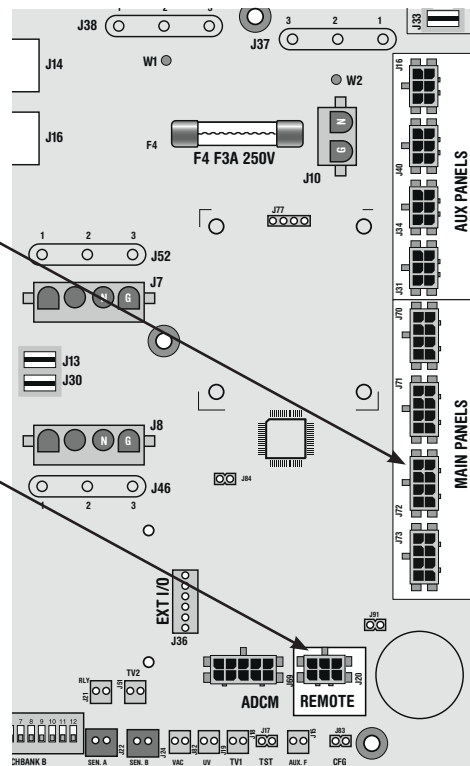
Any time you change DIP Switches or Software Configuration Settings that affect parameters the user can change (any filter settings, set temperature default, Celsius vs Fahrenheit, 12-hour vs 24-hour time, reminders suppression, etc), you must reset Persistent Memory for your DIP Switch or Software Configuration Settings changes to take effect. You should also reset Persistent Memory after loading a new file into a board (using the ESM, purchased seperately).
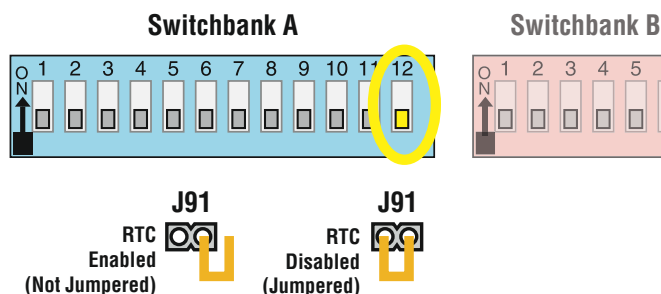
To reset Persistent Memory:
- Power down.
- Set A12 ON (See illustration below).
- Power up.
- Wait until "P_r" or "$PRIMING\ MODE$" is displayed on your panel. Note: If "CFE" appears see section below.
- Set A12 OFF. (This can be done safely with power on if you use a non-conductive tool such as a pencil to push the switch back to the OFF position. Otherwise, power down before setting A12 OFF)
- Power up again (if you powered down in the previous step).
- For all other power ups, leave A12 OFF.

About Persistent Memory and Time of Day Retention:
This system uses memory that doesn't require a battery to store a variety of settings. What we refer to as Persistent Memory stores all the User Preferences, as well as all the filter settings, the set temperature, and the heat mode.

Persistent Memory is not used for Time of Day. Time of Day needs to be "kept running" (not just stored) while the power is off, so a separate Real Time Clock feature (on all models except the EL1000) keeps track of Time of Day while the unit is off. Time of Day Retention, and Time of Day Retention alone, is controlled by the J91 jumper. J91 must be set according to main system panel used.

Switchbank A   **Switchbank B**

J91
RTC
Enabled
(Not Jumpered)

J91
RTC
Disabled
(Jumpered)

CFE message on power up:
If "CFE" appears before (and instead of) "P_r" or "$PRIMING\ MODE$", you have not configured DIP Switches and/or Software Configuration Settings in a valid manner. This must be corrected before you can reset Persistent Memory.

The switch numbers, jumpers, or configuration settings displayed after "CFE" are ones with which the system has found a configuration problem. For example:
- "$CFE\ A5\ b2$" would mean that the combination of how you've set A5 and how you've set B2 is not supported on this system.
- "$CFE\ J99$" would mean that there is a problem with jumper J99
- "$CFE\ P3.1\ bL.1$" would mean that the combination of how you've set pump 3 for 1-speed and blower for 1-speed is not supported on this system.
- "$CFE\ P3\_\ bL.\_$" would mean that the combination of how you've set DIP switches which have been assigned to pump 3 and blower is not supported on this system.

Power Up Display Sequence
Upon power up, you should see the following on the display:
- Three numbers in a row, which are the SSID (the System Software ID). The third display of these numbers is the Software Version, which should match the version of your system. For example, if these three numbers are $100\ 134\ 26$, that is a Mach 3 EL8000 at version 26.
- If there is a Configuration Error, the CFE message (see above) will appear at this point (and none of the messages below will display). Otherwise what comes next is:
- An indication of either the input voltage detected (EL1000/EL2000), or the heater wattage range supported (EL8000/GL2000/GL8000).
  - Heater wattage display: "$1-3$" means the system supports a heater from 1 kW to 3 kW. "$3-6$" means the system supports a heater from 3 kW to 6 kW. "$3-3$" means the system supports a 3 kW heater only. (These ranges may be modified slightly in the case of special heaters, which the next bullet covers.)
  - Input voltage display: A system showing "240" supports 3 kW to 6 kW heaters. A system showing "120" supports the very same heaters, although at 120V those heaters will function at only 1/4 of their 240V rated wattage. (The system shows only either "240" or "120" as a general indication of input voltage; it does not show the actual input voltage.)
- If your system is using a special type of heater, a display such as "$H\ 6$" may appear next. If your system is using the generic Balboa heater, no heater type display will appear.
- "P_r" or "$PRIMING\ MODE$" will appear to signal the start of Priming Mode.

At this point, the power up sequence is complete. Refer to the User Guide for the ML Series panel on your system for information about how the spa operates from this point on.

Wiring Configuration and DIP Settings

Setup 1 (As Manufactured)

- 230V Pump 1, 2-Speed
- 230V Pump 2, 2-Speed
- 230V Pump 3, 1-Speed
- 230V Pump 4, 1-Speed

- 230V Circ Pump
- 10V Spa Light
- 230V Ozone
- 230V AV (Stereo)

- 230V 3.0kW Heater
- MP700 Main Panel

HiPot Testing Note:

Disconnect slip terminal with green wires from J90 prior to performing HiPot test. Failure to disconnect will cause a false failure of the test.

Reconnect terminal to J90 after successful completion of HiPot test.
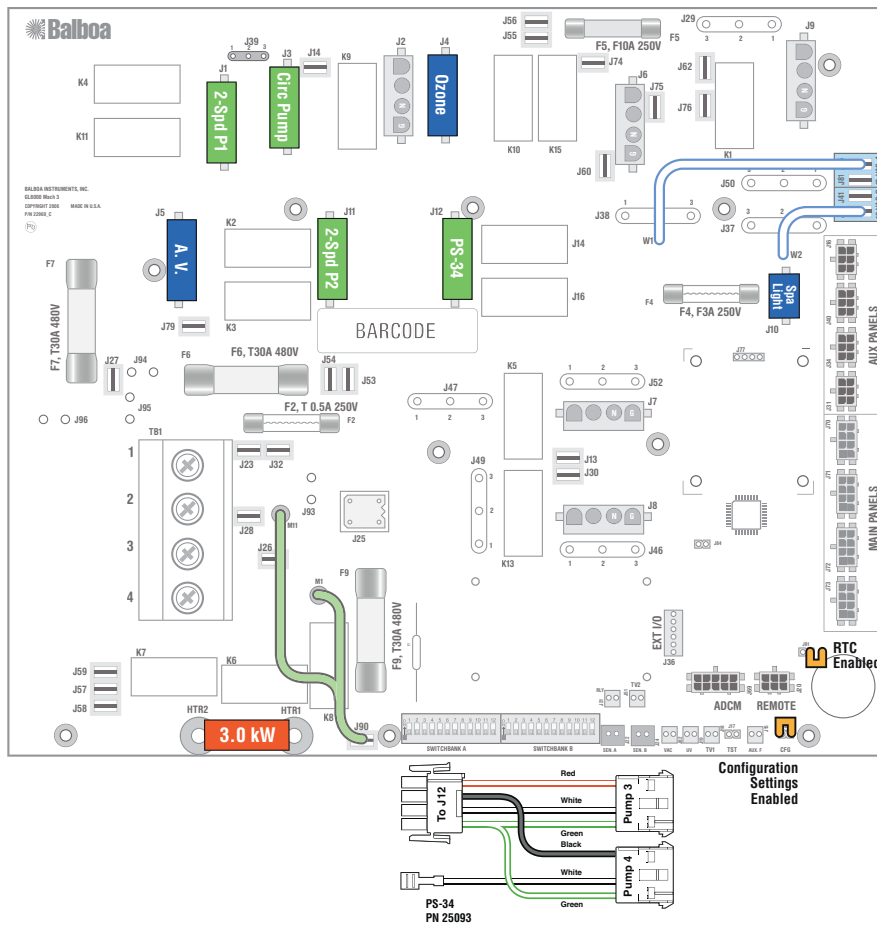
WARNING: Main Power to system should be turned OFF BEFORE adjusting DIP switches.

WARNING: Persistent Memory (A12) must be RESET to allow new DIP switch settings to take effect. (See Persistent Memory page)

Switchbank A

ON 1 2 3 4 5 6 7 8 9 10 11 12

A1, Test Mode OFF
A2,
A3, + 2 Pumps w/Heat
A4,
A5, Not Assigned
A6, Not Assigned

A7, Not Assigned
A8, Not Assigned
A9, Not Assigned
A10, No Edit
A11, Special Amp Rule OFF
A12, Memory ON

Switchbank B

ON 1 2 3 4 5 6 7 8 9 10 11 12

B1, Not Assigned
B2, Not Assigned
B3, Not Assigned
B4, Not Assigned
B5, Not Assigned
B6, Not Assigned

B7, Not Assigned
B8, Not Assigned
B9, Not Assigned
B10, Not Assigned
B11, Not Assigned
B12, Not Assigned

SSID #
100
139
30

RTC Enabled J91

Config Settings Enabled J83

Wiring Color Key

- Neutral (Common) AC Connections
- Special AC Connections
- Line AC Connections
- 10 Volt Connections
- Relay Control Wires

Board Connector Key

1 Typically Line voltage
2 Typically Line voltage for 2-speed pumps
3 Neutral (Common)
4 Ground

Note flat sides in connector

DIP Switches and Jumper Definitions

> **WARNING:**
> - Setting DIP switches 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 hot sheet.

DIP Switchbank A Key

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
A4 .... In "ON" position, add four high-speed pumps (or 3 HS Pumps and Blower) with Heater
A10 .... When switched ON when spa is on, system will enter the Edit Menu for Configuration Settings
Do not start spa with A10 turned on or CFE* error will occur
A11 .... In "ON" position, enables Special Amperage Rule, see "SA" in Software Configuration section for functionality with your system
.... In "OFF" position, disables Special Amperage Rule
A12 .... Persistent memory reset (used when spa is powering up) See "Persistent Memory and Powering Up" page

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.

*CFE errors are illegal configurations such as a pump and a blower set to run on the same output. The configuration must be corrected before the spa will operate.


Assignable DIP Switch Key

A5 ...... Not Assigned
A6 ...... Not Assigned
A7 ...... Not Assigned
A8 ...... Not Assigned
A9 ...... Not Assigned
B1 ...... Not Assigned
B2 ...... Not Assigned
B3 ...... Not Assigned
B4 ...... Not Assigned
B5 ...... Not Assigned
B6 ...... Not Assigned
B7 ...... Not Assigned
B8 ...... Not Assigned
B9 ...... Not Assigned
B10 ...... Not Assigned
B11 ...... Not Assigned
B12 ...... Not Assigned

Jumpers Key

J91 .... Jumper on 1 Pin only enables Real Time Clock function, for use with time capable panels.
Jumper on Pins 1 and 2 will disable RTC function, for use with non-time capable panels.

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For Software Configured System
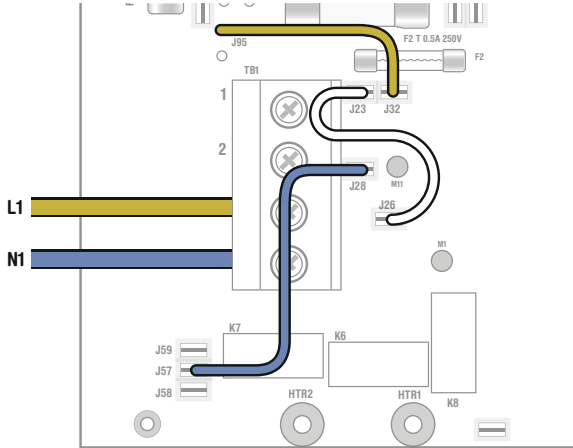
Single Service (1 x 16 Amp or 1 x 32 Amp)

This option is configured and shipped as the default.
For 1 x 32 Amp Service:
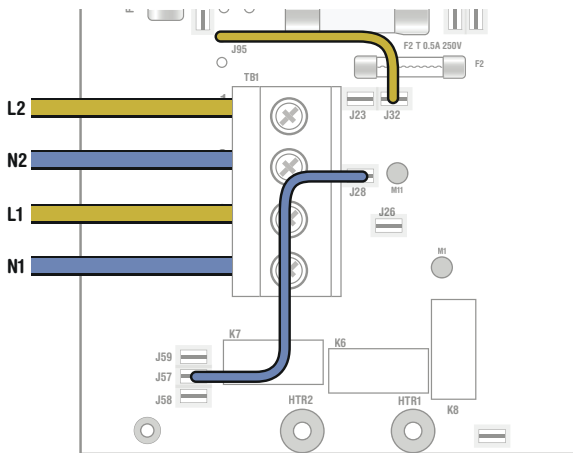 DIP Switch A2, A3, and A4 can be ON
For 1 x 16 Amp Service:
  DIP Switch A2, A3, and A4 must be OFF
For 1 x 16 Amp and 1 x 32 Amp Service:
  DIP Switch A11 must be ON if using Special Amperage Rule
  DIP Switch A11 must be OFF if not using Special Amperage Rule
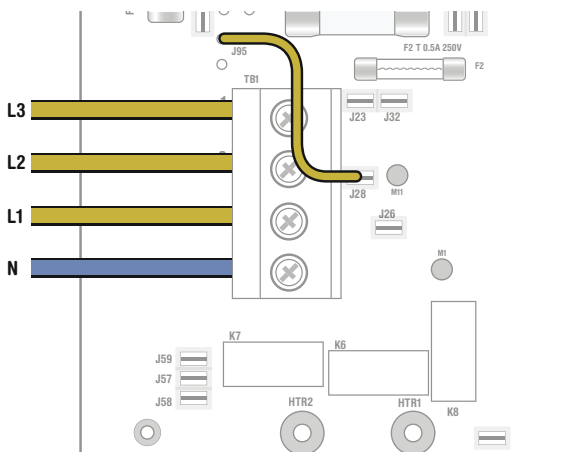
Dual Service Option (2 x 16 Amp)

Completely remove the white wire from J26 and J32.

Note: J32 and J23 are electrically identical. The white wire may be attached to either terminal before removal.

DIP Switch A2, A3, and A4 must be ON
DIP Switch A11 must be ON if using Special Amperage Rule
DIP Switch A11 must be OFF if not using Special Amperage Rule

3-Phase Service Option

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

Completely remove the white wire from J26 and J32.

Note: J32 and J23 are electrically identical. The white wire may be attached to either of these terminals before removal.

Completely remove the blue wire from J28 and J57.

Note: J57, J58 and J59 are electrically identical. The blue wire may be attached to any of these terminals before removal.

Move the brown wire from J23 or J32 to J28.

DIP Switch A2, A3, and A4 must be ON
DIP Switch A11 must be OFF

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Software Configuration Settings

Fd — Program Filter Cycles by Duration (n) Y _
n = Start and stop times; for time capable panels.
Y = Duration; for non-time capable panels   **_ =** 1 DIP Switch

F1 — Pump 1 in Filter (w/Circ Pump) (n) Y (This feature is used in Circ Mode only.)
Allows Pump 1 Low to operate in Filter Cycles to add extra filtration.
n = Normal; **Y =** Pump 1 with Circ

24 — 24-Hour Time * n (Y) _
n = 12-hour (am/pm); **Y =** 24-hour (military\European); **_ =** 1 DIP Switch
* Sets default for user preferences - only applies when persistent memory is reset (A12 On) during power-up.

tc — Celsius * n (Y) _
n = Fahrenheit; **Y =** Celsius; **_ =** 1 DIP Switch
* Sets default for user preferences - only applies when persistent memory is reset (A12 On) during power-up

to — Timeouts 1 (F) 2 3 4 5 6
1-6 = 10, 20, 30, 40, 50, 60 minutes; **F =** 15 minutes

1t — Pump 1 Low Timeout d 1 (2) 3 4 _
d = Use "Timeouts" value above; **1-4 =** number of hours; **_ =** 3 DIP Switch

Lt — Light Timeout d 1 2 3 (4)
d = Use "Timeouts" value above; **1-4 =** number of hours

Sc — Scrunch Panel n (Y) _
n = Normal panel layout;
Y = Alternate panel layout (ML900 scrunching enabled - ML550/700
      Jets 3 replaces Blower;
_ = 1 DIP Switch

ct — Circ Type (behavior) n A 3 (P) _
n = Non circ or circ pump not plumbed with heater; **A =** 24-hour;
3 = 24-hour with 3°F shutoff outside filter;
P = Acts like Pump 1 Low (filter cycles, polls, etc.); **_ =** 2 DIP Switch

PUMP SPEEDS

P1 — Pump 1 Speeds 1 (2) _
1 = 1 speed; **2 =** 2 speed; **_ =** 1 DIP Switch

P2 — Pump 2 Speeds 0 1 (2) _
0 = Disabled; **1 =** On/Off; **2 =** 2 speed; **_ =** 2 DIP Switch

P3 — Pump 3 Speeds 0 (1) 2 _
0 = Disabled; **1 =** On/Off; **2 =** 2 speed; **_ =** 3 DIP Switch

P4 — Pump 4 Speeds 0 (1) E H L _
0 = Disabled; **1 =** On/Off on board; **E =** External X-P CE or X-P231 CE board
H = On/Off on pin 1 of X-P632 CE board; **L =** 2 speed on X-P632 CE board; **_ =** 3 DIP Switch

P5 — Pump 5 Speeds (0) 1 E L _
0 = Disabled; **1 =** On/Off on board; **E =** External X-P CE or X-P231 CE board
L = On/Off on pin 2 of X-P632 CE board; **_ =** 2 DIP Switch

PUMP SPEEDS

P6 — Pump 6 Speeds — (0) 1 _
0 = Disabled; **1** = On/Off; _ = 1 DIP Switch

bL — Blower Speeds — (0) 1 _
0 = Disabled; **1** = On/Off; _ = 2 DIP Switch

LIGHTING CONTROL

Lb — Separate Spa Light Buttons — (n) Y _ See Chart Below
(This feature applies when   **n** = No Spa light button, Spa Light output is on with Fiber;
using Fiber Optic light)   **Y** = Separate Spa Light button on ML900 or Aux panel; _ = 1 DIP Switch

Note: The Light button on an ML900 panel is a SpaLight button. The Light button on most other panels is an EitherLight button.

	Lb.n	Lb.Y
Fo.n	No separately-controlled fiber light; spa light enabled on both SpaLight and EitherLight buttons; fiber light (not wheel) comes on with spa light (at any intensity)	
Fo.Y	No separately-controlled fiber light; fiber light enabled on both FiberLight and EitherLight buttons; spa light comes on with fiber light	Spa light and fiber light each separately controlled; fiber light enabled on both FiberLight and EitherLight buttons; spa light enabled on SpaLight buttons only

L1 — Spa Light On/Off — n (Y) _
n = Dimmable (H, M, L) Light; **Y** = On/Off Light; _ = 1 DIP Switch

Fo — Fiber Optics — (n) Y _
n = Disabled; **Y** = Light and Wheel Enabled;; _ = 2 DIP Switch

oE — Option — (n) Y _
n = Disabled; **Y** = Enabled; _ = 1 DIP Switch

15 — Mister — (n) Y _
n = Disabled; **Y** = Enabled; _ = 1 DIP Switch

CC — Cleanup Cycles * — 0 (1) 2 3 4
0 = Disabled; **1-4** = Number of hours

* Sets default for user preferences - only applies when persistent memory is reset (A12 On) during power-up.

cU — Cleanup Cycles as User Preference — (n) Y
n = Only in Configuration Settings;
Y = Over-rideable by User via User Preferences

OZONE

o3 — Ozone Operation — A (F) _
A = Operates with Heater Pump (Pump 1 Low or Circ Pump);
F = Operates in Filter and Cleanup Cycles only; _ = 1 DIP Switch

o5 — Ozone Suppression — (n) Y _
n = No Suppress; **Y** = 1-hour suppress on button press; _ = 1 DIP Switch

oi — Ozone Icon — n Y (U)
n = Disabled; **Y** = Enabled ; **U** = Controlled by UV input

o9 — Option Qualify — (n) Y
n = Option button Normal; **Y** = Option button qualified by UV input

Auxiliary Buttons

Code	Setting	Options
A1	Aux Button 1 (Bank A)	**(1)** 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
A2	Aux Button 2 (Bank A)	1 **(2)** 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
A3	Aux Button 3 (Bank A)	1 2 3 4 5 6 **(b)** g F E o t d P n A U r O H 9 L 8
A4	Aux Button 4 (Bank A)	1 2 3 **(4)** 5 6 b g F E o t d P n A U r O H 9 L 8

1-6 = Assigns Pump Number (Pump 1, Pump 2, etc); **b** = Blower; **g** = Spa Light; **F** = Fiber-Optic wheel/light; **E** = EitherLight; **o** = Option; **t** = Mister; **d** = CK Mode/Cool; **P** = CK Option/Heat; **n** = CK Intensity/TurboHt; **A** = ACD Aroma; **U** = Button Disabled; **r** = Air Valve; **O** = Option 2; **H** = Option 3; **9** = Invert; **L** = Option 4; **8** = Stir

Code	Setting	Options
b1	Aux Button 1 (Bank B)	**(1)** 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
b2	Aux Button 2 (Bank B)	1 **(2)** 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
b3	Aux Button 3 (Bank B)	1 2 3 4 5 6 **(b)** g F E o t d P n A U r O H 9 L 8
b4	Aux Button 4 (Bank B)	1 2 3 4 5 6 b g F **(E)** o t d P n A U r O H 9 L 8

1-6 = Assigns Pump Number (Pump 1, Pump 2, etc); **b** = Blower; **g** = Spa Light; **F** = Fiber-Optic wheel/light; **E** = EitherLight; **o** = Option; **t** = Mister; **d** = CK Mode/Cool; **P** = CK Option/Heat; **n** = CK Intensity/TurboHt; **A** = ACD Aroma; **U** = Button Disabled; **r** = Air Valve; **O** = Option 2; **H** = Option 3; **9** = Invert; **L** = Option 4; **8** = Stir

Code	Setting	Options
AU	Aux Button Bank Select	**(A)** b _

A = Bank A; **b** = Bank B; **_** = 1 DIP Switch

Reminders

Code	Setting	Options
Sr	Suppress all Reminders	n **(Y)** _

n = Display Reminders; **Y** = Suppress all Reminders; **_** = 1 DIP Switch

Code	Setting	0	1	2	3	4	5	6	7	8	9	t
rP	Check pH Reminder Period	0	**(1)**	2	3	4	5	6	7	8	9	t
rS	Check Sanitizer Reminder Period	0	**(1)**	2	3	4	5	6	7	8	9	t
rF	Clean Filter Reminder Period	0	1	2	**(3)**	4	5	6	7	8	9	t
rg	Test GFCI Reminder Period	0	1	2	**(3)**	4	5	6	7	8	9	t
rd	Drain Water Reminder Period	0	1	2	3	4	5	**(6)**	7	8	9	t
rA	Change Mineral Cartridge	**(0)**	1	2	3	4	5	6	7	8	9	t
rC	Clean Cover Reminder Period	0	1	2	3	4	5	6	7	**(8)**	9	t
ro	Treat Wood Reminder Period	0	1	2	3	4	5	6	7	**(8)**	9	t
rt	Change Filter Reminder Period	0	1	2	3	4	5	6	7	8	**(9)**	t

0 = Off; **1** = 7 days; **2** = 14 days; **3** = 30 days; **4** = 45 days; **5** = 60 days; **6** = 90 days; **7** = 120 days; **8** = 180 days; **9** = 365 days; **t** = 21 days

Code	Setting	Options
LS	Lowest Set Temperature *	**(8)** 7

8 = 80°F/26.0°C; **7** = 70°F/21.0°C

* Setting LS at 7 and Fr at 5 will cause a CFE error.

5t   Default Set Temperature *   5   6   7   8   9   (0)   1   2   3   4   E   F   n

5 = 95°F/35.0°C; **6** = 96°F/35.5°C; **7** = 97°F/36.0°C; **8** = 98°F/36.5°C; **9** = 99°F/37.0°C; **0** = 100°F/38.0°C;
1 = 101°F/38.5°C; **2** = 102°F/39.0°C; **3** = 103°F/39.5°C; **4** = 104°F/40.0°C; **E** = 80°F/26.5°C; **F** = 85°F/29.5°C
n = 90°F/32.0°C
* Sets default for user preferences - only applies when persistent memory is reset (A12 On) during power-up.

Fr   Freeze Temperature Threshold   3   (4)   9   5
                                     3 = 39°F/3.9°C;   **4** = 44°F/6.7°C;   **9** = 49°F/9.4°C;   **5** = 54°F/12.2°C;

tL   Set Temperature Lock   (t)   S
                                       t = Temp Lock Only; **S** = Temp + Settings Lock

Lc   Light Cycle Programming   (n)   Y
                                       n = Disabled; **Y** = Enabled

FILTER CYCLES

1r   Filter 1 Start Hour (Set 1) *   (-) 0 1 2 3 4 5 6 7 8 9 A b C d E F g H J L n o P r
1d   Filter 1 Duration (Set 1) *   (-) 0 1 2 3 4 5 6 7 8 9 A b C d E F g H J L n o P r
2r   Filter 2 Start Hour (Set 1) *   (-) 0 1 2 3 4 5 6 7 8 9 A b C d E F g H J L n o P r
2d   Filter 2 Duration (Set 1) *   (-) 0 1 2 3 4 5 6 7 8 9 A b C d E F g H J L n o P r

- = Standard Defaults; **0** = 0 (12 am, 24); **1-9** = 1-9; **A** = 10; **b** = 11; **C** = 12; **d** = 13 (1 pm); **E** = 14 (2 pm);
F = 15 (3 pm); **g** = 16 (4 pm); **H** = 17 (5 pm); **J** = 18 (6 pm); **L** = 19 (7 pm); **n** = 20 (8 pm); **o** = 21 (9 pm);
P = 22 (10 pm); **r** = 23 (11 pm)

These settings allow customization of the filter defaults. If any of these four settings is **"-"**, the standard filter defaults are used.   **1d** and **2d** cannot both be set to **0**.

When **Fd.n** is selected, **1d** and **2d** are Filter 1 and Filter 2 Duration specifically.

When **Fd.y** is selected:
If **1d** is set to **0**, **2d** is the duration; otherwise **1d** is the duration.
If **1d** is set to **0**, only the Night cycle runs.
If **2d** is set to **0**, only the Day cycle runs.
If neither **1d** nor **2d** is set to **0**, both the Day and Night cycles run.
* Sets default for user preferences - only applies when persistent memory is reset (A12 On) during power-up.

3r   Filter 1 Start Hour (Set 2) *   (-) 0 1 2 3 4 5 6 7 8 9 A b C d E F g H J L n o P r
3d   Filter 1 Duration (Set 2) *   (-) 0 1 2 3 4 5 6 7 8 9 A b C d E F g H J L n o P r
4r   Filter 2 Start Hour (Set 2) *   (-) 0 1 2 3 4 5 6 7 8 9 A b C d E F g H J L n o P r
4d   Filter 2 Duration (Set 2) *   (-) 0 1 2 3 4 5 6 7 8 9 A b C d E F g H J L n o P r

- = Standard Defaults; **0** = 0 (12 am, 24); **1-9** = 1-9; **A** = 10; **b** = 11; **C** = 12; **d** = 13 (1 pm); **E** = 14 (2 pm);
F = 15 (3 pm); **g** = 16 (4 pm); **H** = 17 (5 pm); **J** = 18 (6 pm); **L** = 19 (7 pm); **n** = 20 (8 pm); **o** = 21 (9 pm);
P = 22 (10 pm); **r** = 23 (11 pm)

These settings allow customization of the filter defaults. If any of these four settings is **"-"**, the standard filter defaults are used.   **3d** and **4d** cannot both be set to **0**.

When **Fd.n** is selected, **3d** and **4d** are Filter 1 and Filter 2 Duration specifically.

When **Fd.y** is selected:
If **3d** is set to **0**, **4d** is the duration; otherwise **3d** is the duration.
If **3d** is set to **0**, only the Night cycle runs.
If **4d** is set to **0**, only the Day cycle runs.
If neither **3d** nor **4d** is set to **0**, both the Day and Night cycles run.
* Sets default for user preferences - only applies when persistent memory is reset (A12 On) during power-up.
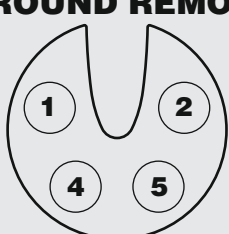
FILTER CYCLES

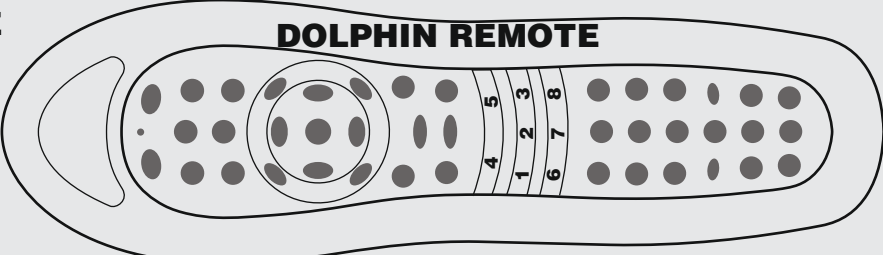**F5** — Filter Default Start Time Set *   (1)   2   _

1 = Set 1; **2** = Set 2; _ = 1 DIP Switch

* Sets default for user preferences - only applies when persistent memory is reset (A12 On) during power-up.

FP — Filter Default Duration Set *   (1)   2   _

1 = Set 1; **2** = Set 2; _ = 1 DIP Switch

* Sets default for user preferences - only applies when persistent memory is reset (A12 On) during power-up.

PURGE DURATION

PP — Pump Purge Duration   3   (1)   2   5   t

3 = 30 seconds; **1 - 5** = 1 - 5 minutes; **t** = 10 minutes

bP — Blower Purge Duration   5   1   2   (3)   4   6   t   F

5 = 5 seconds; **1** = 10 seconds; **2** = 20 seconds; **3** = 30 seconds;
4 = 45 seconds; **6** = 60 seconds (1 minute); **t** = 2 minutes; **F** = 5 minutes

tP — Mister Purge Duration   (5)   1   2   3   4   6   t   F

5 = 5 seconds; **1** = 10 seconds; **2** = 20 seconds; **3** = 30 seconds;
4 = 45 seconds; **6** = 60 seconds (1 minute); **t** = 2 minutes; **F** = 5 minutes

Ar — Air Valve   (n)   Y

n = Disabled; **Y** = Enabled on "alarm" relay

o2 — Option 2   (n)   Y   _

n = Disabled; **Y** = Enabled on "alarm" relay; _ = 1 DIP Switch

03 — Option 3   (n)   Y   _

n = Disabled; **Y** = Enabled on pin 1 of X-P632 board; _ = 1 DIP Switch

04 — Option 4   (n)   Y   _

n = Disabled; **Y** = Enabled on pin 2 of X-P632 board; _ = 1 DIP Switch

REMOTE BUTTONS

n1 — Remote Button 1 (Bank A)   (1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8

n2 — Remote Button 2 (Bank A)   1 (2) 3 4 5 6 b g F E o t d P n A U r O H 9 L 8

n3 — Remote Button 3 (Bank A)   1 2 (3) 4 5 6 b g F E o t d P n A U r O H 9 L 8

n4 — Remote Button 4 (Bank A)   1 2 3 4 5 6 (b) g F E o t d P n A U r O H 9 L 8

n5 — Remote Button 5 (Bank A)   1 2 3 4 5 6 b (g) F E o t d P n A U r O H 9 L 8

n6 — Remote Button 6 (Bank A)   1 2 3 4 5 6 b g (F) E o t d P n A U r O H 9 L 8

n7 — Remote Button 7 (Bank A)   1 2 3 4 5 6 b g F E (o) t d P n A U r O H 9 L 8

n8 — Remote Button 8 (Bank A)   1 2 3 4 5 6 b g F E o (t) d P n A U r O H 9 L 8

1-6 = Assigns Pump Number (Pump 1, Pump 2, etc); **b** = Blower; **g** = Spa Light; **F** = Fiber-Optic wheel/light;
E = EitherLight; **o** = Option; **t** = Mister; **d** = CK Mode/Cool; **P** = CK Option/Heat; **n** = CK Intensity/TurboHt;
A = ACD Aroma; **U** = Button Disabled; **r** = Air Valve; **0** = Option 2; **H** = Option 3; **9** = Invert; **L** = Option 4; **8** = Stir

ROUND REMOTE   **DOLPHIN REMOTE**

REMOTE BUTTONS

H1	Remote Button 1 (Bank B)	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
H2	Remote Button 2 (Bank B)	1 (2) 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
H3	Remote Button 3 (Bank B)	1 2 (3) 4 5 6 b g F E o t d P n A U r O H 9 L 8
H4	Remote Button 4 (Bank B)	1 2 3 4 5 6 (b) g F E o t d P n A U r O H 9 L 8
H5	Remote Button 5 (Bank B)	1 2 3 4 5 6 b (g) F E o t d P n A U r O H 9 L 8
H6	Remote Button 6 (Bank B)	1 2 3 4 5 6 b g (F) E o t d P n A U r O H 9 L 8
H7	Remote Button 7 (Bank B)	1 2 3 4 5 6 b g F E (o) t d P n A U r O H 9 L 8
H8	Remote Button 8 (Bank B)	1 2 3 4 5 6 b g F E o (t) d P n A U r O H 9 L 8

1-6 = Assigns Pump Number (Pump 1, Pump 2, etc); **b** = Blower; **g** = Spa Light; **F** = Fiber-Optic wheel/light;
E = EitherLight; **o** = Option; **t** = Mister; **d** = CK Mode/Cool; **P** = CK Option/Heat; **n** = CK Intensity/TurboHt;
A = ACD Aroma; **U** = Button Disabled; **r** = Air Valve; **0** = Option 2; **H** = Option 3; **9** = Invert; **L** = Option 4; **8** = Stir
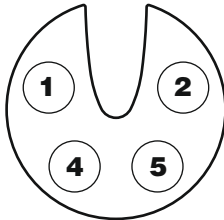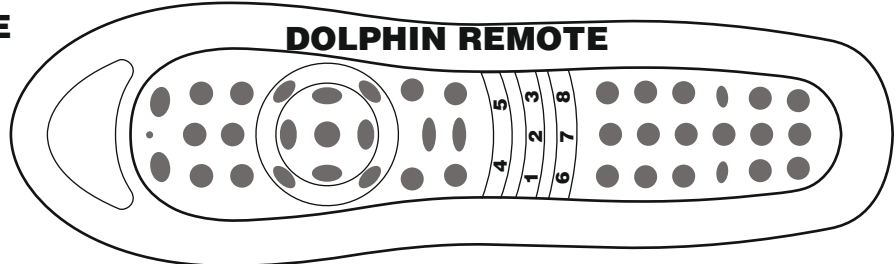
ROUND REMOTE   **DOLPHIN REMOTE**

d0	Remote Button Bank Select	(A) b _
		A = Bank A; **b** = Bank B; **_** = 1 DIP Switch

ML90x SERIES BUTTONS

B1	ML90x Custom Button 1	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
B2	ML90x Custom Button 2	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
B3	ML90x Custom Button 3	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
B4	ML90x Custom Button 4	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
B5	ML90x Custom Button 5	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
B6	ML90x Custom Button 6	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
B7	ML90x Custom Button 7	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
B8	ML90x Custom Button 8	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8

1-6 = Assigns Pump Number (Pump 1, Pump 2, etc); **b** = Blower; **g** = Spa Light; **F** = Fiber-Optic wheel/light;
E = EitherLight; **o** = Option; **t** = Mister; **d** = CK Mode/Cool; **P** = CK Option/Heat; **n** = CK Intensity/TurboHt;
A = ACD Aroma; **U** = Button Disabled; **r** = Air Valve; **0** = Option 2; **H** = Option 3; **9** = Invert; **L** = Option 4; **8** = Stir
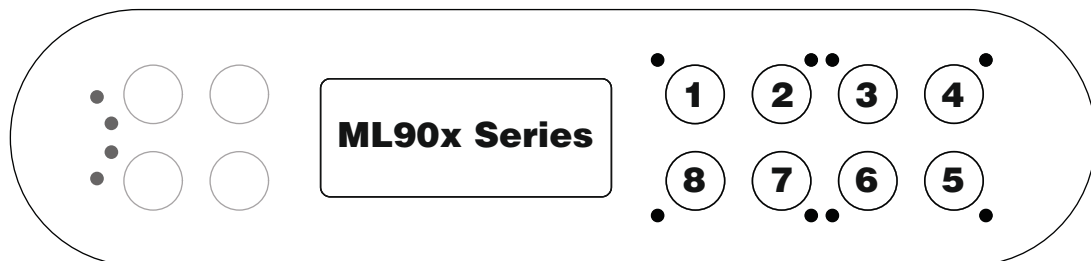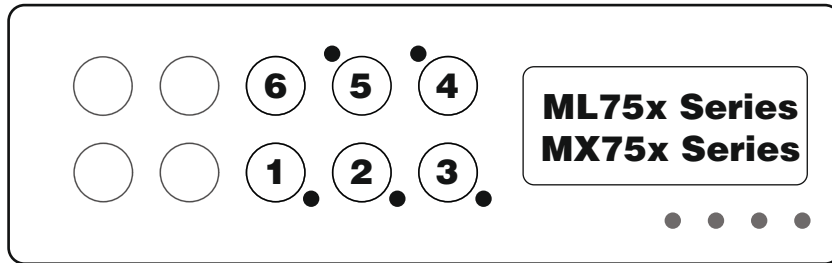

ML90x Series

BC	ML90x Custom Buttons Enable	(n) Y _
		n = Disabled; **Y** = Enabled; **_** = 1 DIP Switch

ML75x/MX75x SERIES BUTTONS

61	ML75x/MX75x Custom Button 1	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
62	ML75x/MX75x Custom Button 2	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
63	ML75x/MX75x Custom Button 3	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
64	ML75x/MX75x Custom Button 4	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
65	ML75x/MX75x Custom Button 5	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
66	ML75x/MX75x Custom Button 6	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8

1-6 = Assigns Pump Number (Pump 1, Pump 2, etc); **b =** Blower; **g =** Spa Light; **F =** Fiber-Optic wheel/light;
E = EitherLight; **o =** Option; **t =** Mister; **d =** CK Mode/Cool; **P =** CK Option/Heat; **n =** CK Intensity/TurboHt;
A = ACD Aroma; **U =** Button Disabled; **r =** Air Valve; **0 =** Option 2; **H =** Option 3; **9 =** Invert; **L =** Option 4; **8 =** Stir

ML75x Series
MX75x Series

6C	ML750/MX750 Custom Buttons Enable	(n) Y _
		n = Disabled; **Y =** Enabled; **_** = 1 DIP Switch

ML70x SERIES BUTTONS

41	ML70x Custom Button 1	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
42	ML70x Custom Button 2	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
43	ML70x Custom Button 3	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8
44	ML70x Custom Button 4	(1) 2 3 4 5 6 b g F E o t d P n A U r O H 9 L 8

1-6 = Assigns Pump Number (Pump 1, Pump 2, etc); **b =** Blower; **g =** Spa Light; **F =** Fiber-Optic wheel/light;
E = EitherLight; **o =** Option; **t =** Mister; **d =** CK Mode/Cool; **P =** CK Option/Heat; **n =** CK Intensity/TurboHt;
A = ACD Aroma; **U =** Button Disabled; **r =** Air Valve; **0 =** Option 2; **H =** Option 3; **9 =** Invert; **L =** Option 4; **8 =** Stir

ML70x Series

4C	ML70x Custom Buttons Enable	(n) Y _
		n = Disabled; **Y =** Enabled; **_** = 1 DIP Switch

ML55x SERIES BUTTONS

51	ML55x Custom Button 1	(1)	2	3	4	5	6	b	g	F	E	o	t	d	P	n	A	U	r	O	H	9	L	8
52	ML55x Custom Button 2	(1)	2	3	4	5	6	b	g	F	E	o	t	d	P	n	A	U	r	O	H	9	L	8
53	ML55x Custom Button 3	(1)	2	3	4	5	6	b	g	F	E	o	t	d	P	n	A	U	r	O	H	9	L	8
54	ML55x Custom Button 4	(1)	2	3	4	5	6	b	g	F	E	o	t	d	P	n	A	U	r	O	H	9	L	8
55	ML55x Custom Button 5	(1)	2	3	4	5	6	b	g	F	E	o	t	d	P	n	A	U	r	O	H	9	L	8

1-6 = Assigns Pump Number (Pump 1, Pump 2, etc); **b =** Blower; **g =** Spa Light; **F =** Fiber-Optic wheel/light;
E = EitherLight; **o =** Option; **t =** Mister; **d =** CK Mode/Cool; **P =** CK Option/Heat; **n =** CK Intensity/TurboHt;
A = ACD Aroma; **U =** Button Disabled; **r =** Air Valve; **O =** Option 2; **H =** Option 3; **9 =** Invert; **L =** Option 4; **8 =** Stir
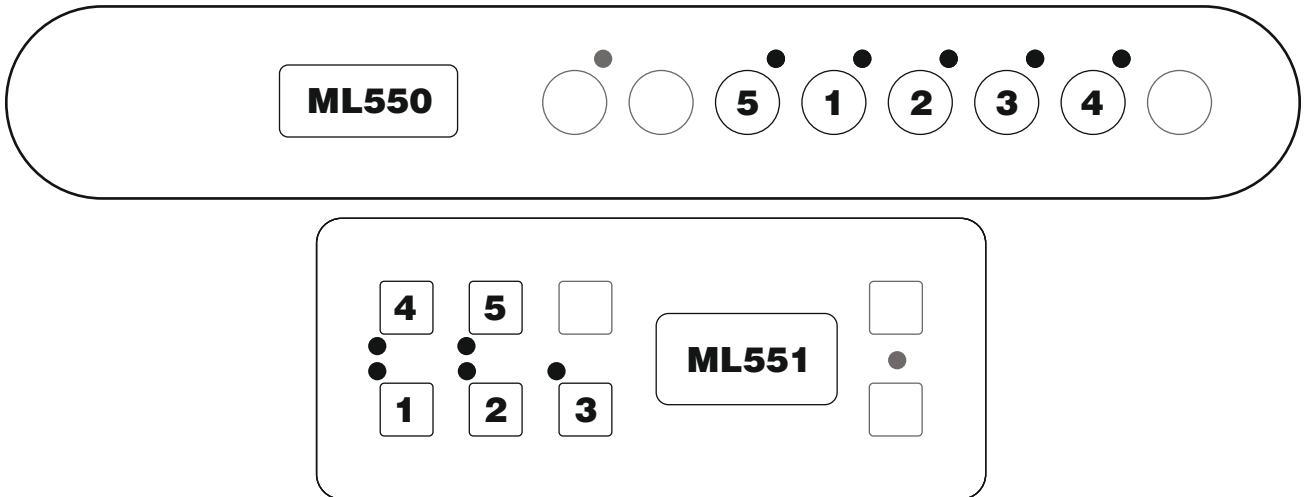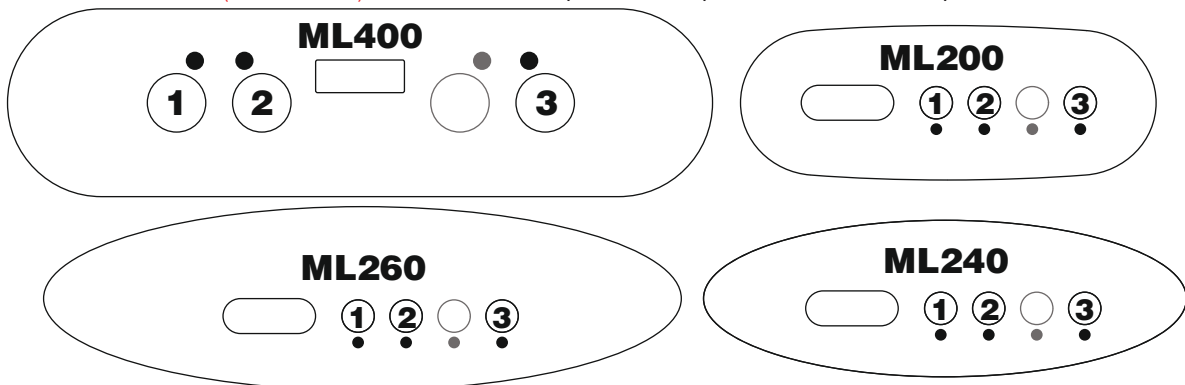

5C	ML55x Custom Buttons Enable	(n) Y _	

n = Disabled; **Y =** Enabled; **_ =** 1 DIP Switch

ML40x/ML2xx SERIES BUTTONS

31	ML40x/ML2xx Custom Button 1	(1)	2	3	4	5	6	b	g	F	E	o	t	d	P	n	A	U	r	O	H	9	L	8
32	ML40x/ML2xx Custom Button 2	(1)	2	3	4	5	6	b	g	F	E	o	t	d	P	n	A	U	r	O	H	9	L	8
33	ML40x/ML2xx Custom Button 3	(1)	2	3	4	5	6	b	g	F	E	o	t	d	P	n	A	U	r	O	H	9	L	8

1-6 = Assigns Pump Number (Pump 1, Pump 2, etc); **b =** Blower; **g =** Spa Light; **F =** Fiber-Optic wheel/light;
E = EitherLight; **o =** Option; **t =** Mister; **d =** CK Mode/Cool; **P =** CK Option/Heat; **n =** CK Intensity/TurboHt; **A =** ACD Aroma;
U = Button Disabled (DO NOT USE); **r =** Air Valve; **O =** Option 2; **H =** Option 3; **9 =** Invert; **L =** Option 4; **8 =** Stir

3C	ML40x/ML2xx Custom Buttons Enable	(n) Y _	

n = Disabled; **Y =** Enabled; **_ =** 1 DIP Switch

SA   Special Amperage Rule *

      1   2   3

1 = Blower off when 2nd high-speed pump on;   **2 =** Max 1 high-speed pump

3 = Max 2 high-speed pumps

* Note: DIP A11 must be ON to use Special Amperage Rule.

HC   Heat Cool Feature

      n   Y   _

n = Disabled;   **Y =** Enabled;   _ = 1 DIP Switch

co   Color Kinetics

      n   Y

n = Disabled;   **Y =** Enabled

dr   DR Mode

      n   Y

n = Disabled;   **Y =** Enabled

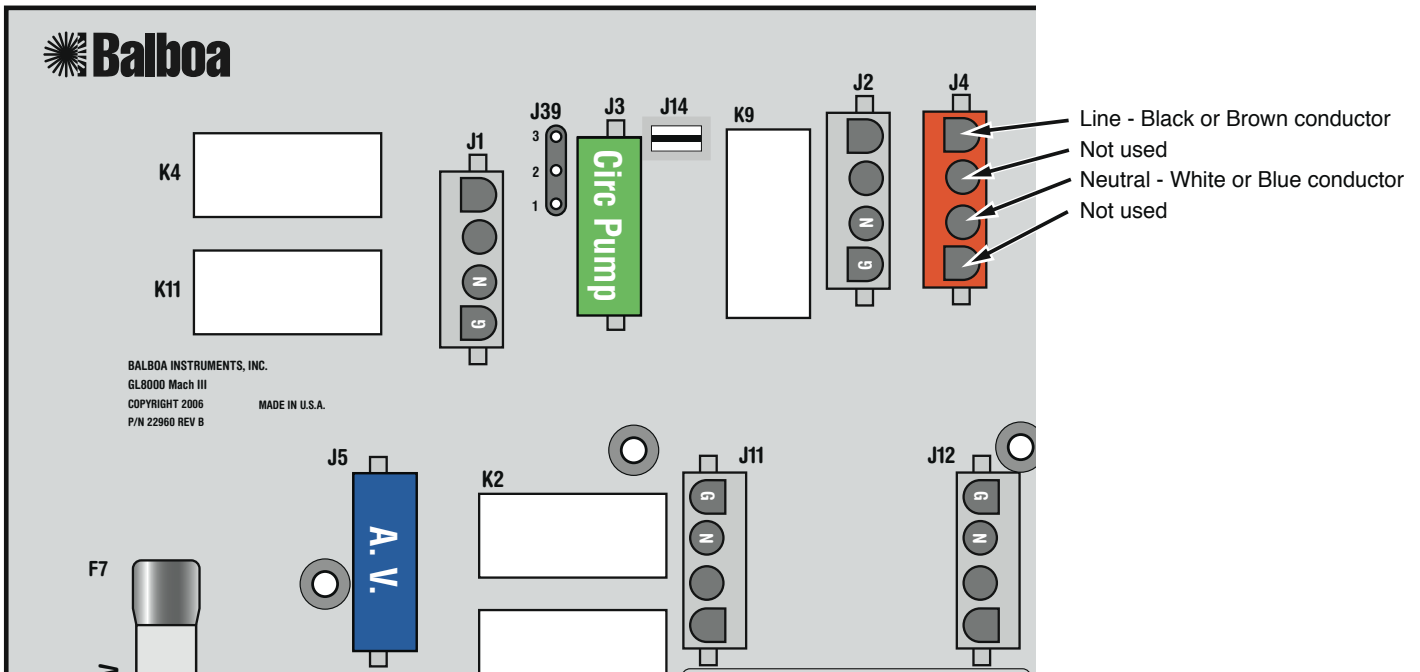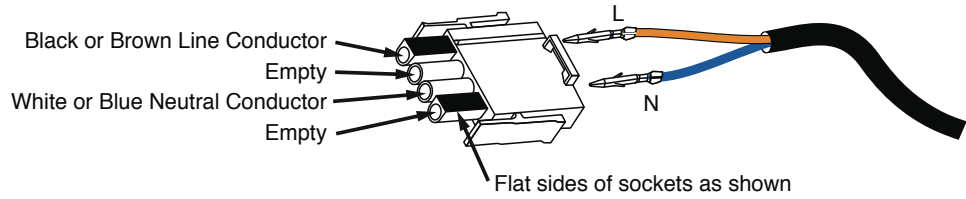**dE**   Demo Mode

      n   Y

n = Disabled;   **Y =** Enabled

gc   Graphic Clock

      n   Y

n = Disabled;   **Y =** Enabled (Panel must be able to support this feature)

Ozone Connections

Note: A special tool is required to remove the pins from the connector body once they are snapped in place. Check with your Balboa Account Manager for information on purchasing a pin-removal tool.

Balboa Ozone connector configuration for 230VAC 50Hz:

Black or Brown Line Conductor
Empty
White or Blue Neutral Conductor
Empty

L

N

Flat sides of sockets as shown

Line - Black or Brown conductor
Not used
Neutral - White or Blue conductor
Not used

Circ Pump

A. V.

K4

K11

BALBOA INSTRUMENTS, INC.
GL8000 Mach III
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P/N 22960 REV B
MADE IN U.S.A.

J39
3
2
1

J1

J3

J14

K9

J2

J4

J5

K2

J11

J12

F7

55862_97_A

Panel Configurations

TIME CAPABLE

Note: RTC jumper (J91) on Main PCBA must be OFF (1 pin only)

MP700
PN 53251-01 with No Overlay (Customer supplied)
• Connects to Main Panel terminal J70, J71, J72, or J73

AUXILIARY

Note: Connects to Aux Panel terminal J31, J34, J40, or J16

AX10 (Up to four can be used)
Jets 1 - PN 52803 with No Overlay (Customer supplied)
Jets 2 - PN 52804 with No Overlay (Customer supplied)
Jets 4 - PN 52806 with No Overlay (Customer supplied)