Titan™ Bath Control Installation and User Guide for Balboa Generic Configurations

BALBOA™

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BALBOA®
water group

Introduction

INTELLECTUAL PROPERTY ADVISEMENT

All Intellectual property, as defined below, owned by or which is otherwise the property of Balboa Water Group or its respective suppliers relating to the Balboa Water Group Titan Bath Control System including but not limited to, accessories, parts, or software relating there to (the "System"), is proprietary to Balboa Water Group and protected under federal laws, state laws, and international treaty provisions. Intellectual Property includes, but is not limited to, inventions (patentable or unpatentable), patents, trade secrets, copyrights, software, computer programs, and related documentation, and other works of authorship. You may not infringe or otherwise violate the rights secured by the Intellectual Property. Moreover, you agree that you will not (and will not attempt to) modify, prepare derivative works of, reverse engineer, decompile, disassemble, or otherwise attempt to create source code from the software. No title to or ownership in the Intellectual Property is transferred to you. All applicable rights of the Intellectual Property shall remain with Balboa Water Group and its suppliers.

WARNINGS: DANGER! RISK OF ELECTRIC SHOCK!

- All electrical work must be performed by a qualified electrician and must conform to all national, state, and local codes.
- Before making any electrical connections, make certain that the Main Power breaker from the house breaker box has been turned off.
- Do not attempt service of this control system. Contact your dealer or service organization for assistance.
- Do not permit any electric appliance, such as a light, telephone, radio, or television within 5* (1.5m) of a pool or spa.
- Follow all owner's manual power connection instructions.
- Installation must be performed by a licensed electrician and all grounding connections must be properly installed.
- No user serviceable parts.
- Water temperature in excess of 38°C may be injurious to your health.
- Disconnect the electrical power before servicing.
- Keep access door closed
- To ensure continued protection against shock hazard, use only identical replacement parts when servicing.

END USER WARNING

This Installation Manual is provided solely to aid qualified spa service technicians in installing spas with control systems manufactured by Balboa Water Group. Balboa controls have absolutely no end user serviceable parts. Balboa Water Group does not authorize attempts by the spa owner/user to repair or service any Balboa products. Non-qualified users should never open or remove covers, as this will expose dangerous voltage points and other dangerous risks. Please contact your dealer or authorized repair center for service.

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Table of Contents

Introduction to the Titan

This manual describes Balboa Water Group's Titan bath controls, equipment, and how to configure and install those controls using Balboa's Configuration Tables.

Although sometimes described as a Titan "system," Titan's bath configurations are created from its many components that can be mixed and matched to provide a wide variety of functionality. A Titan system can be as interpreted to mean any one of many functioning configurations of Balboa's Titan bath components.

ORGANIZATION OF THIS MANUAL

The manual is separated into the following sections:
- **The Titan Bath Components:** Provides an overview of all parts associated with Titan Bath products, and provides a brief description, part number, and function of the part.
- **Common Configurations:** Illustrates basic placement of Titan components.
- **Component Installation:** Describes and illustrates installation of important electronic components such as the bath panel, sensors, and solenoids.
- **Creating a Configuration 40 Bath System:** The Titan bath collection has the flexibility to allow equipment to be assembled in many ways. This section illustrates a common configuration with diagrams and explains how it's put together.
- **Codes, Abbreviations, and Terms:** Provides an introduction to what "codes" are, and explanations of related terms and abbreviations that help with configuration tables.
- **Bath Control Configuration Tables:** A cross reference of equipment installed.
- **Bath Button Panel Configuration:** The process of inputting a configuration number into the panel.
- **Bath Control User Guides:** Two and six button user guides provide instructions to operate all equipment configurations. Because of their design, four button bath panel user guides are more specialized and have user specific functions. Each user guide have their unique document number and revision letter, front and back. Each user guide can be printed separately as a single, two sided page. When printed, the user guides do not show page numbers.

A FEW THINGS TO CONSIDER BEFORE GETTING STARTED

- Each control box accepts any control panel.
- Each control box accepts water and temp sensors (both are highly recommended).
- Each control box controls either a single or variable speed pump or blower.
- For lights, a Variable Speed Control (VSC) is required.
- To have control over pulsating jets, pillow, or related equipment, a Primary Valve Control (PVC) is required.
- Only one blower may be assigned per system.
- Titan parts and accessories can be found on either sites:
  a) http://www.balboawatergroup.com/
  b) http://balboadirect.com/

COMPONENT INSTALLATION SECTION

Only installation of major components is described herein. It is assumed that items such as using, wiring, and routing of Amp connectors, cables, hoses, for example, are common installation procedures of bath manufacturing and will not be discussed here. Installation of air manifolds, fluid dynamics such as circulation, flow rates, water pressure, and the number and size of jets in relation to pumps is beyond the scope of this manual.

Titan Bath Control Behavioral Specs

TITAN BATH CONTROLS SUPPORT 3 PANELS:

- 6-button LED lit icons, and 3-digit LED message display
- 4-button with 4 point LEDs
- 2-button with 3-digit LED message display

6 AND 2 BUTTON PANELS

On the 6-button panel, button icon LEDs change in brightness. Under normal operation, a bright button indicates the function is on. A dim button indicates the function is available but not on. A blank button indicates the function is not available. Exceptions in brightness will occur as when powering up, or when selecting a Configuration.

Off function: If the pump is running and pump-related equipment like waterfall and/or pillow is running, then turning off the pump turns the related equipment off also.

4 BUTTON PANEL

On the 4-button panel, the 4 point LEDs can indicate Error, On state, Water Present, and User Preset. When there is an error, the Error light will indicate such, while the other 3 LEDs will indicate the error number in binary code. At power up, all 4 LEDs will briefly display the configuration number in binary code.

Off function: If the pump is running and pump-related equipment like waterfall and/or pillow is running, turning off the pump turns the related equipment off at the same time.

SYSTEM TIMER

The System Timer is started any time any water equipment is turned on. The System Timer defaults to 20 minutes; the user can change this, in User Preferences mode.

USER BUTTON

- Until you program it, the User button functions as an "all off" button. In other words, the default User Preset turns all equipment off.
- Pressing and holding the User button memorizes the current state of all equipment as a User Preset. Pressing (but not holding) the User button recalls the last-memorized User Preset.
- If it's programmed as a user button and you want to return it to an "all off" button again, turn everything off and re-save.

SENSORS

It is highly recommended to install a water level sensor. The sensor affects the pump and blower purge. If there is no water sensor, the pump can run any time, even when the water level falls below acceptable levels for safe pump operation. When there is a water sensor, the pump can only run when there is water detected. The water temp sensor also cuts off if the water temperature goes beyond 111 degrees.

TEMPERATURE AND TIMER DISPLAY

On panels with 3-digit displays, the user can select whether to show the water equipment timer, the temperature, or both alternating.

The temperature will be displayed in 0.5 steps in C, and full steps in F. No degree symbol will be shown. The timer value will be displayed as 2 digits preceded by the letter "t". If no temperature sensor is present, only the timer value will be displayed. The temperature sensor is usable at all times.

The panel will be able to communicate bidirectionally with any module(s) it is connected to. Each module will acknowledge its working state and report any errors it can determine. In the case of an error, an error code will display.

BUTTONS WITH TWO OPTIONS

A user guide may designate a bath button panel as having a dual function, "Light/Aux" for example on the two button panel. Depending on the equipment installed, the button configuration must be inputted according to the equipment shown on the configuration table (as a pillow, for example). In this case, AUX would designate the function for the pillow.
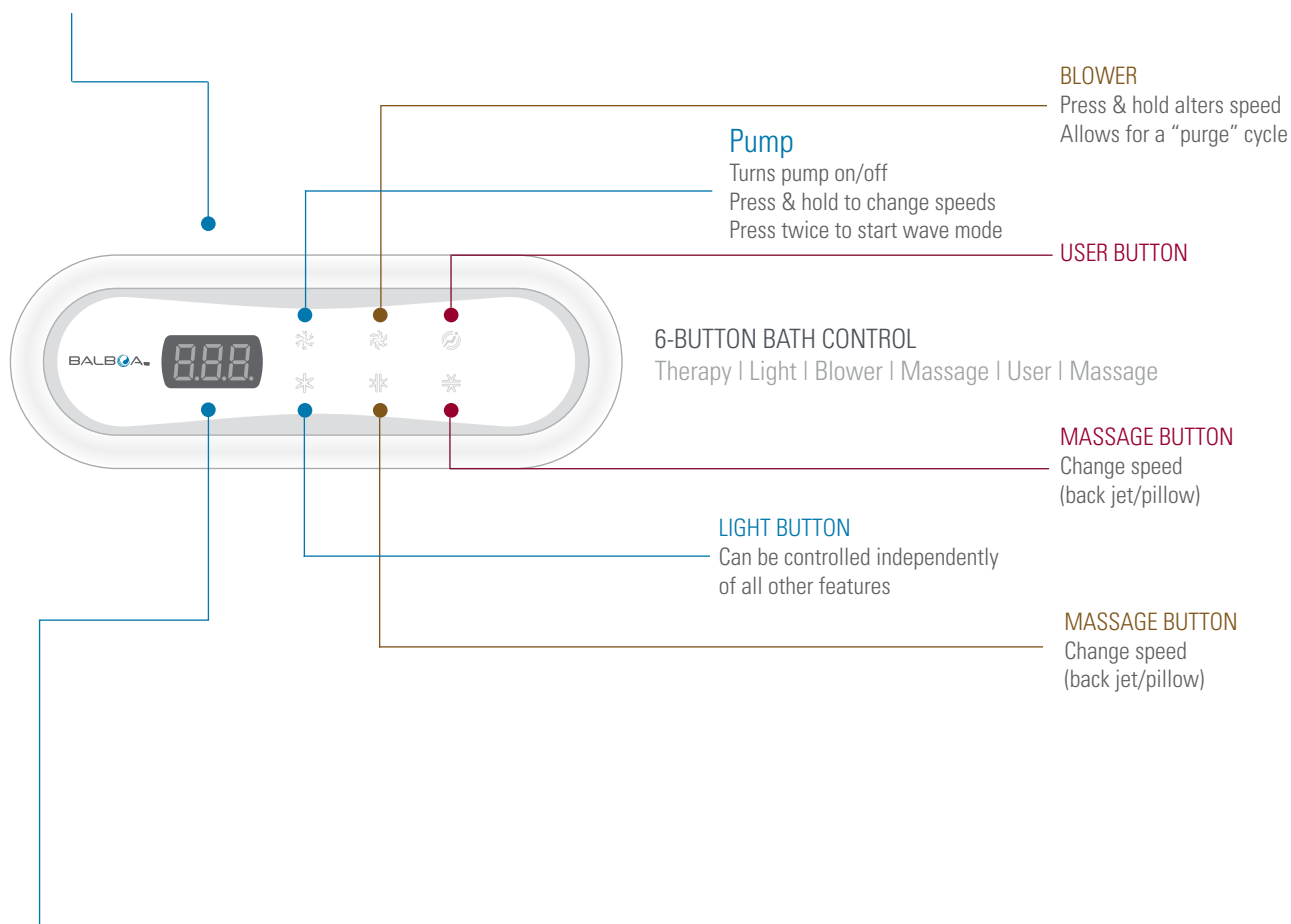
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Bath Control Information

90010
6-BUTTON BATH CONTROL

LED Display
- Shows config. & software at start-up
- Time remaining
- Pump Speed
- Pulse Mode
- Blower Rolling
- Pulse Pattern
- Error and Diagnostic Codes

BLOWER
Press & hold alters speed
Allows for a "purge" cycle

Pump
Turns pump on/off
Press & hold to change speeds
Press twice to start wave mode

USER BUTTON

6-BUTTON BATH CONTROL
Therapy | Light | Blower | Massage | User | Massage

MASSAGE BUTTON
Change speed
(back jet/pillow)

LIGHT BUTTON
Can be controlled independently
of all other features

MASSAGE BUTTON
Change speed
(back jet/pillow)

DISPLAY MESSAGE FORMATS

37.5 Numbers appear in Fahrenheit or Celsius depending on Preferences.

Con CON. Allow for entry into the Configuration Settings.

t29 T refers to the time in seconds left remaining in the therapy session.

sp6 SP refers to speed. SP1, for example, indicates the lowest speed.

pul PUL refers to Pulse Mode (Blower only).

rol ROL Rolling means that over several seconds the blower or pump reduces and then increases in speed. Then the cycle resumes.

PT3 "PT" refers to pattern of jets pulsating, whether synchronous or alternating. PT1 is the lowest speed pattern.

Titan Bath Components

Variable Speed Control

Part No. 90017 (90005 is similar)

- Panel
- 12V Light
- Water Level Sensor
- Temperature Sensor

Primary Valve Control

Part No. 90018

- 5 Discrete paired output connectors for valves
- Panel
- 120V Light
- Water Level Sensor
- Temperature Sensor

**J1 Mini DIN 8 Pin
(Panel)**

**J2 Mini DIN 6 Pin
(Water/Temp Sensors)**

**J3 Mini DIN 4 Pin
(12V Light)**

**J4 Mini DIN 6 Pin*
(Water/Temp Sensor)**

**J5 Mini DIN 8 Pin*
(Panel)**

Paired Valve Connectors

Part No.	Bath Controls	Dimensions
90017	Variable Speed Control	7-3/8" x 4-1/4" x 2-3/8" (Mounting holes 6-7/8" +/- 1/8")
90018	Primary Valve Control	7-3/8" x 4-1/4" x 2-3/8" (Mounting holes 6-7/8" +/- 1/8")
90005	System Expandable, Var. Sp. (Similar to 90017)	7-3/8" x 4-1/4" x 2-3/8" (Mounting holes 6-7/8" +/- 1/8")
Connector	**Component**	**Function**
J1	Variable Speed Control	Panel Cable (8 Pin)
J2	Variable Speed Control	Sensor Cable (6 Pin)
J3	Variable Speed Control	Light Cable (4 Pin)
J4*	Primary Valve Control	Sensor Cable (6 Pin)*
J5*	Primary Valve Control	Panel Cable (8 Pin)*
Green Conn.	Primary Valve Control	5 Discrete Paired Outputs

Depending on the model revision, J4 & J5 may be reversed.

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Bath Panels

Part No. 90010

Part No. 90011

102

Pump or Blower

Device or Valve

Part No. 90016

104

Part No. 90013-01

Pump or Blower

Device or Valve

Up

Down

Part No. 90015

Part No. 90022

Pump or Blower

Device or Valve

Valve

Valve

Part No. 90012

Pump or Blower

Device or Valve

Valve

User

Cables and Display Trims

Part No. 25569
Cable Bath 8 Pin Mini DIN 6 Ft
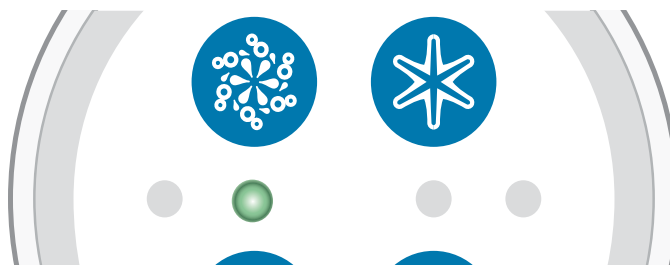
Part No. 99642-CW
Display Trim Round

Part No. 25750
Light Adapter Cable 4 Pin DIN

Part No. 99757
6 Button Display Trim

Part No. 25748
Splitter Cable Control Box

Part No. 99755
6 Button Display Trim

Parts Cross Reference

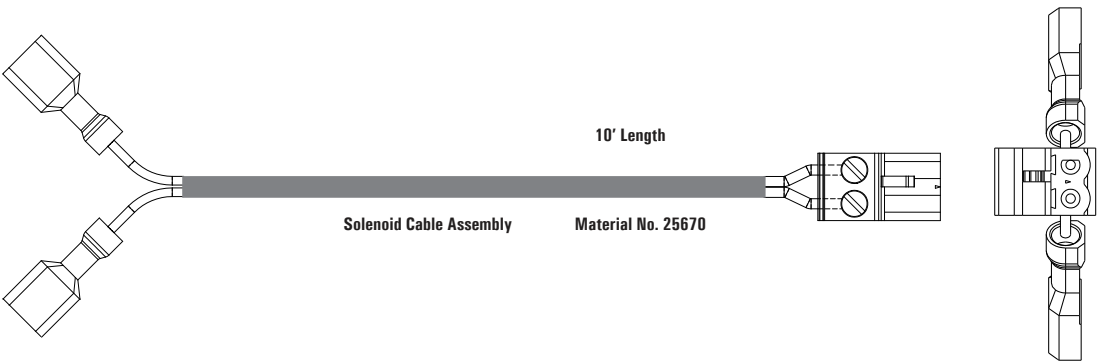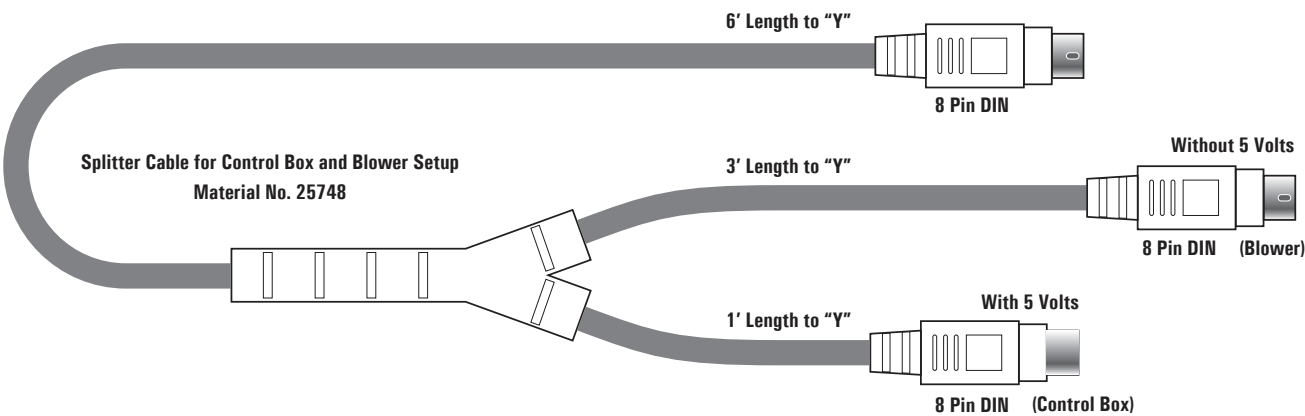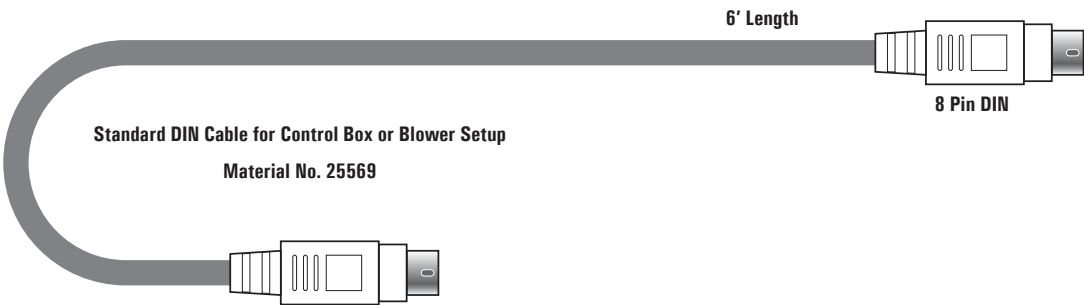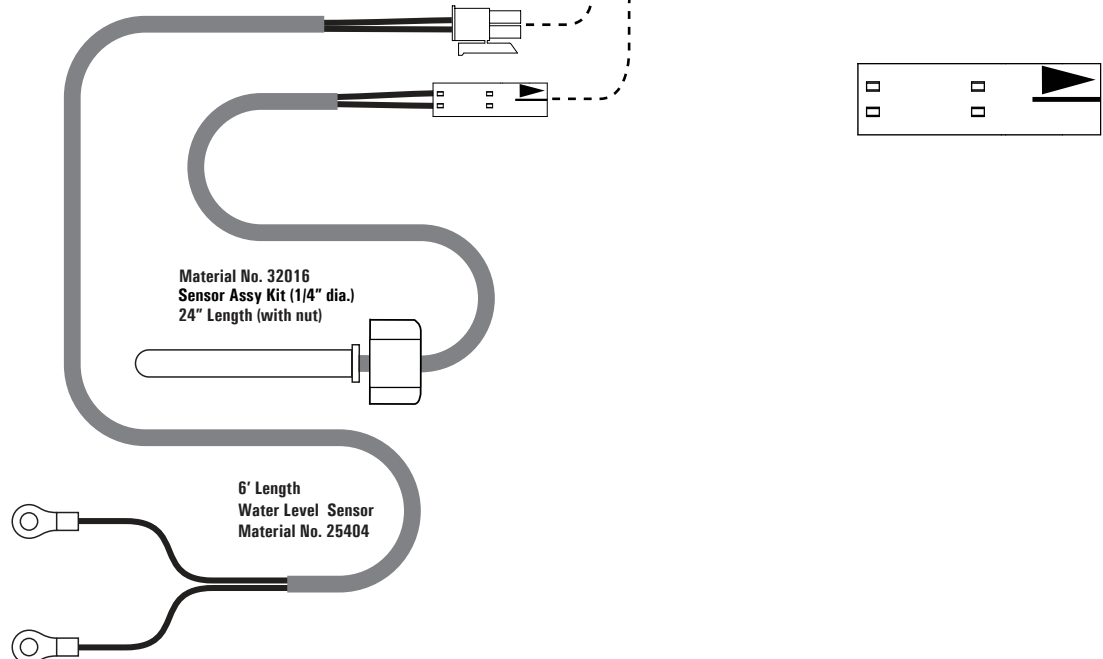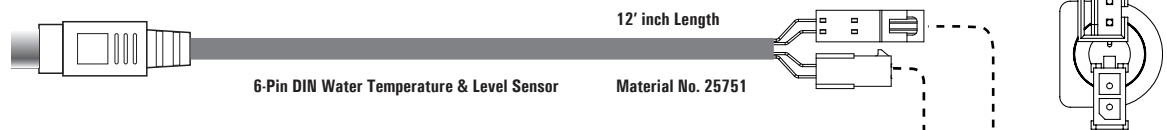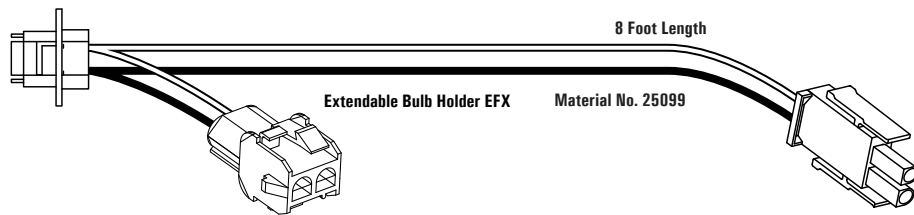| Part No.	System Bath Panels
90010	Panel Bath 6 Button O/L 12015
90011	Panel Bath 2 Button O/L 12012
90012	Panel Bath 4 Button O/L 12014
90013-01	Panel Bath 4 Button O/L 12013
90022	Panel Bath 4 Button O/L 12983

BATH PANELS, CABLES & ADAPTERS (ALPHABETICALLY)

Part No.	Material Description	Overall Length Cable	Type
25652	4-Pin Mini DIN Male to Lamp holder Cable Assembly	22 AWG, 8 Foot Length	4 Pin DIN
59007-V	7 LED Bulb Cluster w/Light Pro (Chromatherapy)		
8141-6320	Blower 600W HTR 1HP w/Control 115V		
25670	Cable 4 Pin DIN to JUDCO 8ft	10 Foot Length	4 Pin DIN
25751	Cable 6 Pin DIN for Water Level	12 Inch Length	6 Pin DIN
25569	Cable Bath 8 Pin Mini Din 6ft	6 Foot Length	8 Pin DIN
25404	Cable Water Detection Conductive 6 Ft	6 Foot Length	
99757-AL	Display Trim, 6 Button, Almond		
99757-BC	Display Trim, 6 Button, Biscuit		
99757-WH	Display Trim, 6 Button, White		
99642-CW	Display Trim, Round		
25099	Extendable Bulb Holder EFX		
25750	Light Adapter Cable 4 Pin DIN	6 inch Length	4 Pin DIN
32016	Sensor Assy Kit, 24in (Dia. 1/4in), (M7 Temperature)	24 Inch Length	
99749	Set (2 Ea) of Conductive Screw		
25748	Splitter Cable Control Box	9-1/2 Foot Length Overall Approx.)	
25749	Splitter Cable Remote Control	6 Foot Length	

Cable Assembly Diagrams: Adapters and Splitters

DIN Cables and Splitters

6' Length

8 Pin DIN

Standard DIN Cable for Control Box or Blower Setup

Material No. 25569

6' Length to "Y"

8 Pin DIN

Splitter Cable for Control Box and Blower Setup

Material No. 25748

3' Length to "Y"

Without 5 Volts

8 Pin DIN   (Blower)

1' Length to "Y"

With 5 Volts

8 Pin DIN   (Control Box)

10' Length

Solenoid Cable Assembly   Material No. 25670

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DIN Modules and Adapters

22 AWG 8' Length

4-Pin Mini DIN Male to Lampholder Cable Assembly   **Material No. 25652**

6 Inch Length

4-Pin DIN Spa Light Adapter   **Material No. 25750**   **20 Gauge**

8 Foot Length

Extendable Bulb Holder EFX   **Material No. 25099**

12' inch Length

6-Pin DIN Water Temperature & Level Sensor   **Material No. 25751**

Material No. 32016
Sensor Assy Kit (1/4" dia.)
24" Length (with nut)

6' Length
Water Level Sensor
Material No. 25404

42135F

Common Configurations

Sample 120V Bath Configuration
with a Primary Valve Control Box

Part No. 90018
Primary Valve Bath Control

Part No. 32016
Sensor Assy Kit
(24in, 1/4in dia.)

Part No. 25404
Cable Water Detection
Conductive 6 Ft

Temperature and
Water Level Sensor

120V

Part No. 8141-6320
Blower 600W HTR 1HP
w/Control 115V

To Solenoids

Part No. 90010
6 Button Panel

((( )))

IR Connection
by placing Control
Boxes side by side

Blower or Pump

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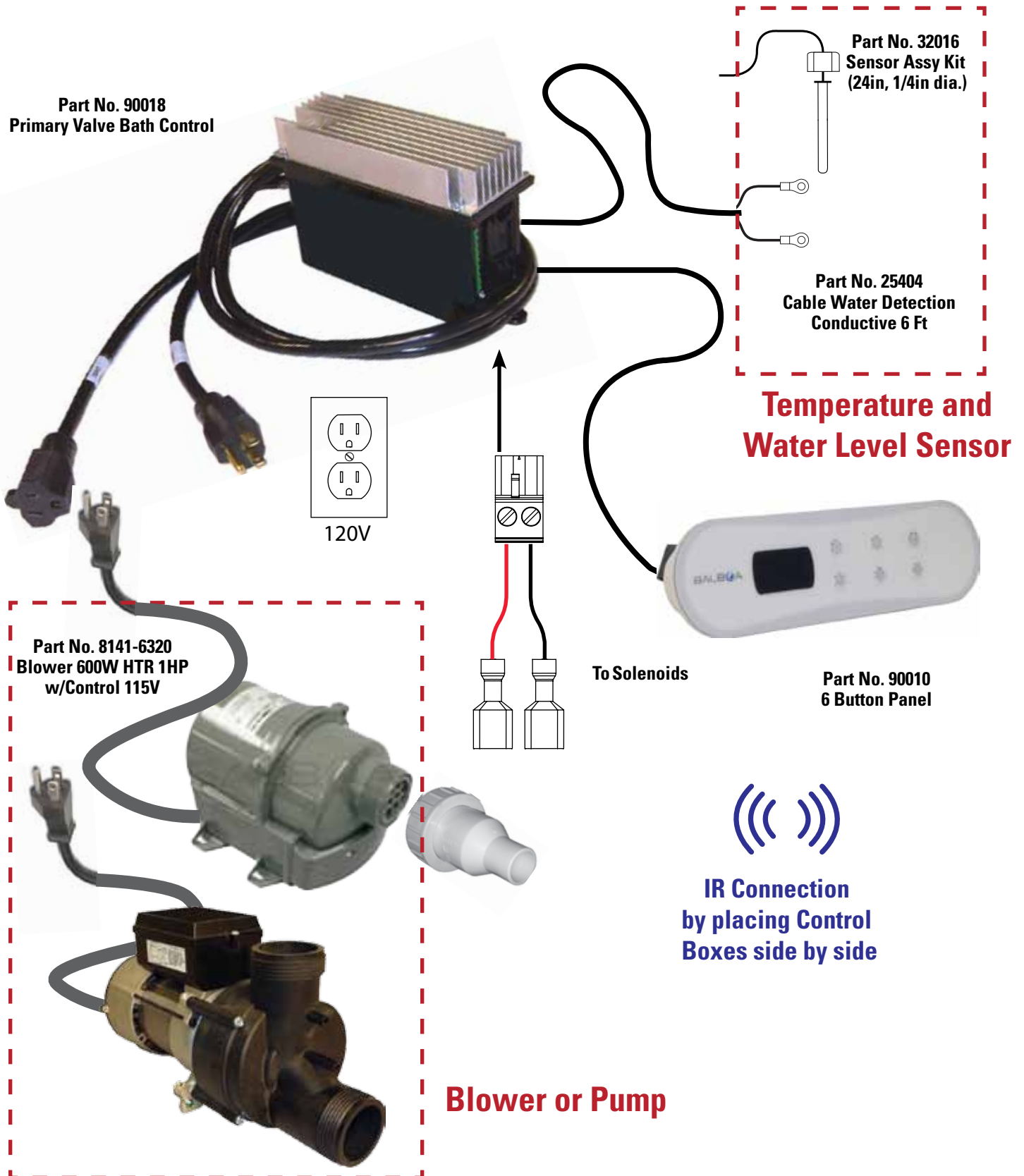
Sample EU (230V) Bath Configuration

**IR Connection
by placing Control
Boxes side by side**

Skeletal View

Air Control

Control Panel

Blower

Manifold

Hydromassage Jets

Electronic Controls

Fittings and Tubing

Air Button

Air Massage Jets

Lights

Bath Pump

Suction and Drain
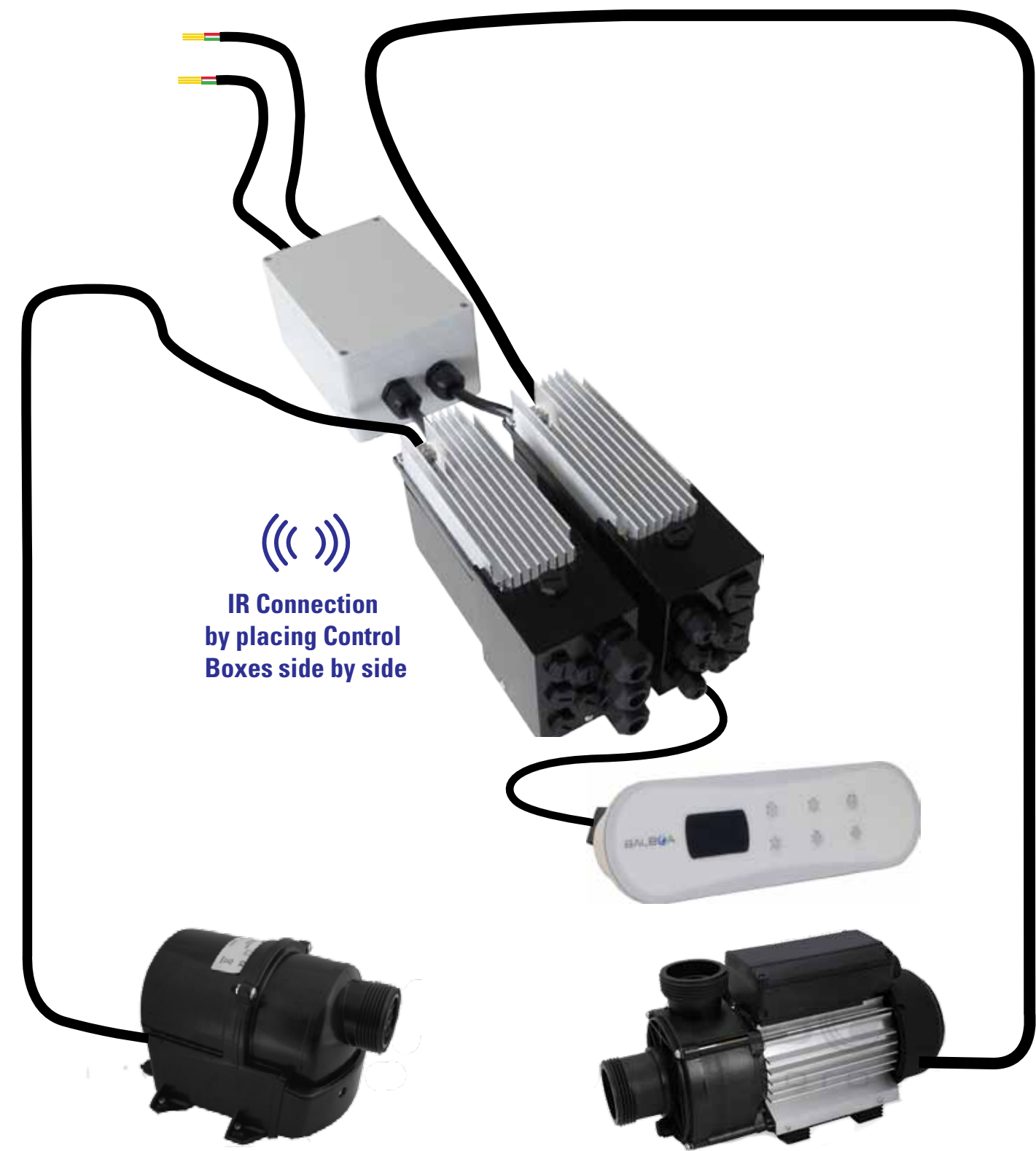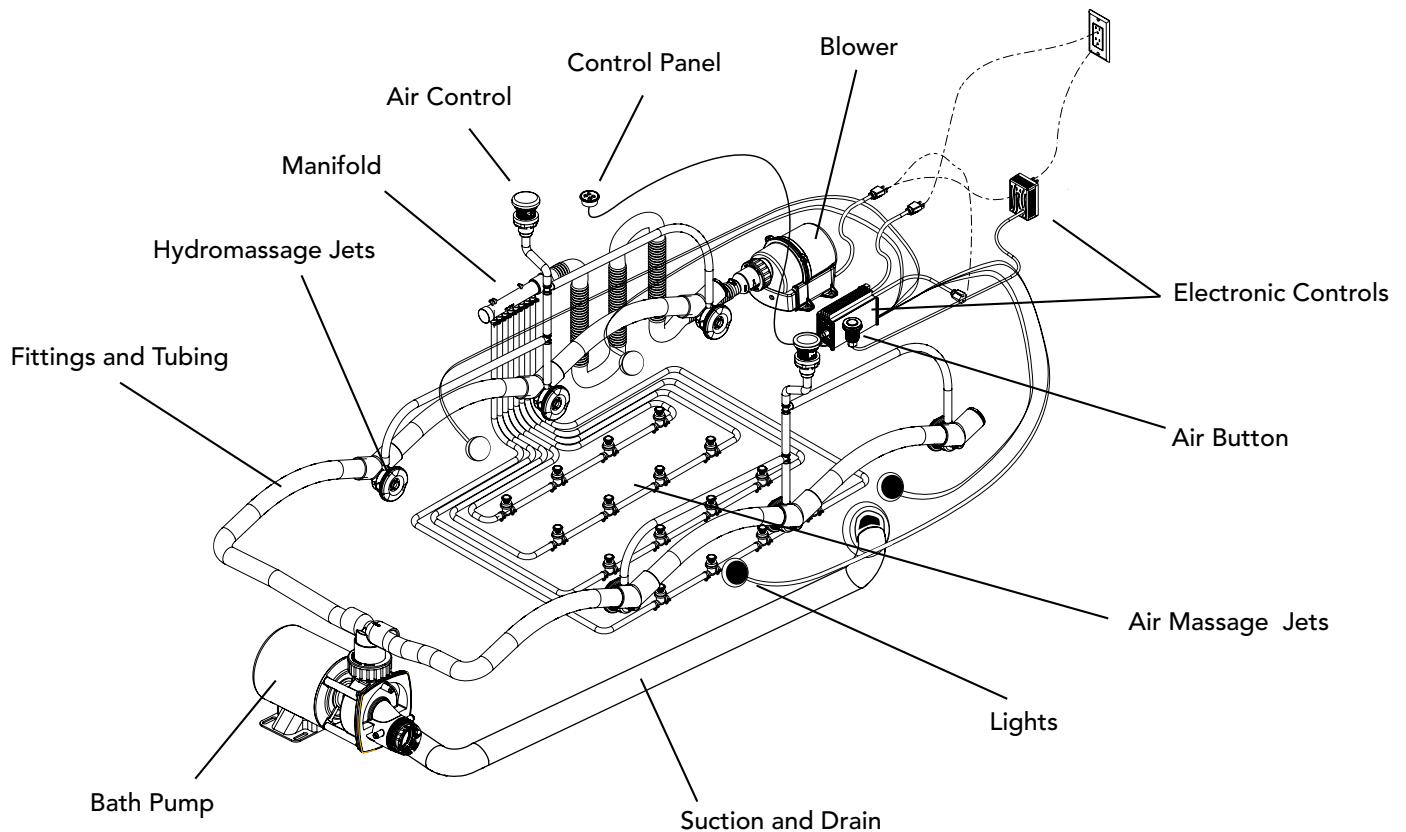
Installation and Configurations - Solenoids

(2) One Inlet, Three Outlet Solenoids

Manifold

Solenoid Filter Tee

Pump
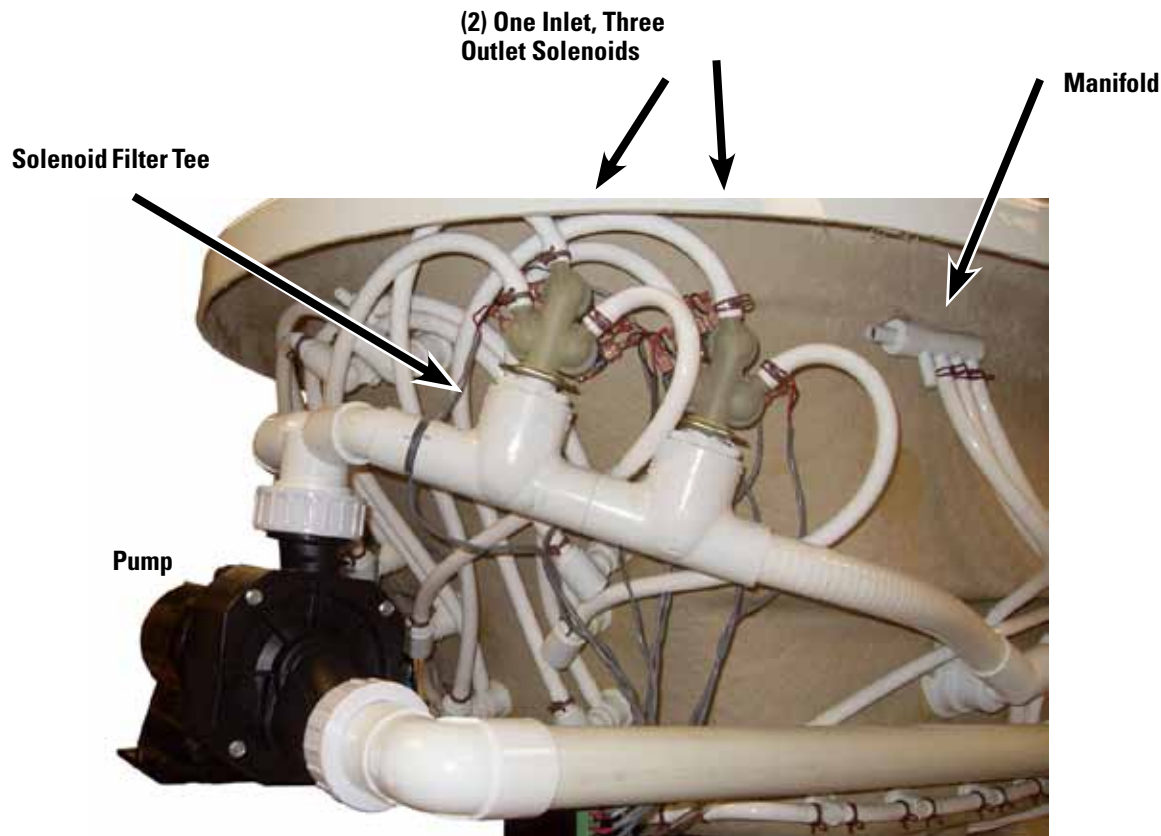
One Inlet, Two Solenoids

**BLOWER PLUMBING
WITH MANIFOLD LINES**

**Part No. 25099
Extendable Bulb Holder EFX**

**Part No. 59007-V
7 LED Bulb Cluster w/Light Pro**

**Part No. B-80335WH
Blower 1InSpg C/V Housing
with
Part No. 92152
Union-Std Nut**

**Part No. 8141-6320
Blower 600W HTR 1HP w/Control 115V**

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Component Installation

INSTALLATION OVERVIEW

Before you begin putting together your bath system, it's a good idea to have in mind a layout of where the bath components are to be installed. A skeletal illustration of installed bath components is found in the preceding pages.

An important consideration is the location of the topside bath button control in relation to other equipment. Do not mount equipment directly under the control panel mounting location in order to avoid any potential for water to drip directly onto the equipment. Create a drip-loop in the control panel wires to help prevent any water traveling down those wires that may drip onto the equipment.

All three panels use 8-pin DIN connectors. The 8-pin DIN connector cables plug into any control box. If two control boxes are used, the panel cable can be plugged into either control box. If three control boxes are used, the panel cable must be plugged into the middle control box.

The control boxes can be paired together and will communicate with each other via IR signals without external connecting wires or external dipswitch settings. You can have two of the same type of control boxes (two variable speed boxes controlling the bath). It is important, however, to place the control boxes side by side as close as possible to have the control boxes communicate properly

INSTALLING CONTROL BOXES, PUMPS, AND BLOWER

When mounting pumps, blowers, and control boxes, they must be mounted securely because of vibration and start & stop cycles.

CONTROL BOXES

The panel can be plugged into any of the control boxes. If three boxes are used, the panel must be plugged into the central control box. All functions will work providing the following criteria is observed:

1. The control boxes must be placed side by side.
2. The control boxes must be aligned next to each other.)
3. The panel is configured for the equipment used.
4. Be sure that the sides facing each other are not obstructed, i.e., papers, stickers, etc. If obstructed, the IR link will not communicate.
5. Two of the same control boxes can be used together. In other words, it's all right to have two 90017 control boxes controlling your bath, excluding other types of control boxes. Or, two 90018 boxes can be used together excluding 90017 boxes. And so on.
6. The connectors of the boxes must face in the same direction (DIN pin connectors facing all one way; power cords facing all one way).
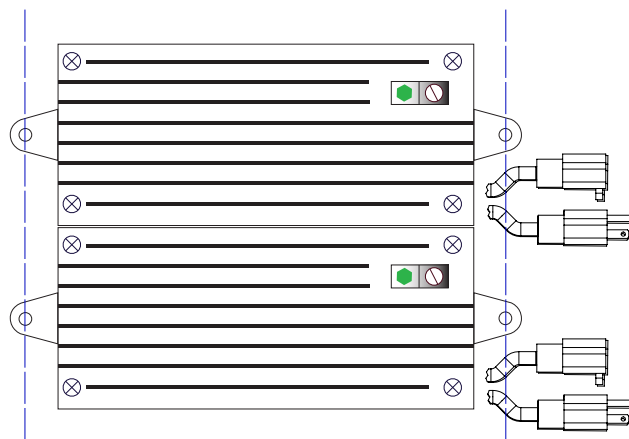
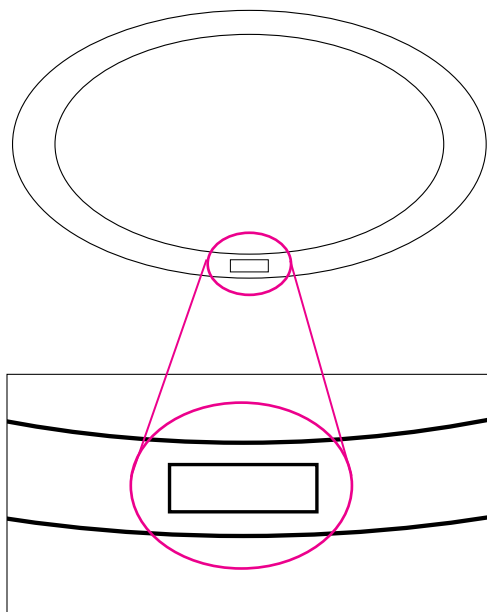

Top View of Two Control Boxes

Installation Instructions for the Titan 6 Button Panel

Material and Tools Needed:
a) Masking tape
b) Power drill with 3/8" drill bit
c) Jig saw

Installation Note: Be sure that the panel will not be submerged in the water once the tub is filled.

1. Find an appropriate location to install the topside panel. The surface should be clean and flat so that the adhesive on the back of the panel will adhere well. Make sure the cable length will reach the controller(s). Also, make sure the panel is positioned for easy viewing by the spa user.
2. Take into consideration all of the equipment that will be installed onto the bath system. Anticipate how long each cord is to the equipment installed, that is, from the panel, to the control box, to the pump, or blower, etc.
3. Once an area has been found for the bath panel, apply a layer or two of masking tape over the area that will be cut out. The tape will protect the bath surface from getting marred by the jig saw.
4. After applying the tape, measure a rectangle as shown in the illustration. When finished, the hole cut-out will be 1-3/8" x 4-1/4".

Top view, bath

1 - 3/8"

4 - 1/4"

2.375"

6.375"
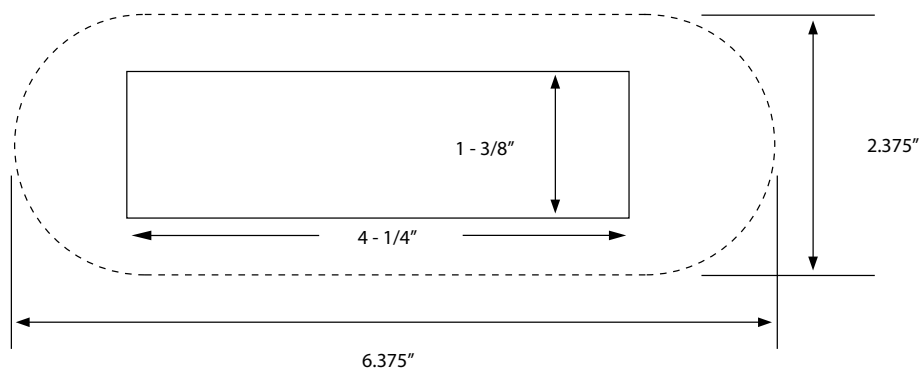
Titan 6 button bath panel cut-out template
A full size diagram for printing is located at the
back of this manual.

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5. Drill four 3/8" holes in each corner, as shown.
6. Cut out the remaining material. Deburr the cut area if necessary. Without removing the adhesive from the trim ring, set the trim ring into the hole to check for fit.

Drill a 3/8" hole in each corner

Trim ring with adhesive

Installing the Trim Ring & Panel

7. **Important:** *Before installing the assembly, be aware that depending on the trim ring assembly version, the panel may go into the trim ring one way only.* Check for this before installing the trim ring and panel. The trim ring cut-out is opposite the display. See below.
8. If the trim ring fits properly into the hole, is aligned, and the orientation of the panel is correct, install the trim ring and panel. Remove the masking tape, make sure the bath surface is clean for good adhesion, remove the adhesive backing from the back of the panel trim ring (the adhesive should be fully exposed), then place the trim ring into the hole and press down firmly.
9. Plug the 8-pin panel cable into the panel system board, and clip on the cable retainer. Place the 8-pin cable through the bath cut-out opening, then place the topside panel into the cut-out. Press down firmly along the trim ring. It will snap into place.
10. Route the 8-pin cable to the control box.

**Step No. 9
Clip on the cable retainer**
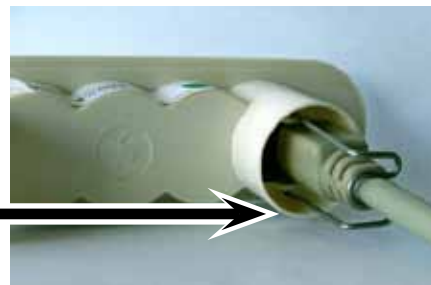
The trim ring cut-out is opposite the display

Installation of Temperature Sensor

The temperature sensor mount can be installed onto any 1.5" or 2" pipe. For installation of the temperature sensor, refer to the diagrams below.
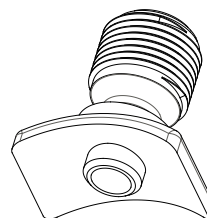
Note:
- Mount temperature sensor before heater.
- Mount the assembly in a position so that it is will not come in contact with anything that can damage the sensor and assembly.

PROCEDURE

1. Find a suitable location for the temperature sensor. In relation to water flow, the sensor must be placed before the heater.
2. Drill a 3/8 inch diameter hole as a receptacle for the temp. sensor mount.
3. Remove burrs, if any.
4. Before applying any solvents, position the sensor mount onto the pipe to be sure that the surfaces fit properly together and make good contact.
5. Prepare the PVC surface. Preferably use a PVC Solvent primer before applying solvent. Apply the PVC solvent according to the manufacturer's instructions. Be careful not to allow the solvent to get into the holes of the pipe or sensor mount.
6. Press and hold firmly in place, or affix according the manufacturer's instructions.
7. Insert the temperature sensor into the fitting. Tighten the nut to secure the temperature sensor in place.
8. Plug the sensor into a 6-Pin DIN water temperature sensor cable (Part No. 25751), and then into a 6-Pin DIN receptacle on the control box.
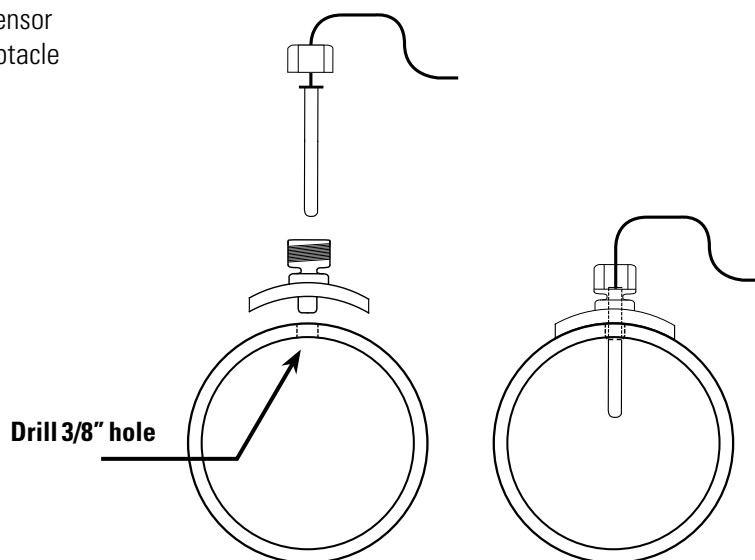
Temperature Sensor Mount (two views)
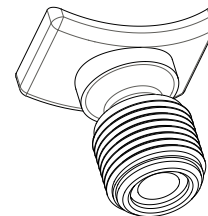
Part No. 381
1.5" Titan Temp Sensor Saddle Barb

Part No. 382
2.0" Titan Temp Sensor Saddle Barb

Part No. 32016
Sensor Assy Kit (24in, 1/4in dia.)

Part No. 25751
6-Pin DIN Water Temperature & Level Sensor

Drill 3/8" hole

Cross sectional view.
Installation of Temperature Sensor in Mount

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Installation of Conductive Water Sensor

The conductive water sensor can be installed low in the tub to sense the presence of water to facilitate blowing out (purge) an air injector system. It can also be mounted such that one connection is in the suction line and the second connection is installed in the water pressure line to act as a water level sensor to prevent a pump from operating if the water level is below a predetermined level.

The connections are attached to the plumbing with conductive screws. The picture of Part No. 99749 shows the two screws provided in the kit, with washers.

The picture below shows one of the conductive sensor wire leads installed. The conductive screw holds the metal washer against the rubber that contacts and seals the side of the pipe. The other lead is installed in the same way. The sensor is then plugged into a 6-Pin DIN water temperature and sensor cable (Part No. 25751), and then into the control box.
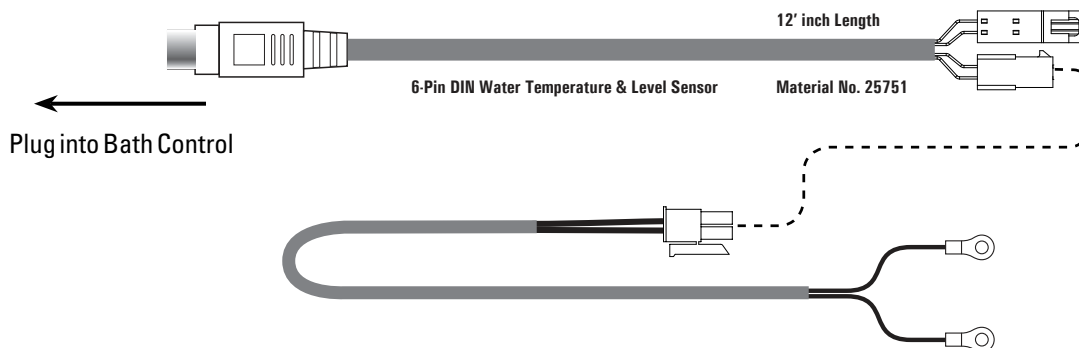

Part No. 99749
Set (2 Ea) of Conductive Screw

Conductive wire sensor lead installed

Part No. 25404
Cable Water Detection Conductive 6 Ft

12' inch Length

6-Pin DIN Water Temperature & Level Sensor   Material No. 25751

Plug into Bath Control

Solenoid Valves

BATH SOLENOIDS

Solenoid valves are used to create pulsating water jets and regulate jet flow patterns. Solenoid valves must be arranged and wired properly. The controller box can accommodate five discrete pairs of a twin (5.08mm spacing) pluggable block. Each discrete pair (two pins) on the controller body can manage one or two solenoids.
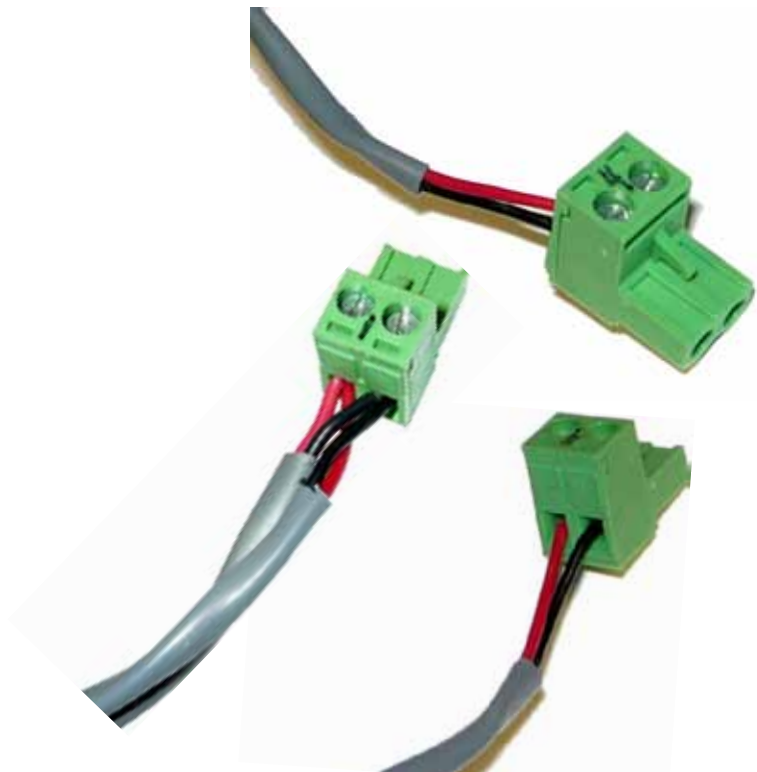
Note:
- Below are examples of typical red and black wiring diagrams.
- The outputs of the controller box are non-polarized (AC), yet the solenoids should be wired and connected in a consistent pattern.

Part No. 25670 Solenoid Cable Assembly

Red

Black
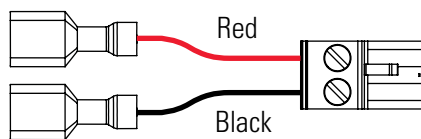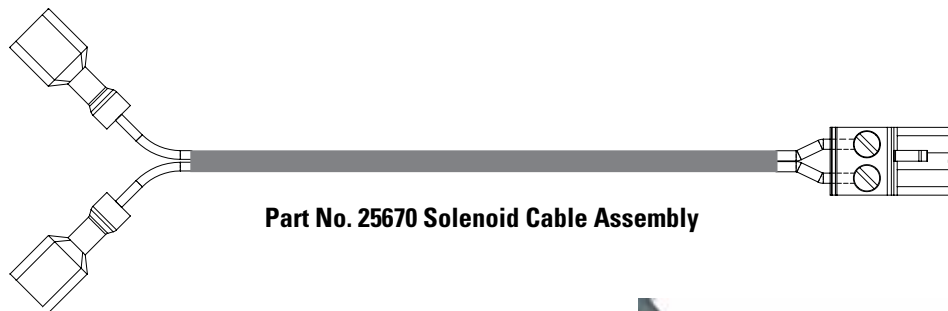
One pluggable block per one solenoid

Red
(2 wires)

Black
(2 wires)
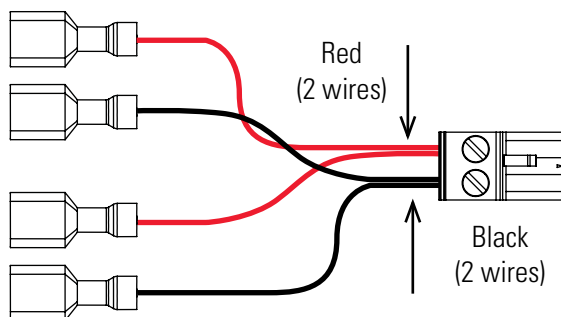
One pluggable block per two solenoids

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Multiple Solenoid Outputs
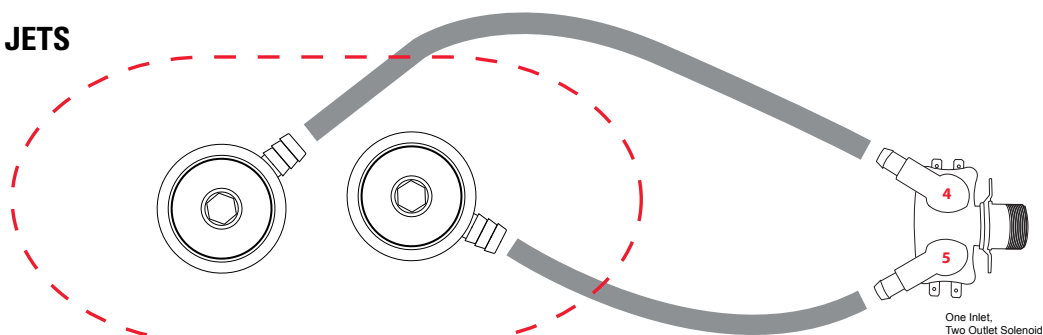
CONSISTENCY IN VALVE TO JET CONNECTIONS

As with solenoid wiring needing consistency, solenoid valves must also be plumbed to jets in a specific, consistent pattern. When looking at the diagrams, take note of how many valves each solenoid assembly has, the number assigned to each solenoid valve, and the types of jets that are connected to the specific valve number. The valve number has a direct correlation to the to the paired valve connectors located on the Primary Valve Control.

For illustrative purposes, a Titan "Configuration 40" arrangement of solenoid valves is shown over the next several pages. It shows the following:
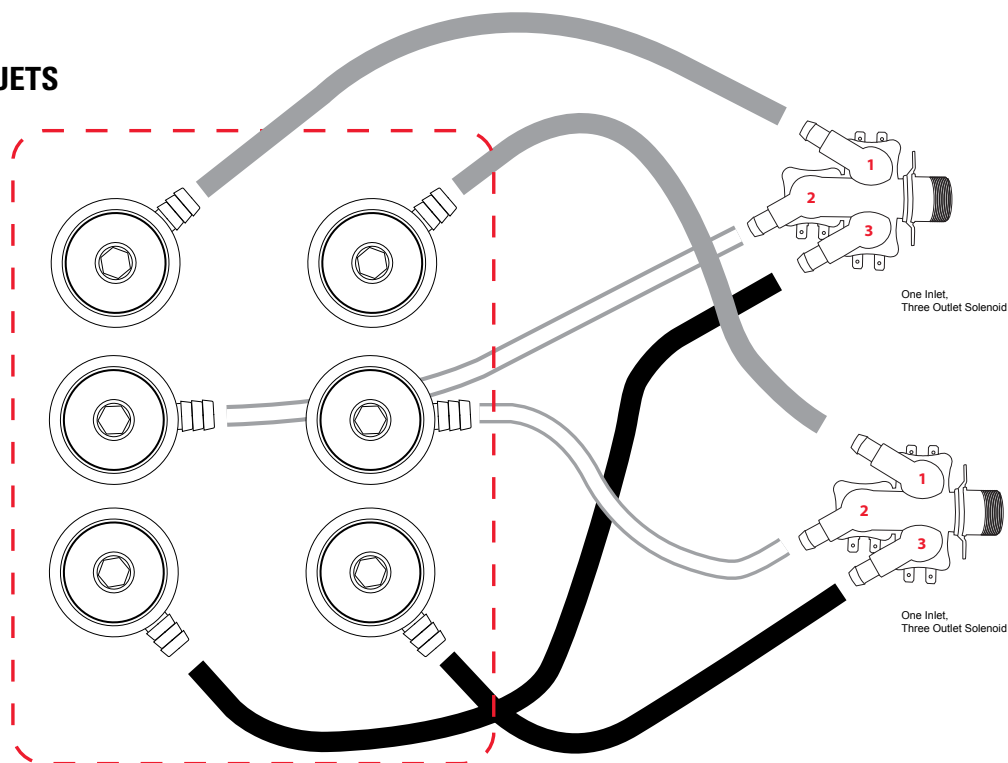
- One valve is used for a waterfall or cleaner
- Two valves are used for either a foot jet, neck jet, or pillow
- Three valves are used for a backjet

Since a pillow uses two jets, a two outlet solenoid can operate two jets, as each solenoid operates each jet. Backjets typically have six jets. As shown below, two No. 1 solenoids can operate the two top jets, two No. 2 solenoids can operate the two middle jets, and two No. 3 solenoids can operate the two bottom jets.
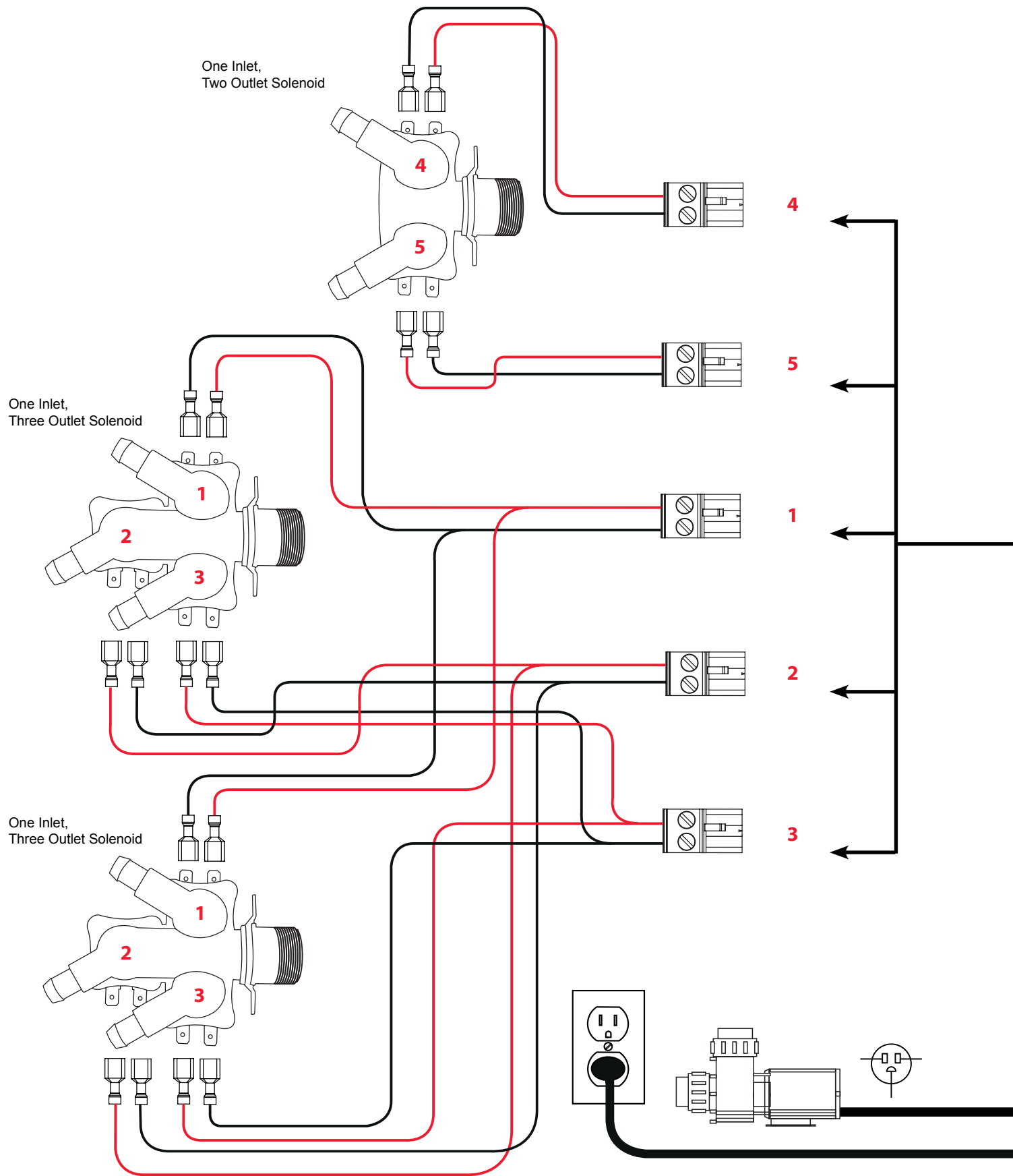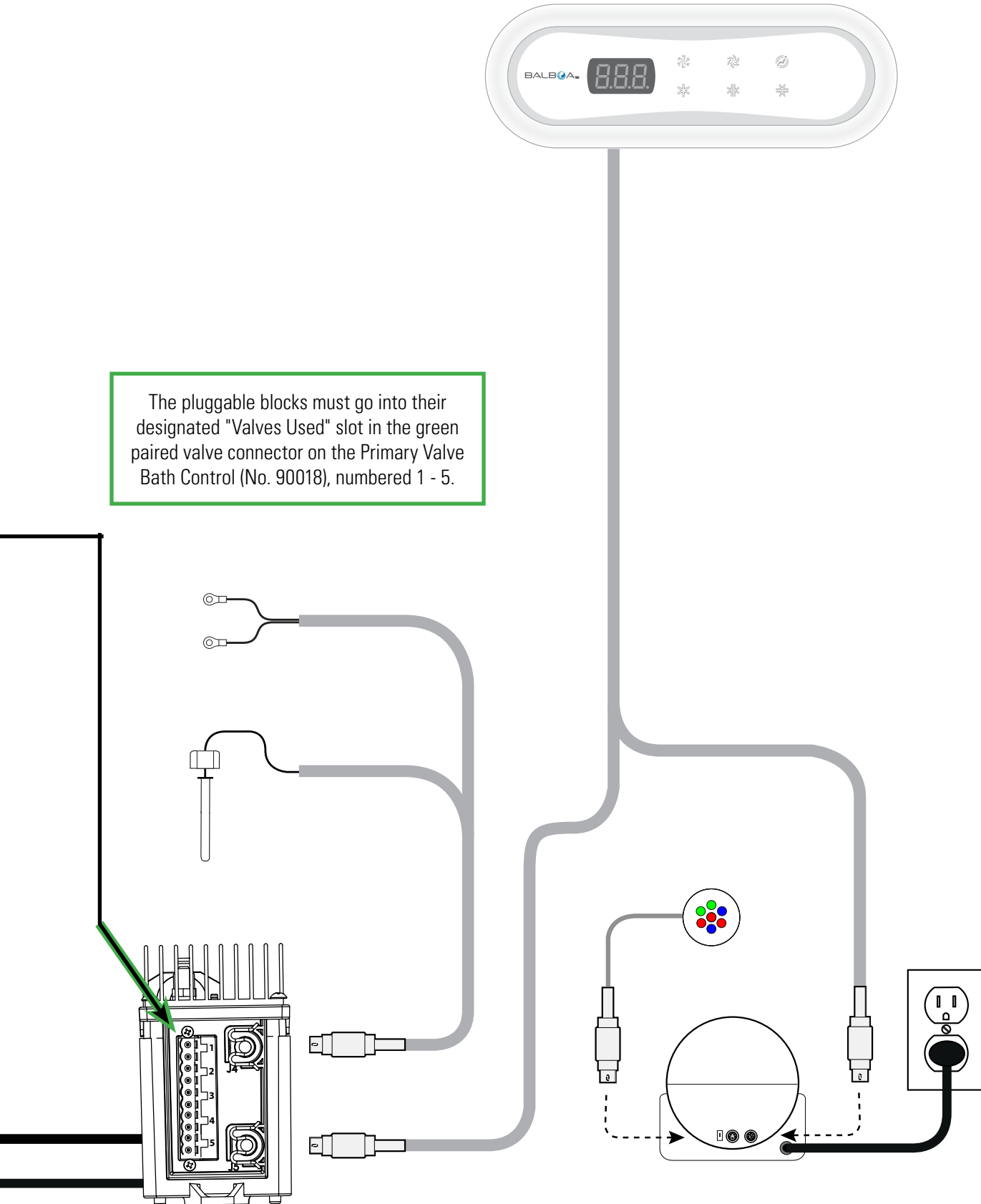
PILLOW = 2 JETS

One Inlet,
Two Outlet Solenoid

BACK JET = 6 JETS

One Inlet,
Three Outlet Solenoid

One Inlet,
Three Outlet Solenoid

Solenoid and Wiring Set-up, Balboa Configuration No. 40

One Inlet,
Two Outlet Solenoid

4

5

4

5

One Inlet,
Three Outlet Solenoid

1

2

3

1

2

One Inlet,
Three Outlet Solenoid

1

2

3

3

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The pluggable blocks must go into their designated "Valves Used" slot in the green paired valve connector on the Primary Valve Bath Control (No. 90018), numbered 1 - 5.

Creating a Configuration 40 Bath System

A bath "system" is actually a specific bath configuration of the equipment installed. What type of equipment is installed and how they're a arranged determines the configuration setup as seen in the *Bath Control Configuration Tables*. That specific configuration number is then assigned through the panel, which must be inputted in order to have the equipment operate properly.

BATH SETUP

The following pages demonstrate installation of equipment using Configuration Number 40 (or, C40 in the table). This configuration was chosen for demonstration purposes; yet, any configuration could have been used. C40 provides an opportunity to show how multiple solenoid valves are installed.

BASIC LIST FOR A BATH SETUP:

When creating a bath system, one place to begin is to consider the following:
1. Determine what features you'd like
2. Determine the equipment needed
3. Install the equipment to create the system
4. Configure the bath button per the configuration table

C40 OVERVIEW

Desired Features	Equipment Needed
Oval bathtub	Tub
6 button bath panel	6 button bath panel w/trim
Pulsating pillow and back jet	PVC (Primary Valve Control is needed to control solenoids) Pump Pillow (2 jets) Backjet (6 jets) (2) One inlet, three outlet solenoids (1) One inlet, two outlet solenoid
Blower with heater	Quiet-Flo Blower (8141-6320)
Accessories: Safety features Temperature read out	Chromatherapy light (7 LED Bulb Cluster) Water level detection cable Water temperature sensor

INSTALLING MULTIPLE SOLENOID VALVES

Further examples of solenoid valve use are as follows: one solenoid valve is used for a waterfall or cleaner, two valves are used to operate either a foot jet, neck jet, or pillow, and three valves are used for a backjet. According to the Bath Control Configuration Table indicates that C40 operates a backjet (button 5) and a pillow (button 6). As noted previously, keep the following in mind:

- The controller box can accommodate five discrete pairs of a twin pluggable blocks. 10 solenoid valves can be controlled from one PVC box. If more solenoid valves are installed, two valve control boxes (90018) are needed.

- If two or more control boxes are connected, whether they are PVC or VSC, they must be positioned and configured properly so that they can communicate via the wireless IR link.
- Although the paired valve connectors on the control boxes are non-polarized (AC), the solenoids should be wired to the valves in a consistent pattern.

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Codes, Abbreviations, and Terms

USING BATH BUTTON CODE CONFIGURATIONS

Once the type of equipment to be installed is determined, then it's all a matter of understanding the nomenclature used and cross referencing that information to the configuration tables.

VSC	Variable Speed Control
PVC	Primary Valve Control
IBC	Integrated Blower Control
Primary	A VSC or PVC connected directly to the panel (Do not confuse a "Primary" Valve Control [PVC] with Primary Location.)
Secondary	A VSC or PVC controlled by the Primary over the IR link
Tertiary	A second VSC or PVC controlled by the Primary over the IR link
Code	Equipment, such as Pumps, Blower, Wfall, Control Box, etc. Often preceded by a "Location" as either P for Primary, S for Secondary, or T for Tertiary. The prefix of the Code is associated with the Location. The suffix of the Code is associated with Valves Used.
Location	Source of the signal used to operate equipment. The Location is most often Primary, Secondary, Tertiary, or Blower.
Valves Used	Any valve output connector on the Primary Valve Control, numbered 1-5.

SYSTEM TIMER CODES

The System Timer button is used to start the internal Session Timer and enable the other device buttons. The current implementation requires water to be present on all attached water sensors. If the button is held down while the Session Timer is running, the remaining time will increment in 5 minute intervals until the maximum session time is reached.

Code	Function
SystemTimer	Starts the session timer and enables other device buttons.

LIGHT CODES

These codes provide On/Off control of a light. Only one light code may be assigned to a panel configuration.

Code	Location	VSC	PVC	IBC
PLight	Primary	X	X	
SLight	Secondary	X	X	
BLight	Blower			X

Codes, Abbreviations, and Terms (cont.)

PUMP CODES

- Pumps are specified as either single or variable speed.
- A single-speed pump is truly single speed and does not provide for speed adjustment or Wave mode.
- The Plus and Minus codes cannot be assigned to a panel if the associated pump is single-speed.
- Two pumps may be assigned to a system, on either a VSC or PVC.

Code	Location	Speeds	Function
PPump	Primary	Single	Turns the pump on and off.
PPumpV	Primary	Variable	Turns the pump on and off. Holding the button ramps the speed. Pressing twice at startup puts the pump in Wave mode.
PPumpPlus	Primary	(Variable)	Clicking increases the pump speed 1 step. Holding ramps the speed up until released.
PPumpMinus	Primary	(Variable)	Clicking reduces the pump speed 1 step. Holding ramps the speed down until released.
SPump	Secondary	Single	Turns the pump on and off.
SPumpV	Secondary	Variable	Holding the button ramps the speed. Pressing twice at startup puts the pump in Wave mode.
SPumpPlus	Secondary	(Variable)	Clicking increases the pump speed 1 step. Holding ramps the speed up until released.
SPumpMinus	Secondary	(Variable)	Clicking reduces the pump speed 1 step. Holding ramps the speed down until released.
TPump	Tertiary	Single	Turns the pump on and off.
TPumpV	Tertiary	Variable	Holding the button ramps the speed. Pressing twice at startup puts the pump in Wave mode.
TPumpPlus	Tertiary	(Variable)	Clicking increases the pump speed 1 step. Holding ramps the speed up until released.
TPumpMinus	Tertiary	(Variable)	Clicking reduces the pump speed 1 step. Holding ramps the speed down until released.

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BLOWER CODES

- The system design assumes all blowers are inherently variable speed.
- The speed designations 'single' and 'variable' are used to define how the On/Off button behaves.
- The 'Plus' and 'Minus' functions may be assigned to all blowers regardless of the On/Off button behavior.
- Only one blower may be assigned per system.

Code	Location	VSC	PVC	IBC	On/Off	Wave/Pulse	Speed Ramp	Speed Change
PBlower	Primary	X	X		X	X		
PBlowerV	Primary	X	X		X	X	X	
PBlowerNoMode	Primary	X	X		X			
PBlowerPlus	Primary	X	X				X	X
PBlowerMinus	Primary	X	X				X	X
SBlower	Secondary	X	X		X	X		
SBlowerV	Secondary	X	X		X	X	X	
SBlowerNoMode	Secondary	X	X		X			
SBlowerPlus	Secondary	X	X				X	X
SBlowerMinus	Secondary	X	X				X	X
BBlower	Blower			X	X	X		
BBlowerV	Blower			X	X	X	X	
BBlowerNoMode	Blower			X	X			
BBlowerPlus	Blower			X			X	X
BBlowerMinus	Blower			X			X	X

Codes, Abbreviations, and Terms (cont.)

VALVE CODES

Valves, referring to solenoids, or solenoid valves, create pulsations of water from jets. When two or more jets are arranged in a group, they can be positioned and wired to create pulsating patterns at varying speeds. Bath buttons that have an LED readout (two and six button bath panels), allow the user to regulate pulsating jet patterns and speeds with the following readouts:

- PT: Pattern of jet pulsations with speed adjustment (synchronous or alternating). synchronous or alternating. PT1 is the lowest speed pattern.
- ROL: Rolling means that over several seconds the blower or pump reduces and then increases in speed. Then the cycle resumes.

Because of the many options available for valve set up and hose routing, setting up pulsating jets is a bit more involved than other equipment. The "Valves Used" references in the table at right are necessary for configuration.

While keeping in mind the number of valves needed for the equipment installed on the system that is being set up, find that equipment (back jet, pillow, etc.) and then use the "Code" and "Location" to see what valves are to be used on the PVC, as only the PVC box has green paired valve connectors.

Once the proper Code and Location is determined, connect the solenoid wires into the valve control connector(s) on the box.

10 Position Valve Control Connector
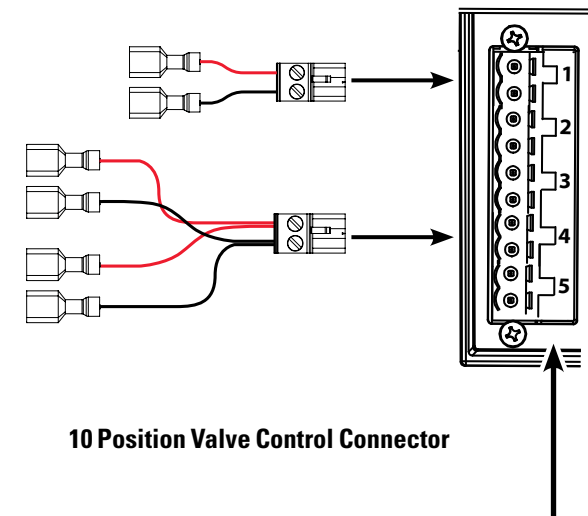
BACK JET CODES

A Back Jet uses three valves and requires the specified box be a PVC. Two Back Jets may be assigned to a panel configuration.

Code	Location	Valves Used
PBackJet	Primary	1, 2, 3
SBackJet	Secondary	1, 2, 3

PILLOW CODES

Pillows are also referred to as Neck Jets or Foot Jets. A pillow uses two valves and requires the specified box be a PVC. Two pillows may be assigned to a panel configuration.

Code	Location	Valves Used
PPillow	Primary	1, 2
SPillow	Secondary	4, 5

WATERFALL CODES

A Waterfall uses a single valve and requires the specified box be a PVC. Only one Waterfall may be assigned to a panel configuration.

Code	Location	Valve Used
PWFall	Primary	3
SWFall	Secondary	4

CLEANER CODES

A Cleaner uses a single valve and requires the specified box be a PVC. Only one Cleaner may be assigned to a panel configuration.

Code	Location	Valve Used
PClean3	Primary	3
PClean5	Primary	5
SClean3	Secondary	3
SClean5	Secondary	5

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Bath Control Configuration Tables

Generic BWG 6-button panel – P/N 90010
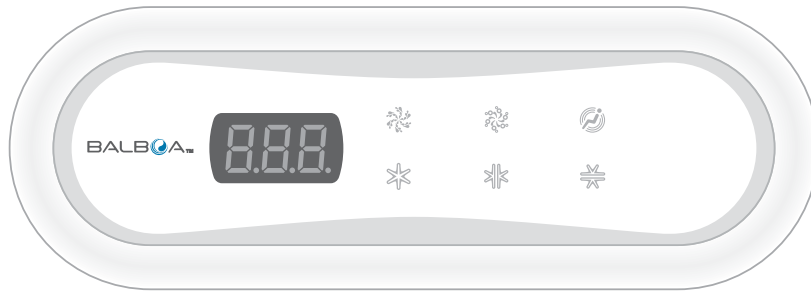
Config.	Button 1	Button 2	Button 3*	Button 4	Button 5	Button 6
C01	PPumpV	-	User1	-	-	-
C02	PPumpV	-	User1	PLight	-	-
C03	PPumpV	-	User1	-	PBackJet1	-
C04	PPumpV	-	User1	PLight	PBackJet1	-
C05	PPumpV	-	User1	-	PPillow1	-
C06	PPumpV	-	User1	PLight	PPillow1	-
C07	PPumpV	-	User1	-	PBackJet1	PPillow4
C08	PPumpV	-	User1	PLight	PBackJet1	PPillow4
C09	PPumpV	-	User1	-	PBackJet1	PWFall4
C10	PPumpV	-	User1	PLight	PBackJet1	PWFall4
C11	PPumpV	-	User1	-	PPillow1	PWFall3
C12	PPumpV	-	User1	PLight	PPillow1	PWFall3
C13	PPumpV	-	User1	-	PPillow1	PPillow4
C14	PPumpV	-	User1	PLight	PPillow1	PPillow4
C15	PPumpV	-	User1	SWFall3	PBackJet1	SPillow1
C16	PPumpV	-	User1	PBackJet1	SPillow1	SPillow4
C17	PPump	-	User1	-	PBackJet1	-
C18	PPump	-	User1	PLight	PBackJet1	-
C19	PPump	-	User1	-	PPillow1	-
C20	PPump	-	User1	PLight	PPillow1	-
C21	PPump	-	User1	-	PBackJet1	PPillow4
C22	PPump	-	User1	PLight	PBackJet1	PPillow4
C23	PPump	-	User1	-	PBackJet1	PWFall4
C24	PPump	-	User1	PLight	PBackJet1	PWFall4
C25	PPump	-	User1	-	PPillow1	PWFall3
C26	PPump	-	User1	PLight	PPillow1	PWFall3
C27	PPump	-	User1	-	PPillow1	PPillow4

*Until you program it, the User button functions as an "all off" button.
See "User Button" under "Titan Bath Control Behavioral Specs."*

Bath Control Configuration Tables (cont.)

Generic BWG 6-button panel – P/N 90010 (cont.)

Config.	Button 1	Button 2	Button 3*	Button 4	Button 5	Button 6
C28	PPump	-	User1	PLight	PPillow1	PPillow4
C29	PPump	-	User1	SWFall3	PBackJet1	SPillow1
C30	PPump	-	User1	PBackJet1	SPillow1	SPillow4
C31	-	BBlowerV	User1	-	-	-
C32	-	BBlowerV	User1	BLight	-	-
C33	PPumpV	BBlowerV	User1	-	-	-
C34	PPumpV	BBlowerV	User1	BLight	-	-
C35	PPumpV	BBlowerV	User1	-	PBackJet1	-
C36	PPumpV	BBlowerV	User1	BLight	PBackJet1	-
C37	PPumpV	BBlowerV	User1	-	PPillow1	-
C38	PPumpV	BBlowerV	User1	BLight	PPillow1	-
C39	PPumpV	BBlowerV	User1	-	PBackJet1	PPillow4
C40	PPumpV	BBlowerV	User1	BLight	PBackJet1	PPillow4
C41	PPumpV	BBlowerV	User1	-	PBackJet1	PWFall4
C42	PPumpV	BBlowerV	User1	BLight	PBackJet1	PWFall4
C43	PPumpV	BBlowerV	User1	-	PPillow1	PWFall3
C44	PPumpV	BBlowerV	User1	BLight	PPillow1	PWFall3
C45	PPumpV	BBlowerV	User1	-	PPillow1	PPillow4
C46	PPumpV	BBlowerV	User1	BLight	PPillow1	PPillow4
C47	PPumpV	BBlowerV	User1	SWFall3	PBackJet1	SPillow1
C48	PPumpV	BBlowerV	User1	PBackJet1	SPillow1	SPillow4
C49	PPump	BBlowerV	User1	-	PBackJet1	-
C50	PPump	BBlowerV	User1	BLight	PBackJet1	-
C51	PPump	BBlowerV	User1	-	PPillow1	-
C52	PPump	BBlowerV	User1	BLight	PPillow1	-
C53	PPump	BBlowerV	User1	-	PBackJet1	PPillow4
C54	PPump	BBlowerV	User1	BLight	PBackJet1	PPillow4
C55	PPump	BBlowerV	User1	-	PBackJet1	PWFall4
C56	PPump	BBlowerV	User1	BLight	PBackJet1	PWFall4
C57	PPump	BBlowerV	User1	-	PPillow1	PWFall3
C58	PPump	BBlowerV	User1	BLight	PPillow1	PWFall3
C59	PPump	BBlowerV	User1	-	PPillow1	PPillow4
C60	PPump	BBlowerV	User1	BLight	PPillow1	PPillow4
C61	PPump	BBlowerV	User1	SWFall3	PBackJet1	SPillow1
C62	PPump	BBlowerV	User1	PBackJet1	SPillow1	SPillow4

Until you program it, the User button functions as an "all off" button.
See "User Button" under "Titan Bath Control Behavioral Specs."

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Bath Control Configuration Tables (cont.)

Generic BWG 2-button panel – P/N 90011

OVERLAY: 12012

Config.	Button 1	Button 2
C01	PPumpV	-
C02	PPumpV	PLight
C03	PPumpV	PBackJet1
C04	PPumpV	PPillow1
C05	PPumpV	PWFall3
C06	PPumpV	BBlowerV
C07	PPump	-
C08	PPump	PLight
C09	PPump	PBackJet1
C10	PPump	PPillow1
C11	PPump	PWFall3
C12	PPump	BBlowerV
C13	BBlowerV	-
C14	BBlowerV	BLight

Generic BWG 4-button panel w/User - P/N 90012

Part No.: 90012
Overlay: 12014

Pump or Blower

Valve

Device or Valve

User

BALBOA™

Config.	Button 1	Button 2	Button 3	Button 4
C01	PPumpV	PLight	PBackJet1	User1
C02	PPumpV	PLight	PPillow1	User1
C03	PPumpV	PLight	PWFall3	User1
C04	PPumpV	PPillow4	PBackJet1	User1
C05	PPumpV	PWFall4	PBackJet1	User1
C06	PPumpV	PWFall3	PPillow1	User1
C07	PPumpV	PPillow1	PPillow4	User1
C08	PPump	PLight	PBackJet1	User1
C09	PPump	PLight	PPillow1	User1
C10	PPump	PLight	PWFall3	User1
C11	PPump	PPillow4	PBackJet1	User1
C12	PPump	PWFall4	PBackJet1	User1
C13	PPump	PWFall3	PPillow1	User1
C14	PPump	PPillow1	PPillow4	User1
C15	BBlowerV	BLight	-	User1

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Generic BWG 4-button panel w/two valves – P/N 90022

Part No.: 90022
Overlay: 12983

Pump or Blower

Device or Valve

Valve

Valve

Config.	Button 1	Button 2	Button 3	Button 4
C01	PPumpV	PLight	-	-
C02	PPumpV	PLight	PPillow4	PBackJet1
C03	PPumpV	PLight	PPillow1	PWFall3
C04	PPumpV	PLight	PBackJet1	PWFall4
C05	PPumpV	PLight	PPillow1	PPillow4
C06	PPumpV	PBackJet1	SPillow1	SPillow4
C07	PPumpV	SWFall3	SPillow1	PBackJet1
C08	PPump	PLight	-	-
C09	PPump	PLight	PPillow4	PBackJet1
C10	PPump	PLight	PPillow1	PWFall3
C11	PPump	PLight	PBackJet1	PWFall4
C12	PPump	PLight	PPillow1	PPillow4
C13	PPump	PBackJet1	SPillow1	SPillow4
C14	PPump	SWFall3	SPillow1	PBackJet1
C15	BBlowerV	BLight	-	-

Bath Control Configuration Tables (cont.)

Generic BWG 4-button panel w/up-down - P/N 90013

Part No.: 90013
Overlay: 12013

Pump or Blower

Device or Valve

Up

Down

BALBOA™

Config.	Button 1	Button 2	Button 3	Button 4
C01	BBlower	BLight	BBlowerPlus	BBlowerMinus
C02	BBlower	-	BBlowerPlus	BBlowerMinus
C03	PPumpV	-	PPumpPlus	PPumpMinus
C04	PPumpV	PLight	PPumpPlus	PPumpMinus
C05	PPumpV	PBackJet1	PPumpPlus	PPumpMinus
C06	PPumpV	PPillow1	PPumpPlus	PPumpMinus
C07	PPumpV	PWFall3	PPumpPlus	PPumpMinus

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Bath Button Panel Configuration
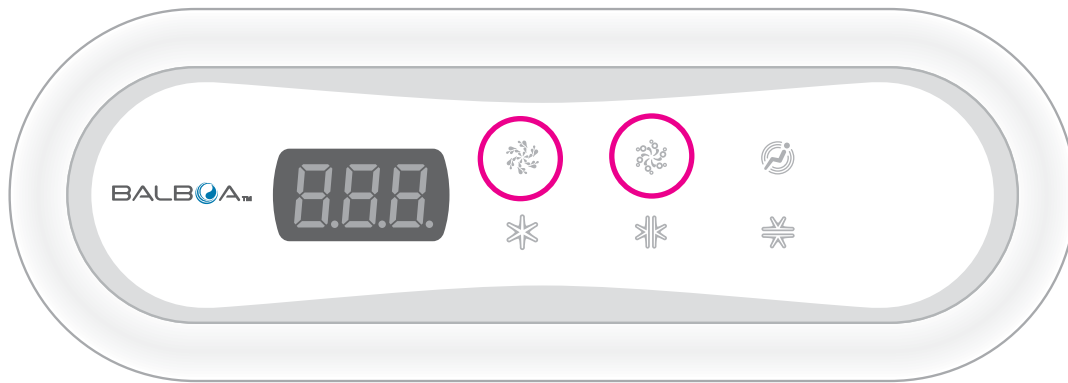
Use the first two buttons for setting up the configurations

CONFIGURING THE 6 BUTTON BATH PANEL

There are many configurations possible with the Titan 6 and 2 button bath panels. The panel must be programmed after all of the equipment is installed and connected for the panel and control boxes to interact effectively.

The process to configure either of these bath panels is the same. Two buttons are pressed upon startup to provide access to the Configuration Set-up menu. The 6-button panel is accessed by using the first two buttons.

Using the 6-button panel as an example, find the set-up that you have installed using the "Bath Control Configuration Tables" to find the closest set-up of equipment installed, and the specific buttons that you'll want to dedicate to run that equipment. Then proceed to set up, or input that configuration number into your panel. Be sure to start from a complete power down. Note: During the process, the panel times out after 10 seconds. If that happens, restart the procedure.

1. Apply power.
2. All LED's will light up. Wait until CON displays, then press the first two buttons and hold. Keep holding until a capital "C" is displayed followed a decimal point and two digits indicating the currently selected configuration.

3. To increment the configuration number, press B1once. Press repeatedly until the desired configuration number is reached. Hold B1 down to automatically cycle through the configurations.
4. To store the configuration in to the panel's memory, press B2. The panel will reboot and a startup sequence will display. If after the boot up, an **Err** (Error) displays, it means that the configuration entered does not match the equipment installed. Recheck the equipment and then the table. The Panel Error Codes page should help in diagnosing the error.

CONFIGURING THE 2 BUTTON BATH PANEL

The process is the same as programing the 6 button panel above. The differences will be that you'll use a different configuration table, and have fewer configurations available. The error codes are the same for 2 and 6 button panels.

Bath Button Panel Configuration (cont.)

CONFIGURING THE 4 BUTTON BATH PANEL

Four button panels do not have a readout display, but use LED's to provide status information during operation. The LED's are also used to configure the panel. There are three four button bath panels. Yet, each four button panel is capable of being configured in many ways. Be sure to reference what equipment is installed with the button used and then configure it accordingly after equipment setup.

The panel displays LED's in binary numbers to designate the configuration number. Below is a table that shows the binary equivalents to the configuration number.

Note: Panel No. 90013 has seven configuration numbers. The remaining 4 button panels have 15 configurations.

Config. No.	LED Display	Binary No.
1	●	0001
2	●	0010
3	● ●	0011
4	●	0100
5	● ●	0101
6	● ●	0110
7	● ● ●	0111
8	●	1000
9	● ●	1001
10	● ●	1010
11	● ● ●	1011
12	● ●	1100
13	● ● ●	1101
14	● ● ●	1110
15	● ● ● ●	1111

1. Upon power-up, The four LED's will blink.
2. Press and hold the 2nd button down for 5-10 seconds. The LED's will begin to count in a binary format. (Note: The counting sequence may not start at one, depending on the last configuration stored.)
3. Once the configuration that you need is reached, release the button.
4. The panel will reboot and go through a start up sequence. The last sequence of numbers after the boot up will show the binary configuration that had just been programed.

After start-up, the four buttons will flash.
Press and hold the second button.

Release the button at the desired configuration.
This is configuration six.

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6 Button Bath Control User Guide

Power Up

Upon power up, the Bath Control goes through a self diagnostic check that lasts for about 15 seconds. The LED Display will then show the water temperature or a blank display, depending on whether a water temperature sensor is installed or not.

Session Timer

- Turning on a device starts a Session Timer that lasts for 20 minutes. The Timer can be changed using User Preferences.
- If a temperature sensor is available, the temperature will display for 20 minutes once a Session has started and then during the purge cycle.
- A bright button indicates the function is on.
  A dim button indicates the function is available but not on.

Therapy Button

- Button press turns Therapy On/Off
- If variable speed is available, press and hold Therapy button to change speed
- Pressing twice once running starts Wave Mode

Light Button/Massage Button

- The light can be controlled independently of all other features
- Some lighting options have unique operation for color changes; see the manual for any special light system that may be installed
- If configured as a Massage Button, see next panel

Blower Button

- "Bubbler"/aeration/aerator
- Allows for a "purge" cycle
- Within seconds accelerates to high speed, then adjustments are made thereafter
- Holding changes speed with auto-reverse capability

Massage Button

- The Therapy (pump) button must be On to have the Massage run
- When Therapy is turned Off, Massage is turned off automatically
- Variable speeds: Change speed with multiple presses (Back Jet and pillow)

User Button

- If equipped, the Back Jet is activated
-

Massage Button

- The Therapy (pump) button must be On to have the Massage run
- When Therapy is turned Off, Massage is turned off automatically
- Variable speeds: Change speed with multiple presses (Back Jet and pillow)

Please see reverse side for more information.

BALBOA
water group

User Preferences

User Preferences allow changes to certain default settings in the control.

Note:

Previously saved variables will display solid; new choices will flash.

If the control is displaying User Preferences and no button is pressed within 10 seconds, the panel exits User Preferences without saving any new settings.

When Setting User Preferences

❄ Adjusts the variables in each menu
 ✳ Navigates from one menu to the next

To View and Edit User Preferences, press...

❄ AND ✳ for 5 seconds.

The **Session Timer** Menu will display the current time-out. Release both buttons.

❄ Each press changes the length of the Session Timer.

  ✳ Press to show **Time/Temp. Display** Settings.

❄ Edit **t** = Time, **H** = Water Temp., or **tH** = both.
 *If no temperature sensor is present, this is fixed at **d.t** (**d**isplay **t**imer).*

  ✳ Press again to show the Temperature Display Menu.

❄ Toggle between **C** = Celsius, or **F** = Fahrenheit.

  ✳ Press again to show the **Store** menu.

❄ Select **St.y** (**Y**es) to Save and Exit your new settings, or
 St.n (**N**o) to Exit without saving new settings.

  ✳ Press again to confirm the **Store** menu choice.

Purge Cycle
(Blower Installations Only)

A Purge Cycle removes standing water from the plumbing and dries the air delivery system. This helps maintain a sanitary plumbing system. The purge cycle lasts for 1 minute.

- Once a Session has ended, "**End**" (of session) appears on the display indicating that the Purge End Use Timer is active and counting down. The purge cycle will begin after 20 minutes.
  a) **Pur** is then displayed and will last for 1 minute during the purge cycle.
  b) Once the Purge Cycle is finished, the system shuts down and the display is blank.
  c) Turning on a pump or blower during the End Use Timer will stop the timer and start a new session.

Display & Messages

- Display shows water display, pattern changes, speed of devices used, warning and error messages.
- If all sensors are installed, the water temperature will display during a user session. The water temperature and time remaining will alternate on the display.
- How the information is displayed can be adjusted in User Preferences.

- **Hot Water Detection** (only if a temperature sensor is installed)
  Water that exceeds 111° F will display: **[Temperature] - too - hot**.
  The panel goes to normal operation when hot water is no longer detected.

- **No Water Detection**
  If no pump water is detected, the display will flash **no - h2o** when a button is pressed.

- **System Error Detection**
  If an error occurs in the bath system, **ERR** will display.
  Additional codes will follow to assist with diagnostics.

- **LED Display:**
  Con: "Configuration Settings"*
  T29: Time remaining in minutes
  SP6: "Speed" (SP1 is lowest speed)
  PUL: "Pulse" Mode
  ROL: "Rolling" (Blower cycles up and down in speed)
  PT3: "Pattern" of pulses (PT1 is lowest speed)

- *****Note**: This is one of dozens of configurations available.

2 Button Bath Control User Guide - Therapy, Light/Aux

Therapy   Light/Aux

Power Up

- Upon power up, the Bath Control goes through a self diagnostic check that lasts for about 15 seconds. The LED Display will then show the water temperature or a blank display, depending on whether a water temperature sensor is installed or not.

Session Timer

- Turning on a device starts a Session Timer that lasts for 20 minutes. The Timer can be changed using User Preferences (see back).
- If a temperature sensor is available, the temperature will display for 20 minutes once Session has started and then during the purge cycle.

Therapy

Single Speed
- Press the button to turn Therapy On or Off.

Variable Speed
- Press the button once to turn Therapy On or Off.
- Holding the button ramps the speed to high speed, then ramps down to lowest speed. The action then repeats. Release on the desired speed.
- Pressing twice at startup puts Therapy in Wave mode.

Light/Aux Button

- The light can be controlled independently of all other features.
- Aux (if used) may be used for Pillow, Waterfall, or Backjet.

Blower (if installed as Aux)

Speed
- If the Blower is off, press the Blower button once to turn it on.
- If you press and hold the Blower button, it ramps to and from the highest to lowest speed. If you press and hold the Blower button again, it continues to ramp repeatedly. The action then repeats. Release on the desired speed.
- If the Blower is on, press the Blower button once to turn the Blower Off.
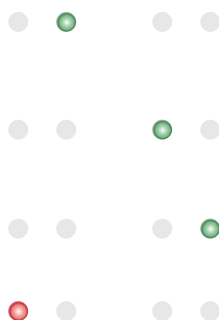
Modes (turn on, beginning with blower off)
- Press the Blower button twice to put the Blower in Pulse mode, or
- Press the Blower button three times to put the Blower in Wave mode.

*Please see reverse
side for more information.*

User Preferences

User Preferences allow changes to certain default settings in the control.

Note:

Previously saved variables will display solid; new choices will flash.

If the control is displaying User Preferences and no button is pressed within 10 seconds, the panel exits User Preferences without saving any new settings.

When Setting User Preferences

❀ Navigates from one menu to the next

❅ Adjusts the variables in each menu

To View and Edit User Preferences, press...

❀ AND ❅ for 5 seconds.
The **Session Timer** Menu will display **t.30**. Release both buttons.

❀ Each press changes the length of the Session Timer.

❅ Press to show **Time/Temp. Display** Menu.

❀ Edit **t** = Time, **H** = Water Temp., or **tH** = both.
*If no temperature sensor is present, this is fixed at **d.t** (**d**isplay **t**imer).*

❅ Press again to show the **Temperature Display** Menu.

❀ Toggle between **C** = Celsius, or **F** = Fahrenheit.

❅ Press again to show the **Store** menu.

❀ Select **St.y** (**Y**es) to Exit and Save your new settings, or **St.n** (**N**o) to Exit without saving new settings.

❅ Press again to confirm the **Store** menu choice.

Purge Cycle
(Blower Installations Only)

A Purge Cycle removes standing water from the plumbing and dries the air delivery system. This helps maintain a sanitary plumbing system. The purge cycle lasts for 1 minute.

- Once a Session has ended, "**End**" (of session) appears on the display indicating that the Purge End Use Timer is active and counting down**.** The purge cycle will begin after 20 minutes.
  a) **Pur** is then displayed and will last for 1 minute during the purge cycle.
  b) Once the Purge Cycle is finished, the system shuts down and the display is blank.
  c) Turning on a pump or blower during the End Use Timer will stop the timer and start a new session.

Display & Messages

- Display shows water display, pattern changes, speed of devices used, warning and error messages.
- If all sensors are installed, the water temperature will display during a user session. The water temperature and time remaining will alternate on the display.
- How the information is displayed can be adjusted in User Preferences.

- **Hot Water Detection** (only if a temperature sensor is installed)
  Water that exceeds 111° F will display: **[Temperature] - too - hot**.
  The panel goes to normal operation when hot water is no longer detected.

- **No Water Detection**
  If no pump water is detected, the display will flash **no - h2o** when a button is pressed.

- **System Error Detection**
  If an error occurs in the bath system, **ERR** will display.
  Additional codes will follow to assist with diagnostics.

- **LED Display:**
  Con: "Configuration Settings"
  T29: Time remaining in minutes
  SP6: "Speed" (SP1 is lowest speed)
  PUL: "Pulse" Mode
  ROL: "Rolling" (Blower cycles up and down in speed)
  PT3: "Pattern" of pulses (PT1 is lowest speed)

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water group

4 Button Bath Control User Guide -

Blower, Light, Speed Buttons

Blower   **Light**

Increase Speed   **Reduce Speed**

Power Up
- Upon power up, the LEDs flash as the bath control goes through a self diagnostic check. Once the LEDs stop flashing, you may use the control.

Session Timer
- Turning on a device starts a Session Timer that lasts for 20 minutes.

Optional Heated Quiet-Flo Blower
- Any time the blower turns on, the heater turns on with it.

Blower
Blower Speed
- If the Blower is off, press the Blower button once to turn the Blower On.
- If the Blower is on, press the Blower button once to turn the Blower Off.
- Click the + or - button to increase or decrease the speed in steps.
- Press and hold the + or - button to increase or decrease the speed smoothly.

Modes (turn on, beginning with blower off)
- Press the Blower button twice to put the Blower in Pulse mode, or
- Press the Blower button three times to put the Blower in Wave mode.

Light
- If you have a light installed, the light can be controlled independently of all other features.
- Some lighting options have unique operation for color changes. See the manual for any special light system that may be installed.

BALBOA
water group

LED Definition

Session Timer On
Tells you a device button has been pressed and a Session Timer is running.

Water Level Detected
Tells you there is still water in the tub. (Sensor required.)

Error
Tells you that your system needs servicing. (See Error Codes for Bath Button Displays.)

LED Messages

System Error Detection
- If an error occurs in the bath system, the red ERROR LED will flash.
- In addition, the three remaining LEDs stay lit in a specific on/off pattern that reveals a diagnostic code of the error. If this should occur, take note which of the three lights are on or off. This information will help technical support in diagnosing the error.

System Reset
- Press and hold the two top buttons for 5 seconds to turn all equipment off. Continue to hold the two top buttons 5 seconds longer to restart the system.

Purge Cycle

- A Purge Cycle removes standing water from the plumbing and dries the air delivery system. This helps maintain a sanitary plumbing system.
- Once the bath control thinks you're finished using the bath, it schedules a Purge Cycle. The Session Timer LED flashes periodically to indicate that a Purge Cycle will soon begin.
- Certain actions may cancel the planned Purge Cycle. This is normal. Otherwise, after a number of minutes, the 1-minute Purge Cycle will begin. At that point, the Session Timer LED will light continuously.
- When the Purge Cycle ends, all equipment turns off and the Session Timer LED turns off.

4 Button Bath Control User Guide -

Blower, Light, User Favorite

Blower   **Light**

User Favorite

Power Up
- Upon power up, the LEDs flash as the bath control goes through a self diagnostic check. Once the LEDs stop flashing, your Therapy Session is ready to begin.

Session Timer
- Turning on a device starts a Session Timer that lasts for 20 minutes.

Optional Heated Quiet-Flo Blower
- Any time the blower turns on, the heater turns on with it.

Blower
Speed
- If the Blower is off, press the Blower button once to turn it on.
- If you press and hold the Blower button, it ramps to and from the highest to lowest speed. If you press and hold the Blower button again, it continues to ramp repeatedly. The action then repeats. Release on the desired speed.
- If the Blower is on, press the Blower button once to turn the Blower Off.

Modes (turn on, beginning with blower off)
- Press the Blower button twice to put the Blower in Pulse mode, or
- Press the Blower button three times to put the Blower in Wave mode.

Light
- If you have a light installed, the light can be controlled independently of all other features.
- Some lighting options have unique operation for color changes.
- See the manual for any special light system that may be installed.

User Favorite
- Used to recall a specific equipment setting.
- When you wish to save an active equipment setting or combination, press and hold the Favorite button for 2 seconds. The Favorite LED will illuminate.
- When you wish to recall your favorite setting, press (do not hold) the Favorite button. Within a second or two, the equipment operation will match what you last saved, and the Favorite LED will illuminate.
- If you then change settings, the Favorite LED will go out (to show that you are no longer using the settings exactly as you saved them).

BALBOA
water group

LED Definition

Session Timer On
Tells you a device button has been pressed and a Session Timer is running.

Water Level Detected
Tells you adequate water level has been reached to run the system. (Sensor required.)

Favorite Setting On
Tells you that your favorite setting is running.

Error
Tells you that your system needs servicing.
(See Error Codes for Bath Button Displays.)

LED Messages

No Therapy Water Detection (Sensor required)
- If no water is detected:
  a) The water devices all shut down,
  b) The Water Level Detected LED flashes for several seconds before it turns off.

System Error Detection
- If an error occurs in the bath system, the red ERROR LED will flash.
- In addition, the three remaining LEDs stay lit in a specific on/off pattern that reveals a diagnostic code of the error. If this should occur, take note which of the three lights are on or off. This information will help technical support in diagnosing the error.

System Reset
- Press and hold the two top buttons for 5 seconds.
- Continue to hold the two top buttons 5 seconds longer to restart the system.

Purge Cycle

- A Purge Cycle removes standing water from the plumbing and dries the air delivery system. This helps maintain a sanitary plumbing system.
- Once the bath control thinks you're finished using the bath, it schedules a Purge Cycle. The Session Timer LED flashes periodically to indicate that a Purge Cycle will soon begin.
- Certain actions may cancel the planned Purge Cycle. This is normal. Otherwise, after a number of minutes, the 1-minute Purge Cycle will begin. At that point, the Session Timer LED will light continuously.
- When the Purge Cycle ends, all equipment turns off and the Session Timer LED turns off.

4 Button Bath Control User Guide - Therapy, Options

Therapy

Option 1

Option 2

Option 3

Power Up
- Upon power up, the LEDs flash as the bath control goes through a self diagnostic check. Once the LEDs stop flashing, your Therapy Session is ready to begin.

Session Timer
- Turning on a device starts a Session Timer that lasts for 20 minutes.

Optional Heated Quiet-Flo Blower
- Any time the blower turns on, the heater turns on with it.

Therapy

Single Speed
- Press the button to turn Therapy On or Off.

Variable Speed
- Press the button once to turn Therapy On or Off.
- Holding the button ramps the speed to high speed, then ramps down to lowest speed. The action then repeats. Release on the desired speed.
- Pressing twice at startup puts Therapy in Wave mode.

Massage
- Therapy must be On for Massage to run.
- Press the button once to turn the Massage On. Press it again (repeatedly) to choose different Massage patterns, or to turn the Massage Off.
- When Therapy is turned Off, Massage is turned off automatically.

Waterfall
- A button press turns the Waterfall On or Off.
- Therapy must be On for Waterfall to run.
- When Therapy is turned Off, Waterfall is turned off automatically.

Blower *(Optional)*

Speed
- If the Blower is off, press the Blower button once to turn it on.
- If you press and hold the Blower button, it ramps to and from the highest to lowest speed. If you press and hold the Blower button again, it continues to ramp repeatedly. The action then repeats. Release on the desired speed.
- If the Blower is on, press the Blower button once to turn the Blower Off.

Modes (turn on, beginning with blower off)
- Press the Blower button twice to put the Blower in Pulse mode, or
- Press the Blower button three times to put the Blower in Wave mode.

Light (Option 1 only)
- The light can be controlled independently of all other features.
- Aux (if used) may be used for Pillow, Waterfall, or Backjet.

BALBOA
water group

LED Definition

Session Timer On
Tells you a device button has been pressed and a Session Timer is running.

Water Level Detected
Tells you adequate water level has been reached to run the system. (Sensor required.)

Favorite Setting On
Tells you that your favorite setting is running.

Error
Tells you that your system needs servicing.
(See Error Codes for Bath Button Displays.)

LED Messages

No Therapy Water Detection (Sensor required)
- If no water is detected:
  a) The water devices all shut down,
  b) The Water Level Detected LED flashes for several seconds before it turns off.

System Error Detection
- If an error occurs in the bath system, the red ERROR LED will flash.
- In addition, the three remaining LEDs stay lit in a specific on/off pattern that reveals a diagnostic code of the error. If this should occur, take note which of the three lights are on or off. This information will help technical support in diagnosing the error.

System Reset
- Press and hold the two top buttons for 5 seconds.
- Continue to hold the two top buttons 5 seconds longer to restart the system.

Purge Cycle

- A Purge Cycle removes standing water from the plumbing and dries the air delivery system. This helps maintain a sanitary plumbing system.
- Once the bath control thinks you're finished using the bath, it schedules a Purge Cycle. The Session Timer LED flashes periodically to indicate that a Purge Cycle will soon begin.
- Certain actions may cancel the planned Purge Cycle. This is normal. Otherwise, after a number of minutes, the 1-minute Purge Cycle will begin. At that point, the Session Timer LED will light continuously.
- When the Purge Cycle ends, all equipment turns off and the Session Timer LED turns off.

4 Button Bath Control User Guide -

Therapy, Option, Speed Buttons

Therapy

Option

Increase Speed

Reduce Speed

Power Up

- Upon power up, the LEDs flash as the bath control goes through a self diagnostic check. Once the LEDs stop flashing, your Therapy Session is ready to begin.

Session Timer

- Turning on a device starts a Session Timer that lasts for 20 minutes.

Optional Heated Quiet-Flo Blower

- Any time the blower turns on, the heater turns on with it.

Therapy

Single Speed

- Press the button to turn Therapy On or Off.

Variable Speed

- Press the button once to turn Therapy On or Off.
- Holding the button ramps the speed to high speed, then ramps down to lowest speed. The action then repeats. Release on the desired speed.
- Pressing twice at startup puts Therapy in Wave mode.

Light (Option 1 only)

- The light can be controlled independently of all other features.
- Aux (if used) may be used for Pillow, Waterfall, or Backjet.

Blower (Optional)

Speed

- If the Blower is off, press the Blower button once to turn it on.
- If you press and hold the Blower button, it ramps to and from the highest to lowest speed. If you press and hold the Blower button again, it continues to ramp repeatedly. The action then repeats. Release on the desired speed.
- If the Blower is on, press the Blower button once to turn the Blower Off.

Modes (turn on, beginning with blower off)

- Press the Blower button twice to put the Blower in Pulse mode, or
- Press the Blower button three times to put the Blower in Wave mode.

LED Definition

Session Timer On
Tells you a device button has been pressed and a Session Timer is running.

Water Level Detected
Tells you adequate water level has been reached to run the system. (Sensor required.)

Favorite Setting On
Tells you that your favorite setting is running.

Error
Tells you that your system needs servicing.
(See Error Codes for Bath Button Displays.)

LED Messages

No Therapy Water Detection (Sensor required)
- If no water is detected:
  a) The water devices all shut down,
  b) The Water Level Detected LED flashes for several seconds before it turns off.

System Error Detection
- If an error occurs in the bath system, the red ERROR LED will flash.
- In addition, the three remaining LEDs stay lit in a specific on/off pattern that reveals a diagnostic code of the error. If this should occur, take note which of the three lights are on or off. This information will help technical support in diagnosing the error.

System Reset
- Press and hold the two top buttons for 5 seconds.
- Continue to hold the two top buttons 5 seconds longer to restart the system.

Purge Cycle

- A Purge Cycle removes standing water from the plumbing and dries the air delivery system. This helps maintain a sanitary plumbing system.
- Once the bath control thinks you're finished using the bath, it schedules a Purge Cycle. The Session Timer LED flashes periodically to indicate that a Purge Cycle will soon begin.
- Certain actions may cancel the planned Purge Cycle. This is normal. Otherwise, after a number of minutes, the 1-minute Purge Cycle will begin. At that point, the Session Timer LED will light continuously.
- When the Purge Cycle ends, all equipment turns off and the Session Timer LED turns off.

4 Button Bath Control User Guide -

Therapy, Options, User Favorite

Therapy

Option 1

Option 2

**User
Favorite**

Power Up
- Upon power up, the LEDs flash as the bath control goes through a self diagnostic check. Once the LEDs stop flashing, your Therapy Session is ready to begin.

Session Timer
- Turning on a device starts a Session Timer that lasts for 20 minutes.

Therapy
Single Speed
- Press the button to turn Therapy On or Off.

Variable Speed
- Press the button once to turn Therapy On or Off.
- Holding the button ramps the speed to high speed, then ramps down to lowest speed. The action then repeats. Release on the desired speed.
- Pressing twice at startup puts Therapy in Wave mode.

Option 1 or 2 can be any one of these
Light (Option 1 only)
- If a light is available, it can be controlled independently of all other features.
- Some lighting options have unique operation for color changes.
- See the manual for any special light system that may be installed.

Massage
- Therapy must be On for Massage to run.
- Press the button once to turn the Massage On. Press it again (repeatedly) to choose different Massage patterns, or to turn the Massage Off.
- When Therapy is turned Off, Massage is turned off automatically.

Waterfall
- A button press turns the Waterfall On or Off.
- Therapy must be On for Waterfall to run.
- When Therapy is turned Off, Waterfall is turned off automatically.

User Favorite
- Used to recall a specific equipment setting.
- When you wish to save an active equipment setting or combination, press and hold the Favorite button for 2 seconds. The Favorite LED will illuminate.
- When you wish to recall your favorite setting, press (do not hold) the Favorite button. Within a second or two, the equipment operation will match what you last saved, and the Favorite LED will illuminate.
- If you then change settings, the Favorite LED will go out (to show that you are no longer using the settings exactly as you saved them).

*Please see reverse
side for more information.*

40937 A   July 29, 2013

LED Definition

Session Timer On
Tells you a device button has been pressed and a Session Timer is running.

Water Level Detected
Tells you adequate water level has been reached to run the system. (Sensor required.)

Favorite Setting On
Tells you that your favorite setting is running.

Error
Tells you that your system needs servicing.
(See Error Codes for Bath Button Displays.)

LED Messages

No Therapy Water Detection (Sensor required)
- If no water is detected:
  a) The water devices all shut down,
  b) The Water Level Detected LED flashes for several seconds before it turns off.

System Error Detection
- If an error occurs in the bath system, the red ERROR LED will flash.
- In addition, the three remaining LEDs stay lit in a specific on/off pattern that reveals a diagnostic code of the error. If this should occur, take note which of the three lights are on or off. This information will help technical support in diagnosing the error.

System Reset
- Press and hold the two top buttons for 5 seconds.
- Continue to hold the two top buttons 5 seconds longer to restart the system.

BALBOA
water group

Error Codes

2 & 6 Button Error Codes

Message 1	Message 2	Message 3	Message 4
Err	E12	no	CFG
Err	E04	no	IbC
Err	E02	no	Ut2
Err	E01	no	Ut1
Err	E05	Ut1	Cnn
Err	E08	IbC	Cnn
Err	E11	Ut	CSU
Err	E09	Ut	tYP
Err	E10	0	CrS
Err	E06	Ut2	Cnn
Err	E07	Ut3	Cnn
Err	E03	no	Ut3

Code	Message	Description
E12 [a]	Reload Configuration Table (No Configuration Table)	The Panel does not have a configuration table loaded
E04 [b]	Missing Blower IBC	The Panel can not communicate with the Blower
E02 [b]	Missing Secondary Box (PVC, VSC)	The Primary Box cannot communicate with the Secondary Box
E01 [b]	Missing Primary Box (PVC, VSC)	The Panel can not communicate with the Primary Box
E05 [c]	Primary Comm lost	The Primary Box has stopped communicating with the Panel
E08 [c]	Blower Comm lost	The Blower has stopped communicating with the Panel
E11 [a]	ROM checksum fail	Checksum error in the Panel program
E09 [a]	Module type error	Module is incorrect type
E10 [a]	No zero-cross interrupts	No zero-cross interrupt
E06 [c]	Secondary Comm lost	The Secondary box has stopped communicating with the Primary
E07 [c]	Expansion Comm lost	The Expansion box has stopped communicating with the Primary
E03 [b]	Missing Expansion box	The Primary box cannot communicate with the Expansion box

Codes, Type of Errors

[a]   Internal, serious errors that should never occur
[b]   Startup errors when a box cannot be located on the IR Link
[c]   Runtime errors when a box stops communicating on the IR Link

Notes:
- Ut stands for Under Tub box.
- IbC stands for Integrated Blower Control -- our blower with the box electronics built in.
- Startup and Runtime errors are communication related and will occur if boxes required by the configuration are missing or communications are lost while running.

4 Button Error Codes
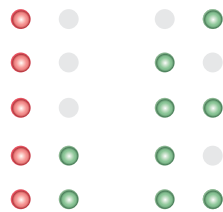
Error Code		Meaning
E01	Error, NoCommunicationIBC	Message #: 1, 7
E02	Error, NoCommunicationPrimary	Message #: 3, 6
E03	Error, NoCommunicationSecondary	Message #: 2
E06	Error, BadPrimaryOrSecondaryBox	Message #: 8, 9, 10, 11 (for Boxes)
E07	Error, BadIBC	Message #: 8, 9, 10, 11 (for Blower)

Code	Message	Description
0	Reload Configuration Table (No Configuration Table)	The configuration table is not downloaded to panel yet
0	Reload Configuration Table (No Active Configuration)	The selected configuration number does not exist in the Active Table
1	Missing Blower IBC	Configuration requires a Blower device (IBC) that does not exist
2	Missing Secondary Box (PVC, VSC)	Configuration requires a secondary device that not exist
3	Missing Primary Box (PVC, VSC)	Configuration requires a primary device that not exist
4	Not Enough Valves	Configuration requires more valves than the boxes can support
5	Swap Boxes	Panel connected to wrong box
6	No Communication Primary	The panel is not receiving messages from the Primary box (PVC, VSC)
7	No Communication IBC	The Panel is not receiving messages from the IBC
8	ROM checksum fail	The power-up ROM self-test has failed
9	Module type error	The module is unable to detect what type it is
10	No zero-cross interrupts	Module is powered but not receiving AC zero-cross signals
11	Secondary comm lost	The Primary is no longer receiving messages from the Secondary
99	Invalid error ID	Unknown error

7/14/14

Titan 6 Button Bath Panel Cut Out Pattern

2.375"

1.25"
(31.75mm)

4.228" (4 7/32")
(107.38mm)

6.375"

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Index of Components (cont.)

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