Spa Touch Control Panel with 2000, 2100 controllers
(Spa Owner's Manual insert)

P.N. 7876B

February 11, 2015

For Spas equipped with BP2000, BP2100 controllers and Spa Touch panel.

Spa Touch Control Panel

User Interface and Programming Reference

The spa Touch menued panel is compatible with all BP systems that support the TP800 and/or the TP900 panels.

If this panel is used with a system that supports only the TP400 and/or TP600, many screens will work correctly, but the spa screen will not display correctly and may not control all of your equipment.
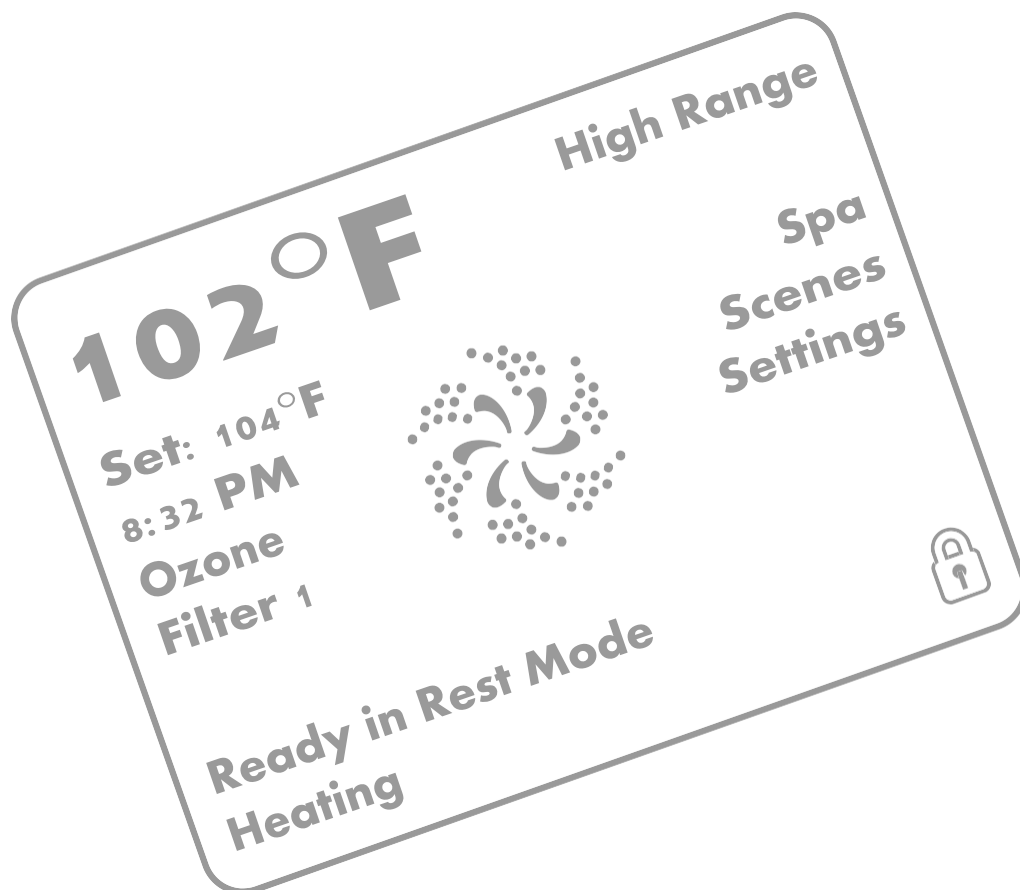
US/Canada. Parts#: PBP2000-P.N.56721, Spa Touch panel-P.N.50390-02

Export. Parts#: PBP2100-P.N.56723, Spa Touch panel-P.N.50390-02

The Main Screen

Spa Status

Important information about spa operation can be seen on the Main Screen.

Most features, including Set Temperature adjustment, can be accessed from this screen.

The actual water temperature and Set Temperature can be seen, and the Set Temperature can be adjusted.
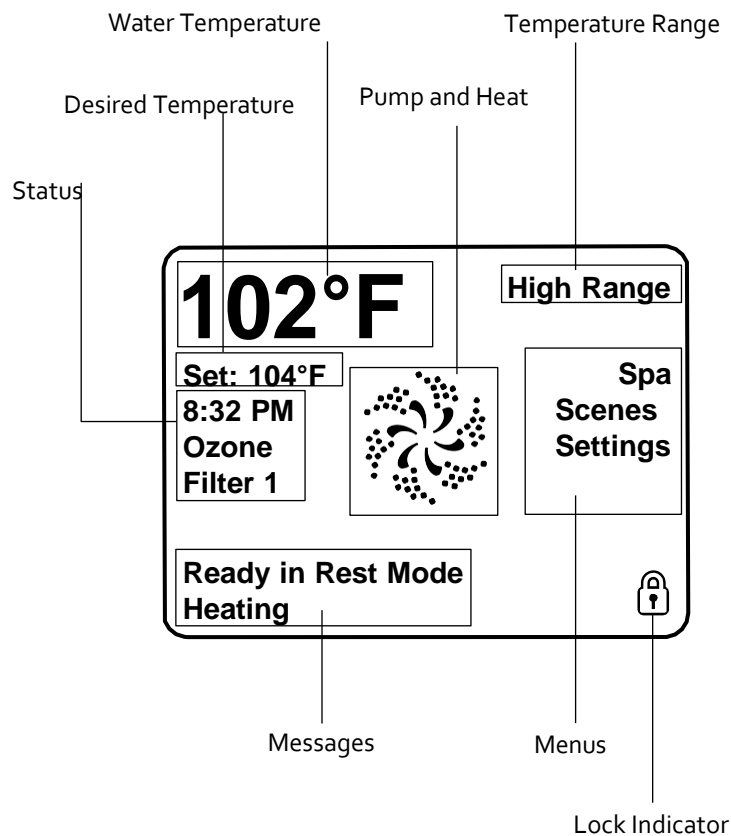
Time-of-Day, Ozone and Filter status is available, along with other messages and alerts.

The selected Temperature Range is indicated in the upper right corner.

The Jets Icon in the center will spin if any pump is running and changes color when the heater is on. A Lock icon is visible if the panel or settings are locked.

The Menu choices on the right can be selected and the screen will change to show more detailed controls or programming functions.

Water Temperature

Temperature Range

Desired Temperature

Pump and Heat

Status

102°F

High Range

Set: 104°F

**8:32 PM
Ozone
Filter 1**

**Spa
Scenes
Settings**

**Ready in Rest Mode
Heating**
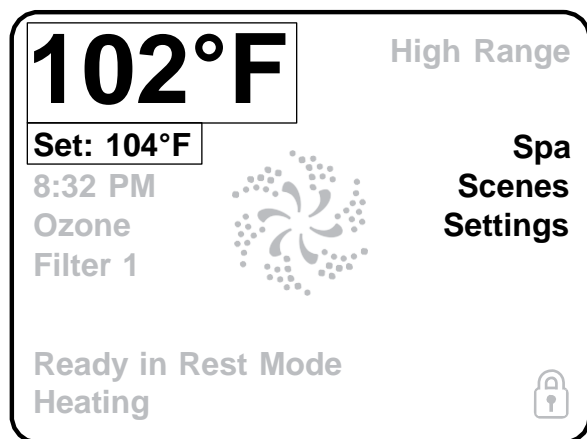
Messages

Menus

Lock Indicator

The Main Screen

Navigation

Navigating the entire menu structure is done by touching the screen. When a

text item is shown in white on the main screen, it is selectable.

The menu selections on the right side of the screen can be selected. Select one of these to enter different screen with additional controls.

Most menu screens time out and revert to the main screen after 30 seconds of no activity.

```
┌─────────────────────────────────┐
│  ┌──────────┐                    │
│  │ 102°F    │      High Range    │
│  └──────────┘                    │
│  ┌──────────┐                    │
│  │ Set: 104°F│           Spa     │
│  └──────────┘          Scenes    │
│   8:32 PM             Settings   │
│   Ozone                          │
│   Filter 1                       │
│                                  │
│   Ready in Rest Mode             │
│   Heating               🔒       │
└─────────────────────────────────┘
```

The only item that can be changed on the left side of the Main Screen is the Set Temperature. Touch either the set temperature line or the water temperature to go to the Set Temperature screen. See next page.

Messages

At the bottom of the screen, messages may appear at various times. Some of these messages must be dismissed by the user.

The Set Temperature Screen

Set Temperature

Set:

101°F

Inc

Dec
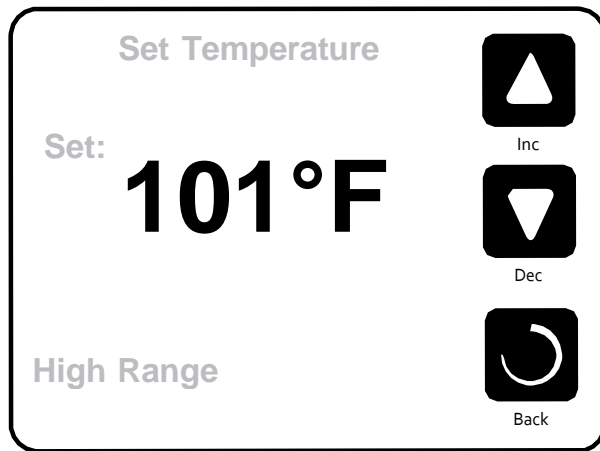
Back

High Range

Set Temperature

Press Inc. or Dec. to modify the Set Temperature. The Set Temperature changes immediately. Press Back to return to the Main Screen.

If you need to switch between high range and low range you need to go to the Settings Screen (Menu).

Press-and-Hold

If the Up or Down button is pressed and held, the temperature will continue to change until the button is released, or the Temperature Range limits are reached.

The Spa Screen

All Equipment Access

The Spa Screen shows all available equipment to control, as well as other features, like Invert. The display shows icons that are related to the equipment installed on a particular spa model, so this screen may change depending on the installation.

The icon buttons are used to select and control individual devices.

Some devices, like pumps, may have more than one ON state, so the icon will change to reflect the state that the equipment is in. Below are some examples of 2-speed Pump indicators.

Jets Off   Jets Low   Jets High

Your Spa has a 24 hour Circ Pump, a Circ Pump Icon will appear to indicate its activity, but outside of Priming Mode, the Circ Pump cannot be controlled directly.

NOTE: The icon for the pump that is associated with the heater (Circ or P1 Low) will have a red glow in the center when the heater is running. It is the Circ pump for your spa.

Back   Jets 1   Jets 2   Jets 3   Light

Invert

Ready in Rest Mode
Heating
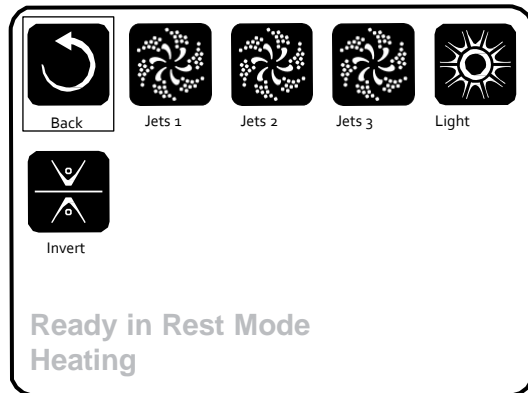
Common Buttons

Exiting Screens

When you see <u>both</u> of these buttons, whether they are labeled or not, they always mean Save and Cancel. They appear on most editing screens once you have changed the value on that screen.

Save

Save

Cancel

Cancel

Save

Save
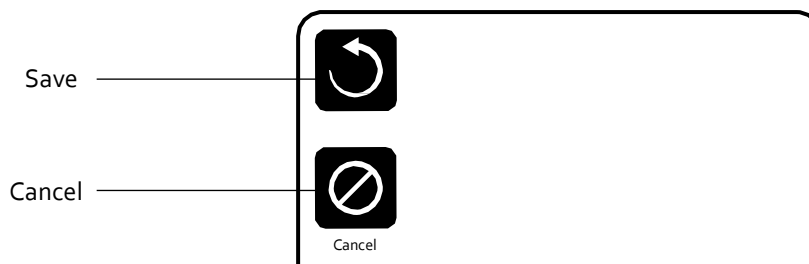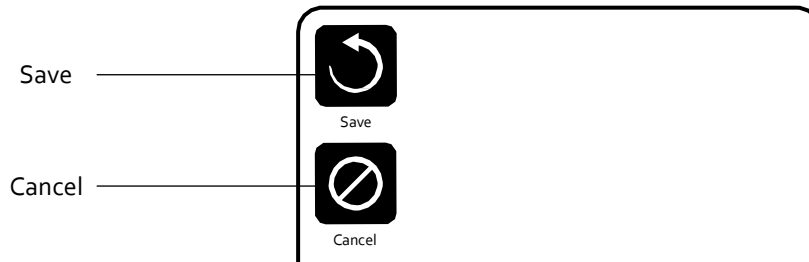
Cancel

Cancel

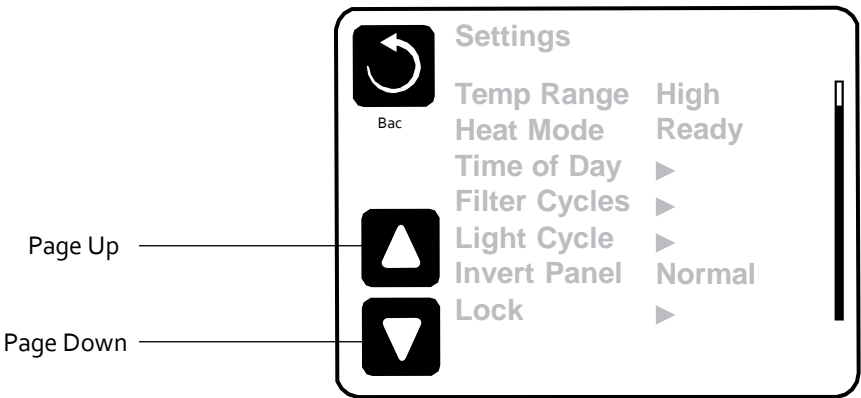If the screen times out due to no activity it will act like Cancel.

When you see <u>only</u> this button, whether it is labeled or not, it means Back or Exit. It appears on editing screens before you have changed any value, as well as on all other screens.

Back

Bac

Back

Common Buttons

Page Up/Down

If an Up or Down button is shown and pressed when in a Menu List, the list can be scrolled a page at a time. The scroll bar on the right side of the screen indicates the relative position of the page.

Bac

Settings

Temp Range   High
Heat Mode   Ready
Time of Day ▶
Filter Cycles ▶
Light Cycle ▶
Invert Panel Normal
Lock   ▶

Page Up

Page Down

Values Increment/Decrement

If an Up or Down button is shown and pressed when on an editing page, and a value has been selected (highlighted), the value can be incremented by pressing the up arrow or decremented by pressing the down arrow.

Selected Value

Time of Day

10:05 PM   12 HR
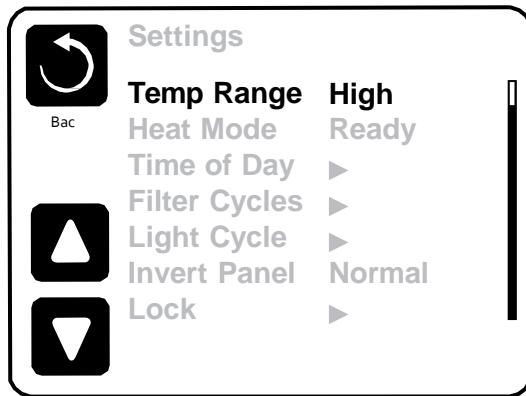
Save

Cancel

Increment

Decrement
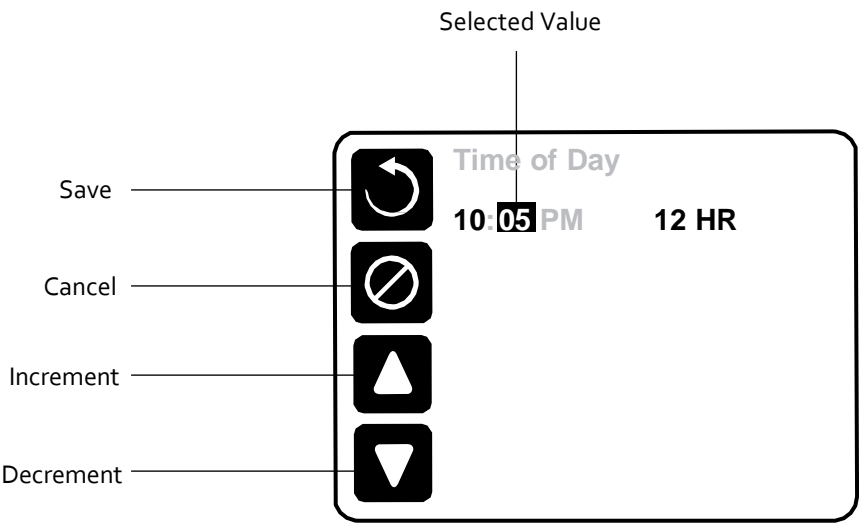
The Settings Screen

Programming, Etc.

The Settings Screen is where all programming and other spa behaviors are controlled.

This screen has several features that can be acted on directly. These features may include Temp Range, Heat Mode, Hold, and Invert Panel. When one of these items is selected, it will toggle between two settings.

All other menu items (with an arrow pointing to the right) go to another level in the menu.

Settings	
Temp Range	**High**
Heat Mode	Ready
Time of Day	▶
Filter Cycles	▶
Light Cycle	▶
Invert Panel	Normal
Lock	▶

Bac

Dual Temperature Ranges (High vs. Low)

This system incorporates two temperature range settings with independent set temperatures. The specific range can be selected on the Settings screen and is visible on the Main Screen in the upper right corner of the display.

These ranges can be used for various reasons, with a common use being a "ready to use" setting vs. a "vacation" setting. Each range maintains its own set temperature as programmed by the user. This way, when a range is chosen, the spa will heat to the set temperature associated with that range.

High Range can be set between 80°F and 104°F.

High Range default Temp. 100°F.

Low Range can be set between 50°F and 99°F.

Low Range default Temp. 70°F.

Freeze Protection is active in either range.

Freeze Threshold is 44°F (7°C).

Freeze Type is rotating with pumps at lowest speed.
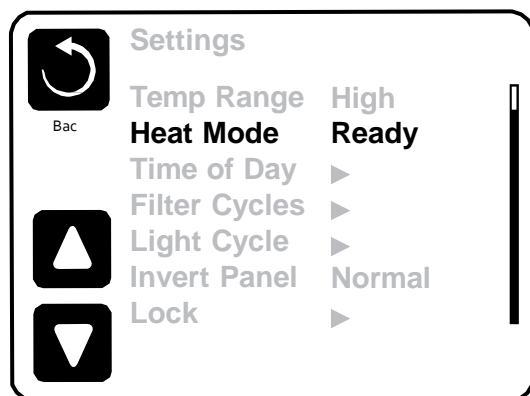
The Settings Screen

Heat Mode – Ready vs. Rest

In order for the spa to heat, a pump needs to circulate water through the heater. The pump that performs this function is known as the "heater pump".

The heater pump can be either a 2-speed pump (Pump 1) or a circulation pump.

Your spa equipped with 24-hours circulation pump and circ. pump is the heater pump. In Ready mode the circ. pump will circulate water continuously in order to maintain a constant water temperature, heat as needed.

In Rest Mode, the spa will only heat during programmed filter cycles, even though the water is being filtered constantly when in 24-hour circulation mode.

	Settings	
↺ Bac	Temp Range	High
	Heat Mode	**Ready**
	Time of Day	▶
▲	Filter Cycles	▶
	Light Cycle	▶
▼	Invert Panel	Normal
	Lock	▶

Ready-in-Rest Mode

Ready in Rest Mode appears in the display if the spa is in Rest Mode and the Jets 1 Button is pressed. After 1 hour, the System will revert to Rest Mode. This mode can also be reset by entering the Settings Menu and selecting the Heat Mode line.

Operational Checking Your Spa

Preparation, Filling and Energizing Hot Tub Equipment

Fill the spa to its correct operating level. Be sure to open all valves and jets in the plumbing system before filling to allow as much air as possible to escape from the plumbing and the control system during the filling process.

Before applying voltage to power up your spa, it is very important that you understand the sequence of events that occur when system is activated in order that pumps can be primed efficiently and damage can be avoided. Turn on the GFCI breaker and test the GFCI breaker, by pushing the small "Test" button. This should automatically trip the spa's GFCI. If this breaker does not trip, immediately call your electrician. Do not use your spa! Only if pushing "Test" button trips GFCI should you reset the breaker and proceed next step. After turning the power on at the main power panel, the top-side panel will display a splash screen or startup screen.

Priming Mode – M019*

After the initial start-up sequence, the control will enter Priming Mode and display a Priming Mode screen. Only pump icons appear on the priming mode screen. During the priming mode, the heater is disabled to allow the priming process to be completed without the possibility of energizing the heater under low-flow or no-flow conditions. Nothing comes on auto-matically, but the pump(s) can be energized by selecting the "Jet" buttons. If the spa has a Circ Pump, it can be turned on and off pressing the "Circ Pump" button during Priming Mode only.

Priming the Pumps

As soon as the Priming Mode screen appears on the panel, select the "Jets 1" button once to start Pump 1 in low-speed and then again to switch to high-speed. Also, select the other pumps, to turn them on. The pumps should be running in high-speed to facilitate priming. If the pumps have not primed after 2 minutes, and water is not flowing from the jets in the spa, do not allow the pumps to continue to run.
Turn off the pumps and repeat the process. Note: Turning the power off and back on again will initiate a new pump priming session. Sometimes momentarily turning the pump off and on will help it to prime. Do not do this more than 5 times. If the pump(s) will not prime, shut off the power to the spa and call for service.
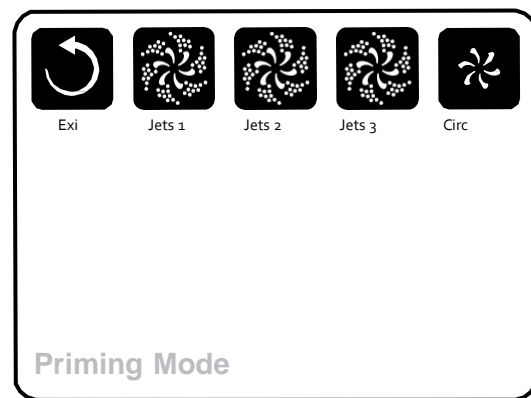
Important: A pump should not be allowed to run without priming for more than 2 minutes. Under NO circumstances should a pump be allowed to run without priming beyond the end of the 4-5 minute priming mode. Doing so may cause damage to the pump and cause the system to energize the heater and go into an overheat condition.

Exiting Priming Mode

The system will automatically enter the normal heating and filtering at the end of the priming mode, which lasts 4-5 minutes.

You can manually exit Priming Mode by pressing the "Exit" button on the Priming Mode Screen. Note that if you do not manually exit the priming mode as described above, the priming mode will be automatically terminated after 4-5 minutes. Be sure that the pump(s) have been primed by this time.

Once the system has exited Priming Mode, the top-side panel will display the Main Screen, but the display will not show the temperature yet, as shown below. This is because the system requires approximately 1 minute of water flowing through the heater to determine the water temperature and display it.

– – –°F   – – –°C

*MoXX is a Message Code.

Spa Operation

Pumps

On the Spa Screen, select a "Jets 1", "Jets2", "Jets 3" button (if equipped) once to turn the pump on or o ff, and to shift between low and high speed for two speed pumps or turn the pump on and off for single speed pump.. If left runni ng, the pump will turn off after time- out period.

A button "Stir" press turning all swim jets on (typically J2, J3, J4) for 20 minutes(only for swim spas).

Your spa (swim spa) equipped with 24-hour circulation pump. 24-hour circulation pump runs continuously.

Filtration and Ozone

On your spa the circulation pump and the ozone generator will run continuously during 24-hours. Ozone will generally run with the circ pump, but can be limited (if ozone suppression mode is ON).

To have additional water filtration and sanitation second filter (filter 2) added to spa plumbing system. The Pump 1 in low speed is factory-programmed with two filter cycles that will run twice per day (start 8:00AM and 8:00PM), duration is 2 hours. The filter time and duration are programmable. A second filter cycle can be enabled as needed. Minimum filtration time Pump 1 is 15 minutes per day.

At the start of each filter cycle, the water devices like blower (if exist) and other pumps will run briefly to purge the plumbing to maintain good water quality. Blower for 30 seconds, pumps for 60seconds.

Freeze Protection

If the temperature sensors within the heater detect a low enough temperature (44°F/7°C), then the pump(s), the blower (if equipped) automatically activate to provide freeze protection. The water devices will run either continuously or periodically depending on conditions. Pumps will run on lowest speed.

In colder climates, an optional freeze sensor may be added to protect against freeze conditions that may not be sensed by the standard sensors. Auxiliary freeze sensor protection acts similarly except with the temperature thresholds determined by the switch. Talk with your dealer for details.

Clean-up Cycle (optional)

When any pump or blower is turned on by a button press, a clean-up cycle begins 30 minutes after the pump or blower is turned off or times out. The pump and the ozone generator will run for 30 minutes or more, depending on the system. On some systems, you can change this setting.

Time-of-Day

Be sure to set the Time-of-Day

Setting the time-of-day is important for determining filtration times and other background features. "Set Time"

will appear on the display if no time-of-day is set in the memory.

On the Settings Screen, select the Time-of-Day line. On the Time-of-Day screen, simply select the Hour, Minutes, and 12/24 Hour segments. Use the Up and Down Buttons to make changes.

Time of Day

**12 : 00 PM   12 HR**
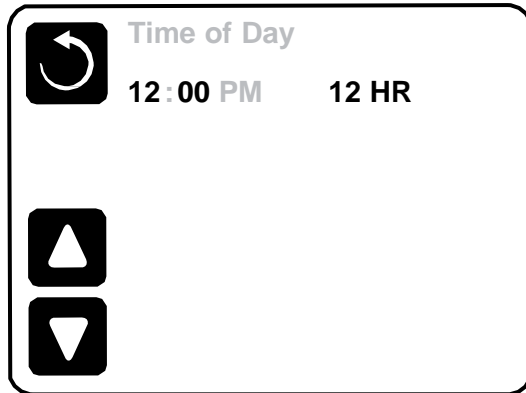
Note:

If power is interrupted to the system, Time-of-Day will be maintained for several days for PBP20 and PBP21 controllers only.

Adjusting Filtration

Your spa was manufactured with 24-hour Circ Pump. Additionally your spa has Pump 1(Low) with optional programmable filter cycles. Default the optional Pump 1(Low speed) filtration set for 2 hours, twice per day.

Optional Pump1 (Low) Filtration.

Using the same adjustment as Setting the Time, Filter Cycles are set using a start time and a duration. Each setting can be adjusted in 15-minute increments. The panel calculates the end time and displays it automatically.
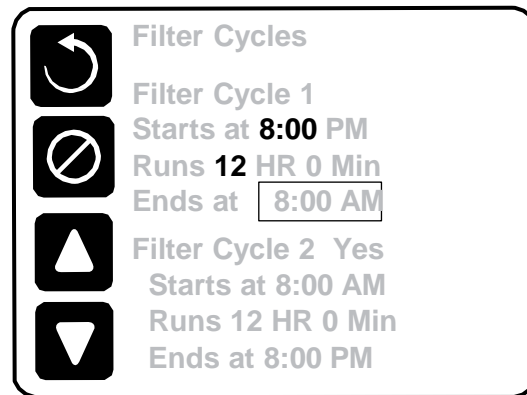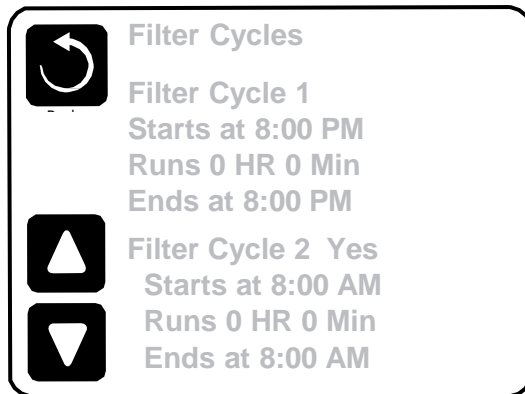
Filter Cycle 2 - Optional Filtration

Filter Cycle 2 is ON by default. This displays as "Yes". When Filter Cycle 2 is OFF it displays as "NO".

Press "Yes" or "No" to toggle Filter Cycle 2 ON or OFF. When Filter Cycle 2 is ON, it can be adjusted in the same manner as Filter Cycle 1. By Default Start time Filter Cycle 1 is 8:00PM and Filter Cycle 2 is 8:00AM and durations are 12HRs.

It is possible to overlap Filter Cycle 1 and Filter Cycle 2, which will shorten overall filtration by the overlap amount.

It is possible to disable optional filter cycle turning Filter Cycle 2 to OFF and set Run time for Filter cycle 1 to 0 HR and 15 Min. 15 min minimum Pump 1(Low) running time is absolutely necessary to purge the plumbing line of Pump to maintain good water quality in pump 1 plumbing lines even if the spa does not used

 Purge cycles (1 minute for pumps and 30 seconds for blower if equipped)) will start in same manner at beginning of each filter cycle.

Purge Cycles

In order to maintain sanitary conditions, as well as protect against freezing, secondary water devices will purge water from their respective plumbing by running briefly at the beginning of each filter cycle.

The Meaning of Filter Cycles

1. The heating pump always runs during the filter cycle

2. In Rest Mode, heating only occurs during the filter cycle

3. Purges happen at the start of each filter cycle

Additional Settings

Light Cycle Option

If Light Cycle does not appear in the Settings Menu, the Light Timer feature is not enabled.

When available, the Light Timer is OFF by default.

The settings can be edited the same way that Filter Cycles are edited.

Light Cycle

↺

Bac

Enabled   No
Starts at 12:00 AM
Runs 0 HR 0 Min
Ends at 12:00 AM
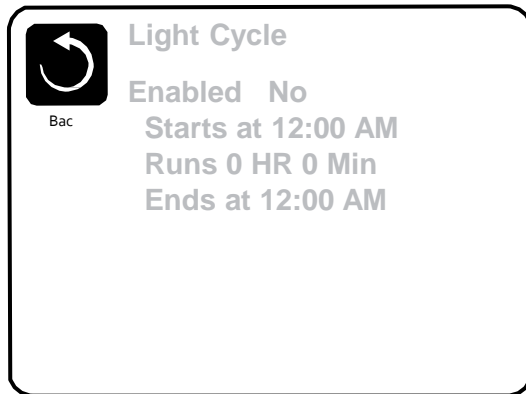
Invert Panel

Selecting Invert Panel will flip the display and the buttons so the panel can be easily operated from inside or outside the hot tub.

Auxiliary Panel(s). (If equipped).

Specific Buttons for Specific Devices

If the spa (swim spa) has an Auxiliary Panel(s) installed, pressing buttons on that panel will activate the device indicated for that button (Jets 1, Light).

These dedicated buttons will operate just like the Spa Screen buttons and the equipment will behave in the same manner with each button press.

Restricting Operation

Lock	
Settings	**Off**
Panel	Off

Bac

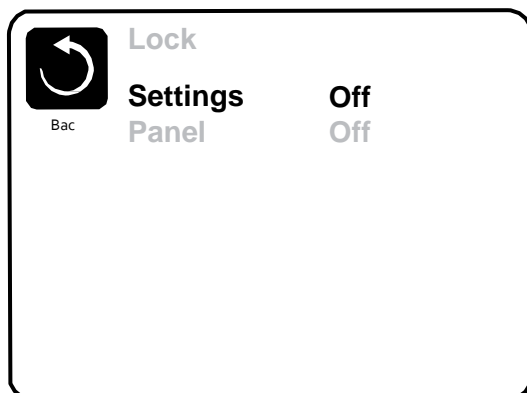The control can be restricted to prevent unwanted use or temperature adjustments.

Locking the Panel prevents the controller from being used, but all automatic functions are still active.

Locking the Settings allows Jets and other features to be used, but the Set Temperature and other programmed settings cannot be adjusted.

Settings Lock allows access to a reduced selection of menu items. These include Filter Cycles, Invert, Information and Fault Log. They can be seen, but not changed or edited.

Settings Locked

102°F	High Range
Set: 104°F	**Spa**
8:32 PM	**Scenes**
Ozone	**Settings**
Filter 1	
Ready in Rest Mode	
Heating	

Panel Locked

102°F	High Range
Set: 104°F	**Unlock**
8:32 PM	
Ozone	
Filter 1	
Ready in Rest Mode	
Heating	

Unlocking

Lock	
Settings	Off
Panel	**On**

Bac

To unlock either Settings or Panel first select Settings (if it says "On") or Panel (if it says "On"), than press in the middle of the screen for at least 5 seconds.
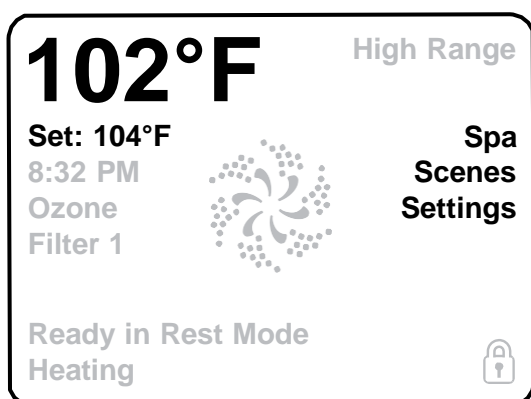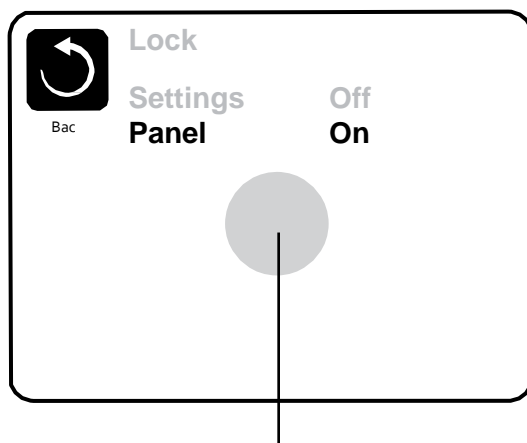
Press here for
5 seconds to
unlock

Scenes

What are Scenes?

Scenes are stored combinations of equipment states. For example if you want to have Pump 1 at high speed, Pump 2 at high speed, Pump 3 at high speed and the Light ON, you could store that in a Scene and recall this combination at any time.

Storing a Scene

Press a Scene number and hold until "Scene stored" appears at the bottom of the screen to save the current equipment combination.

Scenes
Scene 1
Back
Scene 2
Scene 3
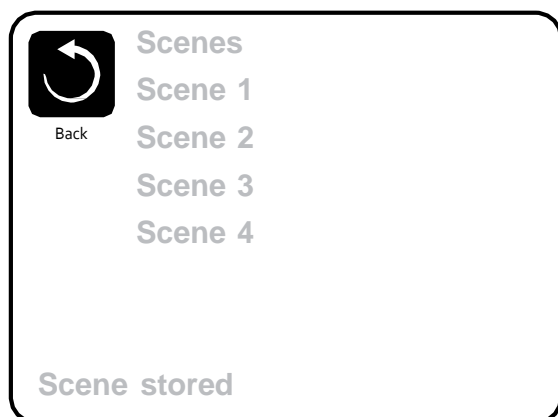Scene 4

Scene stored ——————————————— This appears once the Scene has been stored

Recalling a Scene

To recall a Scene simply press a Scene number.

Pressing any Scene line which has not yet been stored will simply turn off all spa devices.

Scenes
Scene 1
Back
Scene 2
Scene 3
Scene 4

Scene stored

Additional Settings

Hold Mode - M037*

Hold Mode is used to disable the pumps during service functions like cleaning or replacing the filter. Hold Mode will last for 1 hour unless the mode is exited manually. If spa service will require more than an hour, it may be best to simply shut down power to the spa.

Drain Mode (Disabled)

Some spas have a special feature that allows Circ. pump or Pump 1 to be employed when draining the water. When available, this feature is a component of Hold Mode.

Utilities

The Utilities Menu contains the following:

A/B Temps

When this is set to On, the main screen will display sensor A and sensor B temperatures simultaneously. Sensor A is at the opposite end of the heater from sensor B. Can used for Troubleshooting.

Demo Mode (Disabled)

Demo Mode is not always enabled, so it may not appear. This is designed to operate several devices in a sequence in order to demonstrate the various features of a particular hot tub.

Fault Log

The Fault Log is a record of the last 24 faults that can be reviewed by a service tech.

Use the Up and Down buttons to view each of the Faults.

When Priming Mode shows in the Fault Log, it is not a fault. Rather, it is used to keep track of spa restarts.

Fault Log

Entry **2**
  Message Code M026
   1 Days Ago   2:21PM
  Rest Mode
  High Range
  Set Temp 104°F
  Sensors: A: 100   B: 96
Message:
Sensors are out of sync

GFCI Test
(Feature not available on CE rated systems.)

Your system configured with:

Manual GFCI Trip test is enabled but automatic GFCI test is not enabled.

GFCI Test will not appear on the screen if it is not enabled. This screen allows the GFCI to be tested manually from the panel and can be used to reset the automatic test feature.

*MoXX is a Message Code. Codes like this will be seen in the Fault Log

Additional Settings

Preferences

The Preferences Menu allows the user to change certain parameters based on personal preference.

Temp Display

Change the temperature between Fahrenheit and Celsius.

Time Display

Change the clock between 12 hr and 24 hr display.

Reminders

Turn the reminder messages (like "Clean Filter") On or Off.

Cleanup

Cleanup Cycle Duration is not always enabled, so it may not appear. When it is available, set the length of time Pump 1 will run after each use. 0-4 hours are available.

Dolphin II and Dolphin III (Applies to RF Dolphin only)

When set to 0, no addressing is used. Use this setting for a Dolphin II or Dolphin III which is factory set for no address by default. When set between 1 and 7, the number is the address (See the Dolphin manual for details.)

Color

Selecting Color will cycle through 5 background colors available in the control.

Language

Change the language displayed on the panel.
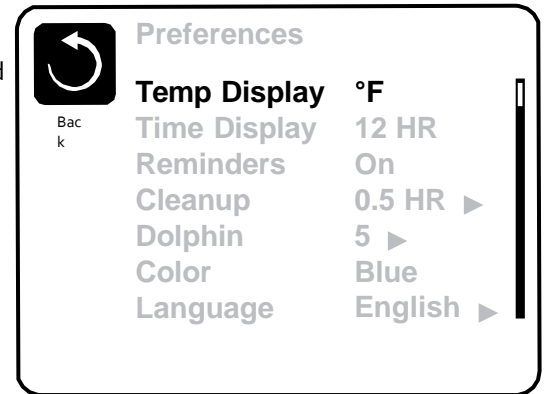
Information

System Information

The System Information Menu displays various settings and identification of the particular system. As each item in the menu is selected, the detail for that item is displayed at the bottom of the screen.

Software ID (SSID)

Displays the software ID number for the System.

System Model

Displays the Model Number of the System.

Current Setup

Displays the currently selected Configuration Setup Number.

Configuration Signature

Displays the checksum for the system configuration file.

Heater Voltage (Feature not used on CE rated systems.)

Displays the operating voltage configured for the heater.

Heater Wattage as Configured in Software (CE Systems Only.)

Displays a heater kilowatt rating as programmed into the control system software (1-3 or 3-6).

Heater Type

Displays a heater type ID number.

Dip Switch Settings

Displays a number that represents the DIP switch positions of S1 on the main circuit board.

Panel Version

Displays a number of the software in the topside control panel.

Utilities – GFCI Test Feature

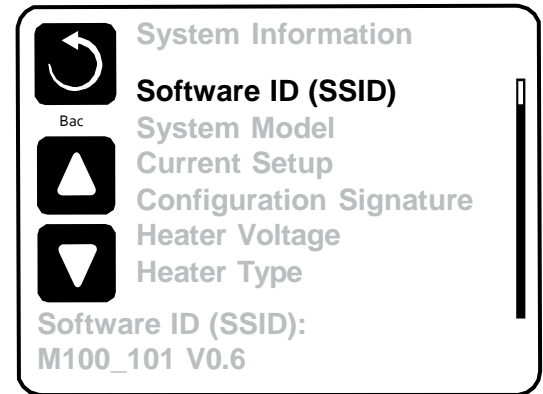The Ground Fault Circuit Interrupter (GFCI) or Residual Current Detector (RCD) is an important safety device and is required equipment on a hot tub installation.
(The GFCI Test Feature is not available on CE rated systems.

GFCI Status - Passed

Test
Reset

Used for verifying a proper installation

Your spa may be equipped with a GFCI Protection feature. If your spa has this feature enabled by the manufacturer, the GFCI Trip Test must occur to allow proper spa function.

On your spa this option is disabled..
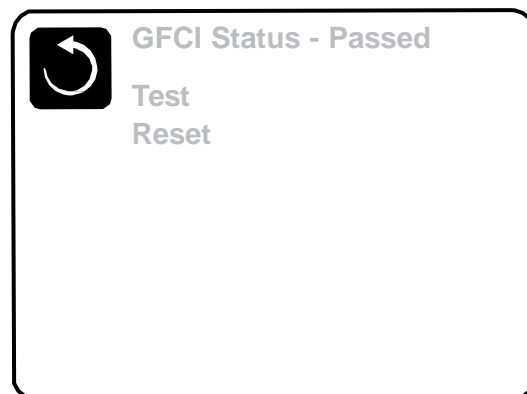
Forcing the GFCI Trip Test (North America Only). Enable for Your Spa

The installer can cause the GFCI Trip Test to occur sooner by initiating it using the above menu.

The GFCI should trip within several seconds and the spa should shut down. If it does not, shut down the power and manually verify that a GFCI breaker is installed and that the circuit and spa are wired correctly. Verify the function of the GFCI with its own test button. Restore power to the spa and repeat the GFCI Trip Test.

Once the GFCI is tripped by the test, reset the GFCI and the spa will operate normally from that point. You can verify a successful test by navigating to the above menu. "Passed" should appear after the Reset line is selected on the GFCI screen.

Warning:

The end-user must be trained how to properly reset the GFCI.

 If freezing conditions exist, the GFCI or RCD should be reset immediately or spa damage could result.

CE Product:

CE registered systems do not have an RCD Test Feature due to the nature of the electrical service..

The end-user must be trained how to properly test and reset the RCD.

General Messages

Most messages and alerts will appear at the bottom of the normally used screens.
Several alerts and messages may be displayed in a sequence.

– – –°F   – – –°C

Water Temperature is Unknown

After the pump has been running for 1 minute, the temperature will be displayed.

Possible freezing condition

A potential freeze condition has been detected, or the Aux Freeze Switch has closed. All water devices are activated.

In some cases, pumps may turn on and off and the heater may operate during Freeze Protection.

This is an operational message, not an error indication.

The water is too hot – M029*

The system has detected a spa water temp of 110°F (43.3°C) or more, and spa functions are disabled. System will auto reset when the spa water temp is below 108°F (42.2°C). Check for extended pump operation or high ambient temp.

Heater-Related Messages

The water flow is low – M016**

There may not be enough water flow through the heater to carry the heat away from the heating element. Heater start up will begin again after about 1 min. See "Flow Related Checks" below.

The water flow has failed* – M017**

There is not enough water flow through the heater to carry the heat away from the heating element and the heater has been disabled. See "Flow Related Checks" below. After the problem has been resolved, reset the message*.

The heater may be dry* – M028**

Possible dry heater, or not enough water in the heater to start it. The spa is shut down for 15 min. Reset this message* to reset the heater start-up. See "Flow Related Checks" below.

The heater is dry* – M027**

There is not enough water in the heater to start it. The spa is shut down. After the problem has been resolved, you must reset the message* to restart heater start up. See "Flow Related Checks" below.

The heater is too hot* – M030**

One of the water temp sensors has detected 118°f (47.8°C) in the heater and the spa is shut down. You must reset the message* when water is below 108°f (42.2°C). See "Flow Related Checks" below.

Flow-Related Checks

Check for low water level, suction flow restrictions, closed valves, trapped air, too many closed jets and pumps prime.

On some systems, even when spa is shut down by an error condition, some equipment may occasionally turn on to continue monitoring temperature or if freeze protection is needed.

* **Some messages can be reset from the panel.** Messages that can be reset will appear with a "right arrow" at the end of the message. Press the message text to reset the message.

**MoXX is a Message Code. Codes like this will be seen in the Fault Log

Clean the filter ▶

Sensor-Related Messages

Sensors are out of sync – M015**

The temperature sensors MAY be out of sync by 3°F. Call for Service.

Sensors are out of sync -- Call for service* – M026**

The temperature sensors ARE out of sync. The fault above has been established for at least 1 hour.
Call for Service.

Sensor A Fault, Senor B Fault – Sensor A: M031**, Sensor B: M032**

A temperature sensor or sensor circuit has failed. Call for Service.

Miscellaneous Messages

Communications error

The control panel is not receiving communication from the System. Call for Service.

Test software installed

The Control System is operating with test software. Call for Service.

°F or °C is replaced by °T

The Control System is in Test Mode. Call for Service.

System-Related Messages

Program memory failure* – M022**

At Power-Up, the system has failed the Program Checksum Test. This indicates a problem with the firmware (operation program) and requires a service call.

The settings have been reset (Persistent Memory Error)* – M021**

Contact your service if this message appears on more than one power-up.

The clock has failed* – M020**

Contact your service.

Configuration error (Spa will not Start Up)

Contact your service.

The GFCI test failed (System Could Not Test the GFCI)– M036**

(North America Only) May indicate an unsafe installation. Contact your service.

A pump may be stuck on – M034**

Water may be overheated. POWER DOWN TO THE SPA. DO NOT ENTER THE WATER. Contact your service.

Hot fault – M035**

A Pump Appears to have been Stuck ON when spa was last powered
POWER DOWN TO THE SPA. DO NOT ENTER THE WATER. Contact your service.

Reminder Messages

General maintenance helps.

Reminder Messages can be suppressed by using the Preferences Menu.

Reminder Messages can be chosen by the Manufacturer. They may be disabled entirely, or there may be a limited number of reminders on a specific model. The frequency of each reminder (i.e. 7 days) can be specified by the Manufacturer.

Press a Temperature button to reset a displayed reminder message.

Check the pH

May appear on a regular schedule, i.e. every 7 days. (Disabled)

Check pH with a test kit and adjust pH with the appropriate chemicals.

Check the sanitizer

May appear on a regular schedule, i.e. every 7 days. (Disabled)

Check sanitizer level and other water chemistry with a test kit and adjust with the appropriate chemicals.

Clean the filter

May appear on a regular schedule, i.e. every 30 days.

Clean the filter media as instructed by the manufacturer.

Additional messages may appear on specific systems.

Reminder messages can be reset from the panel. Messages that can be reset will appear with a "right arrow" at the end of the message. Press the message text to reset the message.

Clean the filter ▶

Reminder Messages

Test the GFCI (or RCD)

May appear on a regular schedule, i.e. every 65 days.

The GFCI or RCD is an important safety device and must be tested on a regular basis to verify its reliability.

Every user should be trained to safely test the GFCI or RCD associated with the hot tub installation.

A GFCI or RCD will have a TEST and RESET button on it that allows a user to verify proper function.

Change the water

May appear on a regular schedule, i.e. every 100 days.

Change the water in the spa on regular basis to maintain proper chemical balance and sanitary conditions.

Clean the cover

May appear on a regular schedule, i.e. every 180 days. (Disabled).

Vinyl covers should be cleaned and conditioned for maximum life.

Treat the wood

May appear on a regular schedule, i.e. every 180 days. (Disabled).

Wood skirting and furniture should be cleaned and conditioned per the manufacturers instructions for maximum life.

Change the filter

May appear on a regular schedule, i.e. every 365 days.

Filters should be replaced occasionally to maintain proper spa function and sanitary conditions.

Additional messages may appear on specific systems.

Reminder messages can be reset from the panel. Messages that can be reset will appear with a "right arrow" at the end of the message. Press the message text to reset the message.

Clean the filter ▶

PBP20X   PN 56721
02-10-15

PART A

TP (MAIN) PANELS
J34 OR J35

AUX
J5 (A1–A4)
J8 (A5–A8)

WIFI TRANSCEIVER
J34 OR J35

IR RECEIVER
OR
RF RECEIVER

LOCATION	DEVICE	VOLTS	AMPS	FROM	TO	FROM	TO
J1 ON RT EXPANDER	1 SPD PUMP3	240V	12A MAX+	W1 ON EXPANDER	GROUP 2 J1	J6 ON EXPANDER	GROUP 3 J53
	PUMP3+ 1 SPD PUMP 4/ BLOWER		12A MAX?			J8 ON EXPANDER	GROUP 3 J58

FOR 12A PUMPS, X-P3322
MUST BE USED.
DO NOT USE X-P332 (WHICH
LACKS THE J8 CONNECTOR).
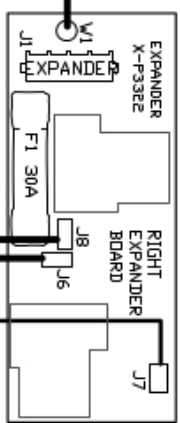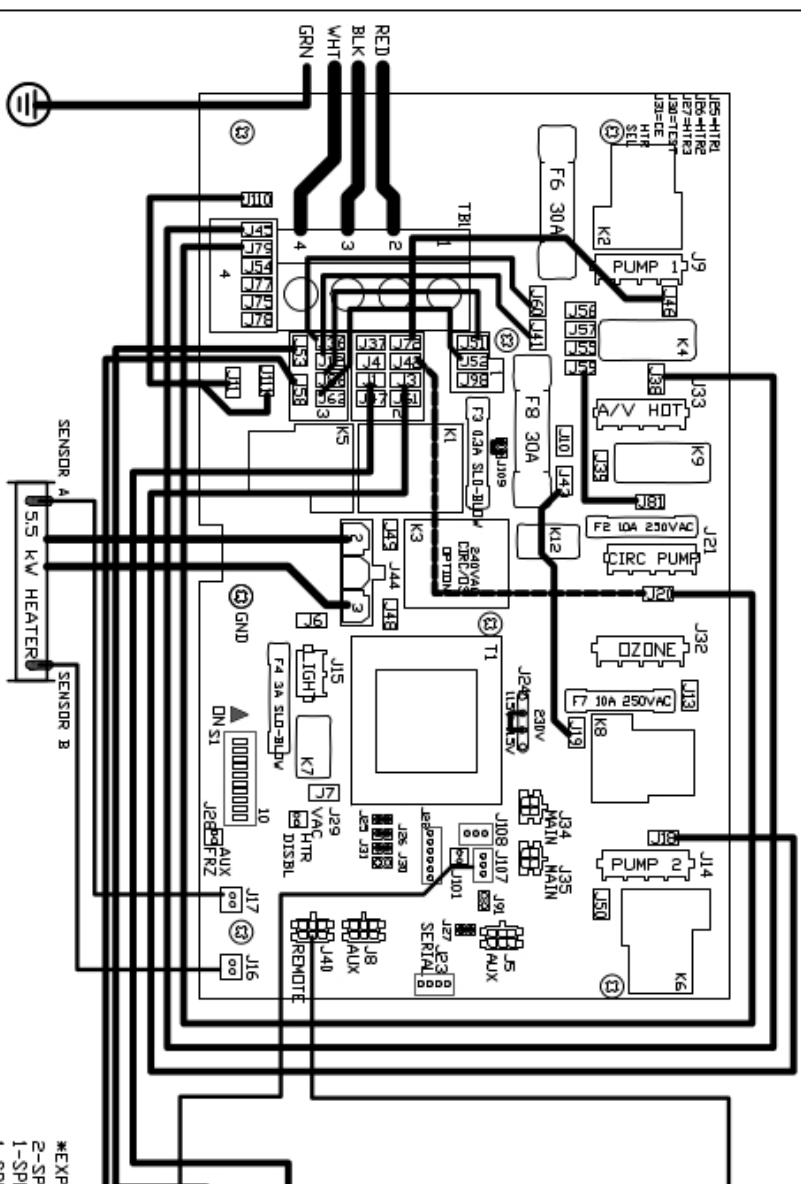
*EXPANDER IS:
2-SPEED PUMP 3 IN SETUPS 1 & 6
1-SPEED PUMP 3 IN SETUPS 3 & 8
1-SPEED PUMP 3 + 1-SPEED PUMP 4 (WITH SPLITTER) IN SETUPS 2 & 7
1-SPEED PUMP 3 AND 1-SPEED BLOWER (WITH SPLITTER & IN-LINE FUSE)
  IN SETUPS 3 & 8
1-SPEED PUMP 3 IN SETUPS 4 & 9
UNUSED IN SETUPS 5 & 10

EXPANDER
X-P3322

RIGHT
EXPANDER
BOARD

J1   W1   EXPANDER   F1 30A   J8   J6   J7

SENSOR A
5.5 kW HEATER
SENSOR B

RED
BLK
WHT
GRN

PUMP 1   J9   K2
F6 30A
K4
A/V HOT   K9   J33
CIRC PUMP   J21   K12
F2 10A 250VAC
OZONE   J32
PUMP 2   J14   K6

5.5 kW HEATER
240VAC
CIRC/OS
OPTION
K3   K1

F8 30A
F3 0.3A SLO-BLO
F7 10A 250VAC

LIGHT
F4 3A SLO-BLO
VAC
HTR DISBL
AUX
FRZ
REMOTE
SERIAL
AUX
MAIN
MAIN

HTR
SEL
HTR TEST

ON S1
GND

Settings

LOCATION	DEVICE	VOLTS	MAX AMPS	FROM	TO
J9	PUMP 1	240V	12A MAX	J45	J72–GROUP 2
J14	PUMP 2	240V	12A MAX	J18	J3–GROUP 2
	PUMP 2 LINE 1 CONNECTION			J19	J43–GROUP2
J15	SPA LIGHT	12V	1A		
J21	CIRC PUMP	240V*	2A MAX	J20	J42–GROUP2
J32	OZONE		1A		
	CIRC AND OZONE LINE 1 CONNECTION JB1			J5B	
J33	TV / AV	120V	3A	J3B	
J44	HEATER	240V	5.5 kW		J45–GROUP 4

* FOR 120V CIRC PUMP AND OZONE, CONNECT J20 TO J79 (IN GROUP 4)

SETUP #	CIRC PUMP	PUMP 1	PUMP 2	PUMP 3	PUMP 4	BLOWER	TEMP SCALE
1	24HR	2-SPEED	2-SPEED	2-SPEED	NONE	NONE	F
2	24HR	2-SPEED	1-SPEED	1-SPEED	1-SPEED	NONE	F
3	24HR	2-SPEED	1-SPEED	NONE	NONE	NONE	F
4	24HR	2-SPEED	2-SPEED	NONE	NONE	NONE	F
5	24HR	2-SPEED	1-SPEED	1-SPEED	NONE	NONE	F
6	24HR/3F	2-SPEED	2-SPEED	NONE	NONE	NONE	F
7	24HR/3F	2-SPEED	1-SPEED	NONE	NONE	NONE	F
8	24HR/3F	2-SPEED	1-SPEED	1-SPEED	NONE	NONE	F
9	24HR/3F	2-SPEED	1-SPEED	1-SPEED	1-SPEED	NONE	F
10	24HR/3F	2-SPEED	2-SPEED	NONE	NONE	NONE	F

INSTEAD OF SETUP #1, THIS SYSTEM IS CONFIGURED IN SETUP # [ ]

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

CONNECT ONLY TO CIRCUITS PROTECTED BY A CLASS A GFCI.

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

TOTAL OUTPUT AMP DRAW NOT TO EXCEED MAX INPUT RATING OF SPA

USE EARTH GROUND CONNECTIONS AS INDICATED INSIDE THE SYSTEM ENCLOSURE

	SWITCHBANK S1 OFF	SWITCHBANK S1 ON
A1	TEST MODE OFF	TEST MODE ON
A2		ADD 1 HS PUMP WITH HEAT
A3	DON'T ADD 1 HS PUMP W/HTR	ADD 1 HS PUMP WITH HEAT
A4	DON'T ADD 2 HS PUMPS W/HTR	ADD 2 HS PUMPS WITH HEAT
A5	DON'T ADD 4 HS PUMPS W/HTR	ADD 4 HS PUMPS WITH HEAT
A6	SPECIAL AMPERAGE RULE A	SPECIAL AMPERAGE RULE B
A7	STORE SETTINGS**	MEMORY RESET**
A8	1 MIN HTR COOLDOWN (ELEC)	5 MIN HTR COOLDOWN (GAS)
A9	NOT ASSIGNED	NOT ASSIGNED
A10	NOT ASSIGNED	NOT ASSIGNED

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

USE COPPER CONDUCTORS ONLY. EMPLOYER UNIQUEMENT DES CONDUCTEURS DE CUIVRE. #6 AWG MIN. WIRE = 90°

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

S2 12A MAX — GREEN, WHITE, BLACK
S1 12A MAX — GREEN, WHITE, RED
TO RED AC (GROUP 2) ON MAIN BOARD
TO J1 ON EXPANDER

SPLITTER OPTIONS:
S1 = PUMP 3
S2 = FUSED ADAPTER OR PUMP 4.

‡OPTIONAL BP2X-WIRE KIT PN 30B93 –REQUIRED FOR SETUPS 2, 3, 7 & 8

TO S2 / TO J33 / 10A / ***FUSED ADAPTER SETUPS 3 & 8 ONLY / AV / BLOWER — REMOVE FUSED ADAPTER WHEN USING PUMP 4 IN SETUPS 2 & 7 / BROMINE
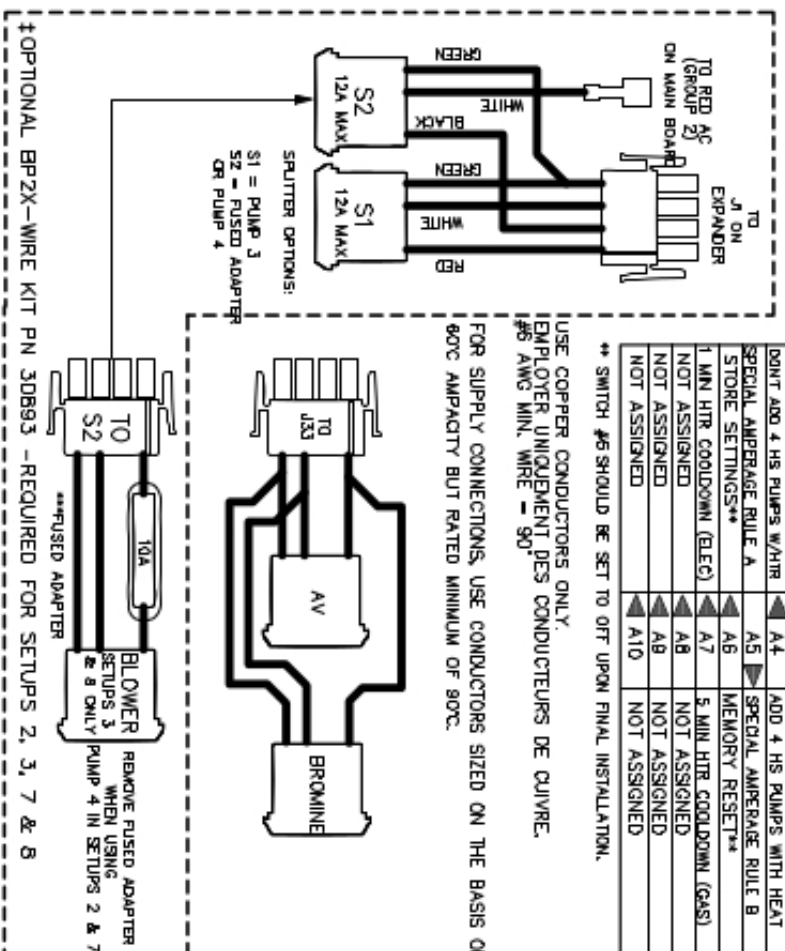
PBP20X –PN 56721

02-10-15

PART B

Wiring Diagram PBP21X

PBP21X PN 56723
02-03-15

PART A

230V
1P
1x32A

GRN
BLU
BRN

F6 30A
J85=HTR1
J86=HTR2
J87=HTR3
J88=TEST
J31=CE
HTR
SEL
K2
PUMP 1
J9
J45
J79
J54
J74
J75
J78
J110
J46
J60 J41
J56
J57
J55
J59
K4
J33
J38
SPLITTER
K9
J39
J31
J72
J42
J32
J53
J51
J52
J98
J111
J4
J1
J2
J63
K5
K1
K3
F8 30A
F3 0.25A SLO-BLOW
J10 J109
J43
J81
K12
F2 10A 250VAC
J21
CIRC PUMP
J20
OZONE
J32
J13
F7 10A 250VAC
K8
230V
115V
J19
J24
J34 MAIN
J35 MAIN
J18
J14
PUMP 2
J50
K6
TB1
4
3 2 1

SENSOR A
3.0 kW HEATER
HEIZELEMENT
RADIATEUR
SENSOR B
GND

F4 3A SLO-BLOW
J15
IGHP
DN S1
J28 AUX FRZ
10
J29 VAC
J7
K7
J26 J30
J31
J22
J108 J107
J101
J91
J27 J23 SERIAL
J5 AUX
J36 AUX
J8 AUX
J40 REMOTE
J17
J16
T1

W1
J1
EXPANDER*
EXPANDER X-P332
F1 30A
RIGHT EXPANDER BOARD
J6
J7

*EXPANDER IS:
2-SPEED PUMP 3 IN SETUP 1
1-SPEED PUMP 3 + 1-SPEED PUMP 4 (WITH SPLITTER) IN SETUP 2
1-SPEED PUMP 3 AND 1-SPEED BLOWER (WITH SPLITTER & IN-LINE FUSE)
    IN SETUP 3
1-SPEED PUMP 3 IN SETUP 4
UNUSED IN SETUP 5

IR RECEIVER
OR
RF RECEIVER

WIFI TRANSCEIVER
J34 OR J35

TP (MAIN) PANELS
J34 OR J35

J5 (A1-A4)
AUX
J8 (A5-A8)

LOCATION	DEVICE	VOLTS	AMPS	FROM	TO	FROM	TO
J1 ON RT EXPANDER	2/1 SPD PUMP 3+ PUMP 4/ BLOWER	230V	8A MAX+	W1 ON EXPANDER	J1	J1 ON GROUP 2	EXPANDER
			8A MAX	EXPANDER	GROUP 3	EXPANDER	J53

NETZSTROMVERSORGUNG
1-GESCHW.-PUMPE 3 +
NETZSTROMVERSORGUNG
1-GESCHW.-
PUMPE 4/SPRUDELGEBLASE

ALIMENTATION PUMPE 3
A 1 VITESSE +
ALIMENTATION
PUMPE 4/VENTILATEUR
A 1 VITESSE

Settings

SINGLE SERVICE 230V 1P / 1x32A,   THREE-SERVICE 230V 1P / 3x16A

LOCATION	DEVICE		
J9	NETZSTROMVERSORGUNG 2-GESCHW.-PUMPE 1 ALIMENTATION POMPE 1 A 2 VITESSES 2-SPEED PUMP 1		
J14	NETZSTROMVERSORGUNG 2/1-GESCHW.-PUMPE 2 ALIMENTATION POMPE 2 A 2/1 VITESSES 2/1-SPEED PUMP 2		
J15	AUX LINE 1 CONNECTION J19 to J43		
J21	10V BELEUCHTUNG ECLAIRAGE BAIN HYDRO SPA LIGHT		
J32	KREISLAUF PUMPE POMPE DE CIRCULATION CIRC PUMP		
J33	OZONGENERATOR GENERATOROZONE OZONE GENERATOR		
J40	CIRC AND OZONE LINE 1 CONNECTION J81 to J59		
J5, J8	BROMINE/AV		
	IR RECIEVER		
	AUX PANEL(S) - AX10, AX20, AX30, AX40		

SETUP #	CIRC PUMP	PUMP 1	PUMP 2	PUMP 3	PUMP 4	BLOWER	TEMP SCALE
1	24HR	2-SPEED	2-SPEED	2-SPEED	NONE	NONE	°C
2	24HR	2-SPEED	1-SPEED	1-SPEED	ONE	NONE	°C
3	24HR	2-SPEED	1-SPEED	1-SPEED	1-SPEED	1-SPEED	°C
4	24HR	2-SPEED	1-SPEED	NONE	NONE	NONE	°C
5	24HR	2-SPEED	2-SPEED	2-SPEED	NONE	NONE	°C
6	24HR/3F	2-SPEED	2-SPEED	1-SPEED	NONE	NONE	°C
7	24HR/3F	2-SPEED	1-SPEED	1-SPEED	NONE	1-SPEED	°C
8	24HR/3F	2-SPEED	1-SPEED	NONE	NONE	NONE	°C
9	24HR/3F	2-SPEED	1-SPEED	1-SPEED	NONE	NONE	°C
10	24HR/3F	2-SPEED	1-SPEED	NONE	NONE	NONE	°C
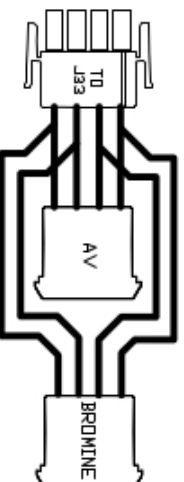
INSTEAD OF SETUP #1, THIS SYSTEM IS CONFIGURED IN SETUP #

TO J43   AV   BROMINE

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

USE COPPER CONDUCTORS ONLY. USE CONDUCTORS UNIQUEMENT DES CONDUCTEURS DE CUIVRE.

TORQUE RANGE FOR MAIN TERMINAL BLOCK (TB1) 27-30 IN. LBS. (311-34.5 kg cm)

SWITCHBANK S1

	SWITCHBANK S1 OFF	SWITCHBANK S1 ON
A1	TEST MODE OFF	TEST MODE ON
A2	DON'T ADD 1 HS PUMP W/HTR	ADD 1 HS PUMP WITH HEAT
A3	DON'T ADD 2 HS PUMPS W/HTR	ADD 2 HS PUMPS WITH HEAT
A4	DON'T ADD 4 HS PUMPS W/HTR	ADD 4 HS PUMPS WITH HEAT
A5	SPECIAL AMPERAGE RULE A	SPECIAL AMPERAGE RULE B
A6	STORE SETTINGS*	MEMORY RESET*
A7	1 MIN HTR COOLDOWN (ELEC)	5 MIN HTR COOLDOWN (GAS)
A8	NOT ASSIGNED	NOT ASSIGNED
A9	NOT ASSIGNED	NOT ASSIGNED
A10	NOT ASSIGNED	NOT ASSIGNED

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

NOTE: SWITCH A3 CAN BE SET TO ON IN SETUP 5 ONLY

TO RED AC (GROUP 2) ON MAIN BOARD
GREEN WHITE BLACK   S2
GREEN WHITE RED   S1
TO J1 ON EXPANDER

230V 1P 1x32A

SPLITTER OPTIONS:
S1 = PUMP 3
S2 = FUSED ADAPTER OR PUMP 4

OPTIONAL BP2X-WIRE KIT PN 30893 REQUIRED FOR SETUPS 2 & 3

TO S2   ***FUSED ADAPTER   10A

230V 3P 3x16A   OFF A5 A2

GRN BRN BLU BRN
4 3 2 1   TB1
J78 J4 J75 J54 J77 J75

BLOWER/REMOVE FUSED ADAPTER WHEN USING PUMP 4 IN SETUP 2
SETUP 3 ONLY

***FUSED ADAPTER

J1   J6   J44   J36

PBP21X PN 56723
02-03-15   PART B