CLEARLY ADVANCED SPA SYSTEMS!™

OWNER'S MANUAL

SC-CF-SBD SPA SYSTEMS

INSTALLATION, INSTRUCTIONS & MORE!

SPA BUILDERS SYSTEMS GROUP

TAKING OVER THE WAVES!

Contents

Topics covered in this manual are as follows:

Notes:

Warnings

Important Warning Instructions

- The temperature sensor must be installed in order to read the water temperature properly. Improper installation of the sensor can cause overheating or insufficient heating of the water. The spa manufacturer must verify if the temperature measured by the sensor is the same as the actual water temperature and that the sensor cannot be affected by external conditions (ex: air temperature).

- This control is not suitable and cannot be used for gas heater applications.

- This control must always be connected to a circuit protected by a ground fault interrupter.

- Install the control on a solid surface to minimize mechanical vibrations.

- The power input cable should always be secured in place with a proper strain relief.

- A notice should be installed by the manufacturer on the finished product to notify the end user to always check the water temperature with his hand before entering the water so as to prevent burns and other injuries which may result from improper water temperatures.

- This control should not be installed in the proximity of highly flammable materials.

- This control is not protected against water infiltration. It should not be installed in a location or in a manner which could lead to contact with water.

- The electrical load of connections to this control must not exceed the ratings specified by Spa Builders Systems Group Inc. Failure to ensure compliance with proper electrical load specifications may cause hazardous operating conditions and/or decreased the life span of the control.

Warnings

Important Warning Instructions

- Use copper wiring only.
- This control is certified as a component only. The finished product which will incorporate this control should be certified by the proper agency as a finished product. In no circumstances should the fact that the control is certified as component be considered sufficient for the finished product to comply with certification requirements. The manufacturer is solely responsible for ensuring that the finished product complies with all applicable laws and regulations.
- Ambient air temperature in the vicinity of the control location should not exceed the maximum temperature rating specified by Spa Builders Systems Group Inc.
- The spa elements, containing water exposed to cold air (piping, pumps, valves, etc.) must be approximately at the same ambient temperature as the power module of the control to prevent adequately from water freezing.
- This control should be serviced by qualify personnel only.
- If a fuse must be replaced, it should be replaced only with a fuse of the same type and rating.
- The control must not be altered or modified in any way.
- Do not connect any equipment to this control other than equipment and or accessories that are specified or approved by Spa Builders Systems Group Inc. for each output.
- This control should always be installed with the proper orientation as per the specifications provided by Spa Builders Systems Group Inc.
- Do not create any opening in the control.
- Do not extend temperature sensor cables.

Warnings

Important Warning Instructions

- This control must be installed as specified in the Spa Builders Systems Group Inc. product certification report.
- It is possible that an output fail in the "on" position. Make sure that this cannot create any hazard.
- The spa must comply with the 'kinetic heating test' described in UL1563 standard section 47.2.: "While at the maximum water temperature from the water temperature test described in 46.1, a unit, covered as specified in 47.2.2, shall be operated circulating water at the maximum flow rate without the heater operating until thermal equilibrium as defined in 45.8 is attained or until ultimate results occur. Any blower shall not be operating and any air induction control shall be closed. A blower that heats the water, if provided, shall be operated. The results are acceptable if the water at any tub inlet does not exceed 50°C (122°F)".
- Any ventilation openings on the pack must be free from obstructions that could limit the ventilation flow rate.
- The user manual must specify that if the keypad is physically damaged, the end user must not use the finished product and the keypad should be replaced immediately.
- Do not submerge the temperature probe completely in water. Only the stainless steel portion should be in contact with water.
- This product is provided with a pre-calibrated pressure switch. Make sure that the pressure switch setting is adequate for your application.
- Should you have any questions with respect to any of the foregoing or the reference materials mentioned herein, please do not hesitate to contact us.

Notes:

This manual Congratulations! You have purchased one of the finest spa packs available. Take the time to carefully read these instructions.

Caution Low voltage or improper wiring may cause damage to this control system. Read and follow all wiring instructions when connecting to power supply.

Electrical Hazard This pack contains no user serviceable parts.
Contact an authorized service center for service.

Notice All connections must be made by a qualified electrician in accordance with the National Electrical Code and any state, province or local electrical codes in effect at the time of the installation.

Important RISK OF ELECTRICAL SHOCK!
If used with 120V, your pack must be connected only to a grounded receptacle.

Notes:

Specifications

General Specifications

Description

These packs are perfect for spas with one or two pumps (or one pump and a blower), a heater, an ozone generator and a mood light.

Features

- Automatic time-out on all outputs
- 3 digit LED display
- Digital temperature display
- Sensor failure detection
- Programmable filtering cycles
- High-Limit protection
- Pressure switch failure detection
- Current limiting option
- Freeze protection
- Temperature measurement within ± 1°F

From keypad

- Temperature set point
- Temperature display in °C or °F
- Spa light control (on/off)
- One or two-speed pump control

Specifications

Electrical Specifications

Input	240 V, 48 A, 60 Hz 120 V, 15 A, 60 Hz	
Outputs		
Pump 1	(high)	120 V, 14 FLA / 80 LRA
	(low)	120 V, 14 FLA / 80 LRA or
	(high)	240 V, 14 FLA / 80 LRA
	(low)	240 V, 14 FLA / 80 LRA
	Connector:	J&J or AMP
Pump 2 (blower)	120 V, 14 FLA / 80 LRA or 240 V, 14 FLA / 80 LRA Connector: J&J or AMP	
Heater	120 V, 8.3 A or 240 V, 16.7 A	
Ozone	120V. 3A or 240 V, 3A Connector: J&J or AMP	
Light	12 V, 1 A Connector: Direct lamp socket assembly	

Temperature Specifications

Operating	0 ⟷ 122°F -17 ⟷ 50°C
Storage	-40 ⟷ 160°F -40 ⟷ 70°C
Humidity	Up to 80% non-condensing
Set Point Adj.	Adjusted in 1° increments from 59° to 104°F (10° to 40°C)
Temp. Measure	Better than 1°F

Specifications

Keypad Dimensions

All keypads have been sealed to perfection to insure years of trouble-free usage. The extent of their design demonstrates a clear commitment to excellence in quality and reliability. Two models of keypads are available: K-18 & K-19. Both models include specific overlays for single pump and dual pump systems or single pump and blower systems.

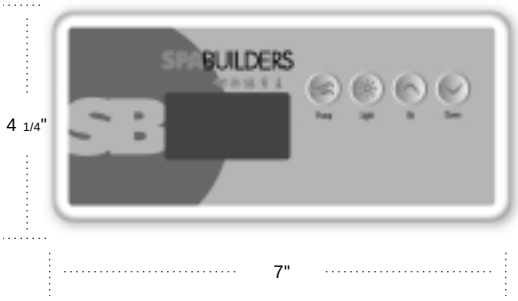
K-18

Dual pump system

Single pump with blower system

Single pump system

K-19



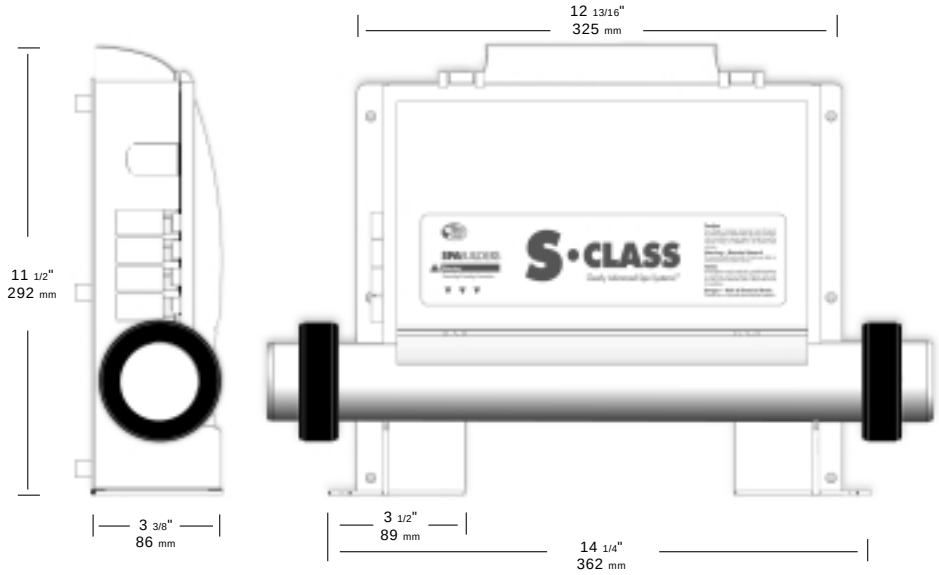
Single pump system

Dual pump system

Single pump with blower system

Specifications

Power Box Dimensions



Power Box

The design of your pack power box took size, weight and ease of installation into account. Compact and light, the power box of your pack is made of thick plastic and is highly resistant to shock, corrosion, chemicals and humidity.

Hinged Cover

The cover of the power box can be easily opened to access the connection ports. Simply remove the 2 front cover screws and pull the hinged cover up to access main board, connectors and jumpers.

Installation

The first step in the installation procedure of the K-18 main spa side control is to cut a hole directly on the edge of the spa.

The hole must be a 1" by 3 5/8 " rectangle to allow the keypad box to slide into position.

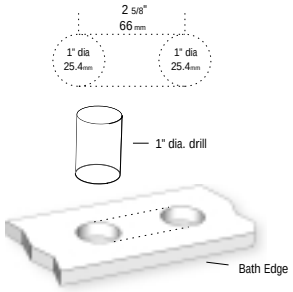
Mounting System

The keypad should be installed directly on the spa (or very close) for it to be easily reached by the user.

Steps to follow:

1- Select the appropriate location for the control unit.

2- Drill two 1” holes as shown in figure 2. Cut the material between the two holes.



3- Peel off the double-faced tape protective layer.

4- Insert the keypad and secure it in place by pressing firmly on the keypad.

Note: *If the keypad is physically damaged, the spa must not be used and the keypad should be replaced immediately.*

Installation

Main Spa Side Control (K-19)

Installation

The first step in the installation procedure of the K-19 main spa side control is to cut a hole directly on the edge of the spa.

The hole must be a 2 5/8 " by 6 3/8 " rectangle to allow the keypad box to slide into position.

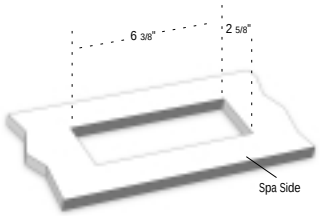
Mounting System

The keypad should be installed directly on the spa (or very close) for it to be easily reached by the user.

Steps to follow:

1- Select the appropriate location for the control unit.

2- Cut a 2 5/8 " by 6 3/8 " rectangle on the edge of the spa.



3- Peel off the double-faced tape protective layer.

4- Insert the keypad and secure it in place by pressing firmly on the keypad.

Note: *If the keypad is physically damaged, the spa must not be used and the keypad should be replaced immediately.*

Overlays

Note:

Please note that the following installation procedure is similar for K-18 and K-19 pack overlays.

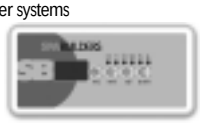
Make sure to select the overlay that goes with your spa configuration.

K-18 overlays

Single pump system

Dual pump systems

Pump & Blower systems



K-19 overlays

Single pump system

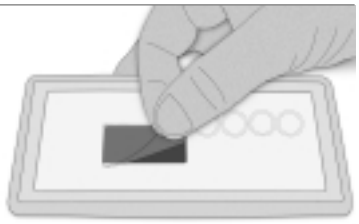
Dual pump systems

Pump & Blower systems

Installation

To properly install an overlay on a keypad, you only need a hair dryer, paper towel and rubbing alcohol.

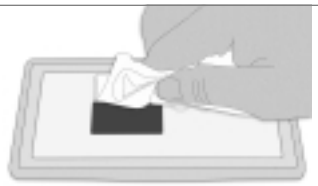
First, peel off the plastic film that protects the LED display window.



Installation

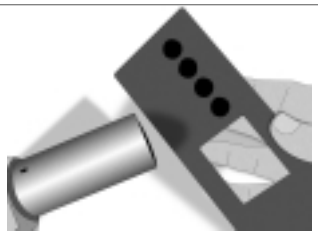
Overlays

Clean the surface of the keypad with an alcohol saturated paper towel.



Peel the protective paper from the overlay.

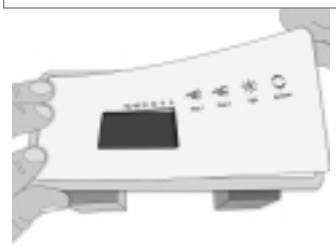
Gently heat the back of the overlay with the hair dryer.



Heat the surface of the keypad.

Place the overlay on the keypad starting with its left side. Make sure the overlay is well aligned and rests perfectly in the recess of the keypad.

Insure that the overlay is properly glued by pressing with your finger over the entire surface.



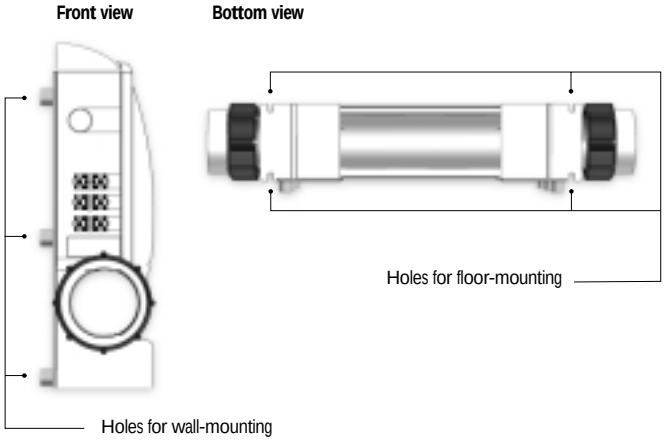
Power Box

The power box must be installed close to the spa side, preferably under the spa, at a location where possibility of water leaks is minimal.

It can be wall-mounted or installed directly on the floor (or both at the same time).

Six holes on the back of your pack are provided to mount the pack on a wall.

Four holes located on the pack feet can be used to fix it to the floor.



Warning: *Any physical damage to the enclosure arising from misuse, abuse or improper installation will automatically void any liability of the product.*

Installation

Connecting your pack

Connect to Spa Plumbing

Your pack must be connected to your spa plumbing. The connections must be made with the tail pieces at both ends of the pack's heater and must be perfectly sealed.

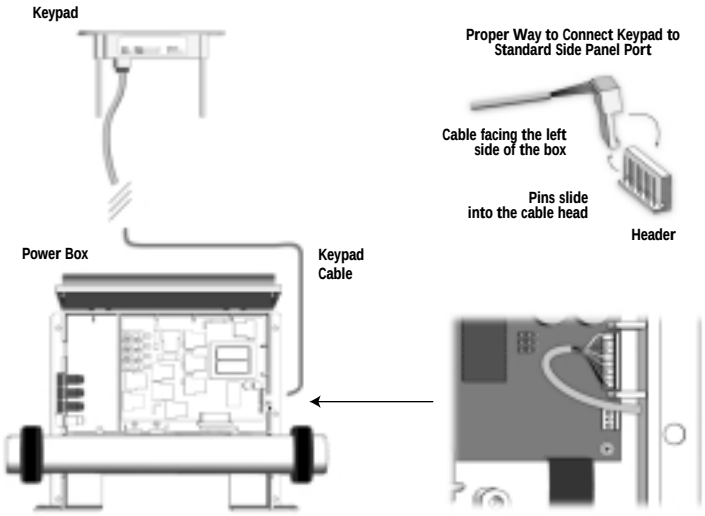
Refer to your spa manual for more information on how to properly seal your plumbing connections.

Main Spa Side Control and Temperature Probes

Connecting to the Power Box

The main spa side keypad must be connected to the standard side panel port of the control box.

A cable is provided to connect the keypad to the power box. Attach the connector to the power box as shown.

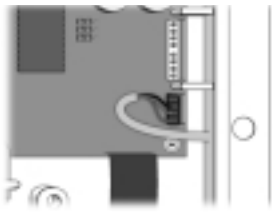


Warning

Clearance between Low and High Voltage conductors must be at least 1/4".

Connecting the Temperature Probe

The water temperature probe must be similarly connected to the power box, with cable following the same route as the main keypad.

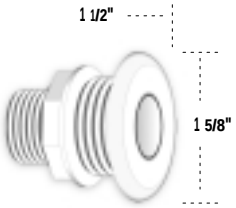


Installation

Optional Wet-End Fitting

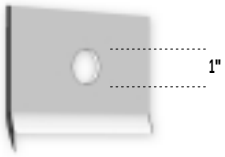
Optional Wet-End Fitting

The optional wet-end fitting secures your pack temperature sensor into position in the spa.



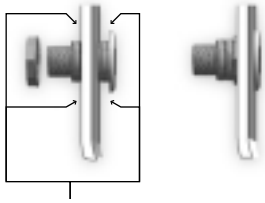
To install the fitting

1) Select a location for the temperature sensor. It should be below water level, accessible and as close as possible to the pack.



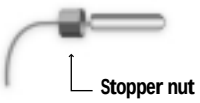
2) Drill a 1" diameter hole in the spa wall.

3) Install the fitting as shown. It should be tight enough to prevent water leaks. Do not forget to apply silicone.



To install the sensor

1) Slide the temperature sensor inside the stopper nut of the wet-end fitting.



2) Insert the sensor into the fitting. Fully insert the sensor into the wet-end fitting until the tip of the sensor slightly intrudes into the spa

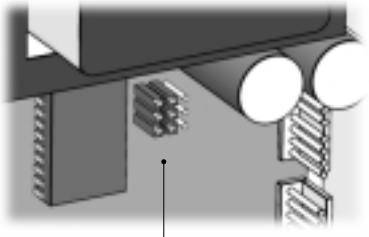
3) Tighten the stopper nut to ensure proper sealing.

4) Apply foam on the back of the fitting to prevent cold or warm air from affecting the sensor reading.

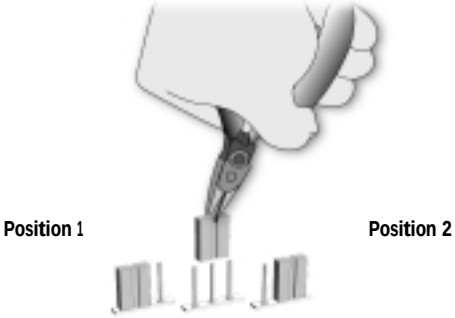
Jumpers

Jumper Selection

It is possible to change some parameters of your pack by positioning specific jumpers located on the board. To access the jumpers, remove the 2 front cover screws then lift the cover of your pack power box.



1• The jumpers are located on the lower right section of the board.



2• To change a setting, simply pull the jumper out and reinsert it in the desired position.

Jumper 1: Current Limiting Option

Jumper 1 is used to limit the current drawn when 2 pumps or a pump and a blower are used.

Position 1 (HC):	All outputs can be turned on at the same time.
Position 2 (LC)*:	The system will not turn the heater on when one pump (or blower) is in high speed. The "Heater" icon will flash on the display to tell the user that there is a call for heat but the heater is not allowed to start.

***Mandatory for 120 vac systems**

Jumper 2: Temperature Unit

This jumper is used to select the temperature unit.

Position 1:	Temperature will be displayed in Fahrenheit degrees.
Position 2:	Temperature will be displayed in Celsius degrees.

Jumper 3: Pumps

Position 1:	Single pump (single pump K-18 or K-19 overlays)
Position 2:	Dual pump or single pump and a blower (dual pump system K-18 or K-19 overlays)
Note:	*It is mandatory that the topside overlay matches the settings of this jumper*

Notes:

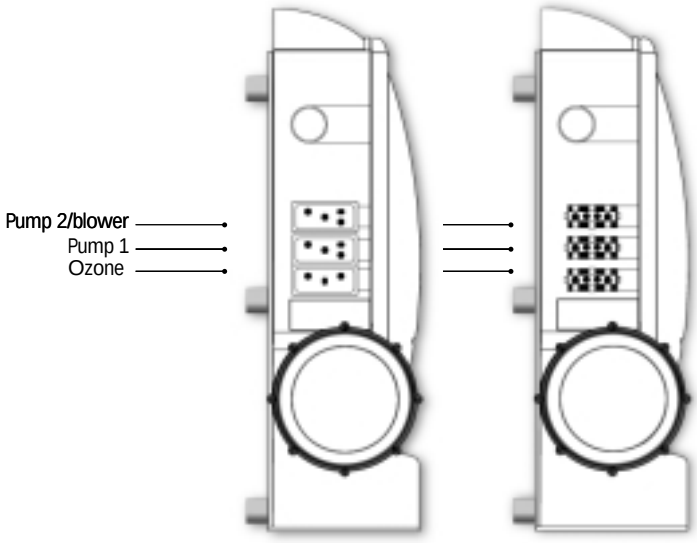
Output connections

J&J or Amp connectors

Connecting the equipment

The pumps, blower and ozonator must be connected to their respective connectors on the side of the pack.

Your pack also comes with a light socket that is ready to receive a lamp.



Pack with J&J connectors

Pack with Amp connectors

Output Configuration

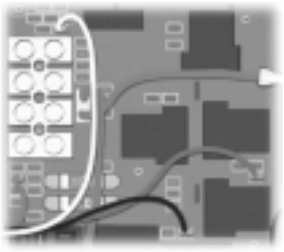
Pump 1

Configuration of Pump 1

Pump 1 is configured at the factory as a 120 V pump.

If you are using a 240 V pump, you must change the wiring configuration. Perform the following steps:

1) Locate the pump 1 connectors.



2) Using a pair of long-nose pliers, unplug the white wire of the pump 1 connector from the board. (P7)

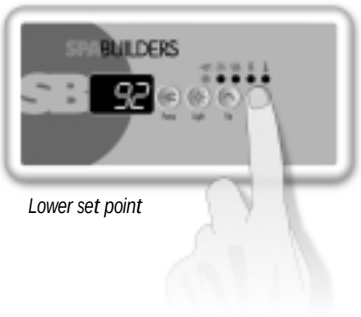
3) Reconnect the white wire to the P18 (connector) and make sure the connector is properly inserted.

Pump 1

Important Note:

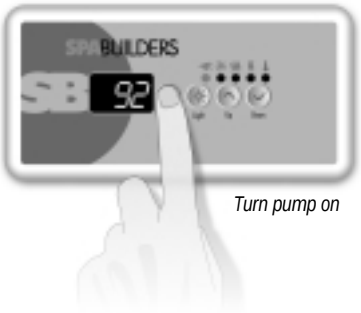
Unfortunately, there are two different color standards for two-speed pump wires. Some use the red wire for the high speed winding and others use the black wire.

It is important to have the proper wiring configuration.



Lower set point

You can only test it when the system is ready to use. To do so, lower the set point below the water temperature to turn the pump off (it will take 30 secs. for the pump to go off). Press **Pump** 1 key to manually turn on the pump. It should start in low speed and not high speed. If the pump starts in high speed, follow this procedure to correct the problem.



Turn pump on

1) Turn the breaker off.
2) Locate the Pump 1 connectors. (P12 and P14)
3) Using a pair of long-nose pliers, invert the connection of the black and red wires. Make sure the connectors are properly inserted.

Output Configuration

Blower

Configuration of the blower

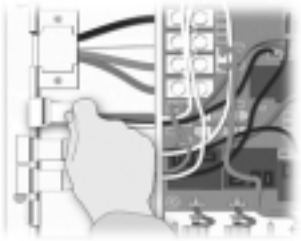
If you purchased a pack with J & J connectors and your spa is equipped with a blower, you need to replace the factory installed J&J pump 2 connector with the supplied J&J blower connector.

To do so:

1) Locate the Pump 2 connectors.
   (P6, P11 & P9 for a 120V pump)
   (P6, P11 & P17 for a 240V pump)

2) Using a pair of long-nose pliers, unplug all three wires from the connectors on the board.

3) Remove the J&J Pump 2 connector by sliding it from its slot on the pack.



4) Put the J&J Blower connector (included with your pack) in place and slide the wire through the hole of the interior panel.

5) Reconnect the three wires on the board at the following locations
   Black = P11
   Green = P6
   White = P9 for a 120V blower
   P17 for a 240V blower

Make sure they are properly inserted.

Configuation of Pump 2 / Blower

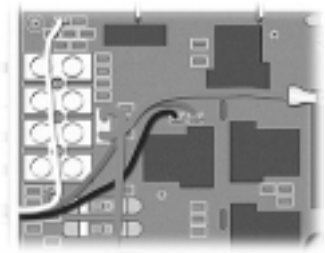
The configuration of Pump 2 (or blower) depends on:

- The pump (or blower) voltage (120V or 240V)
- The power input voltage of the pack

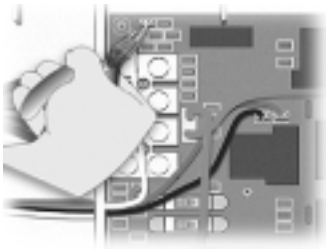
Do not change anything if your pack will be powered with 240V and your Pump 2 (or blower) is a 120V pump (or blower).

If your pack is powered with 120V and your Pump 2 (or blower) is 120V, or if your pack is powered with 240V and your Pump 2 (or blower) is 240V, perform the following steps:

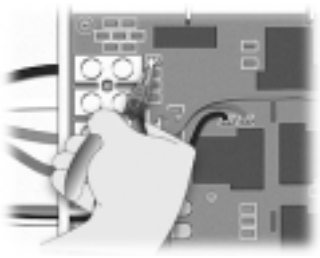
1) Locate the Pump 2 (or blower) white wire connector (P9 for a 120V pump or Blower)



2) Using a pair of long-nose pliers, unplug the white wire of the Pump 2 (or blower) connector.



3) Reconnect the white wire to the P17 connector and make sure the connector is properly inserted.



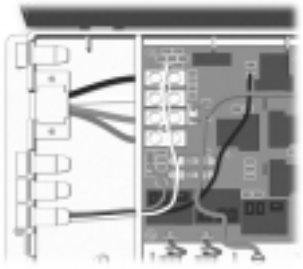
Output Configuration

Ozonator

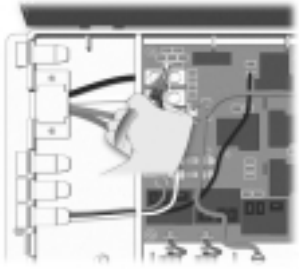
Configuration of ozonator output

Your pack is configured at the factory to control a 120V ozonator. If you want to use a 240V ozonator, you need to change the white wire connector on the board. To do so:

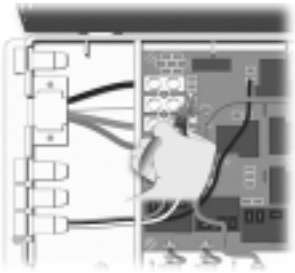
1) Locate the ozonator connector.



2) Using a pair of long-nose pliers, unplug the white wire of the ozonator connector (P8) from the board.



3) Reconnect the white wire to P19 (see wiring drawing). Make sure the connector is properly inserted.

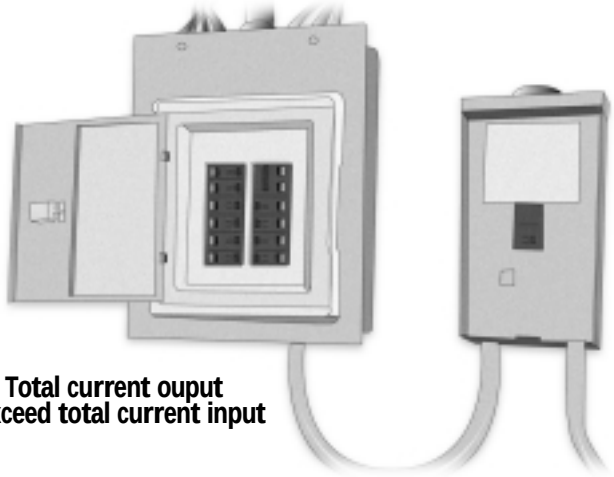


Note:
The ozonator will be activated only during the filter cycle.

Electrical Wiring

Proper wiring of the electrical service box, GFCI box and pack terminal block is essential.

- Refer to supplied wiring diagrams.
  Connections must be made by a certified electrician

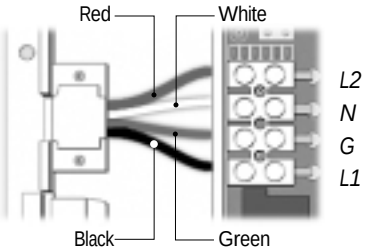


- **Warning: Total current ouput cannot exceed total current input rating!**

For 240 vac systems:

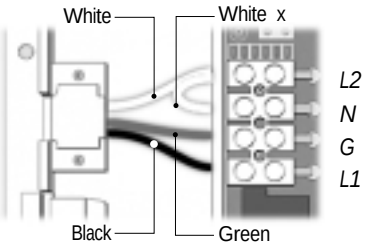
Electrical Box

GFCI



Pack Terminal Block

For 120 vac systems:



x Jumper supplied with the pack

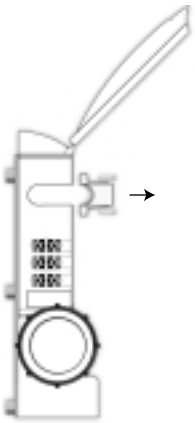
Powering your pack

With strain relief

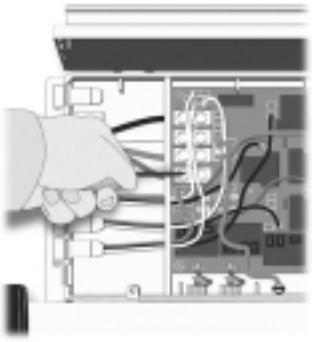
Powering the pack

If you are not using a conduit for the power cable:

1) Remove the strain relief.
2) Connect the wires to the terminal block.
3) Install the strain relief and make sure it holds the cable firmly in place.



1



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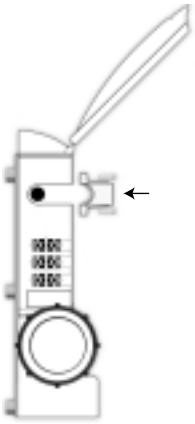

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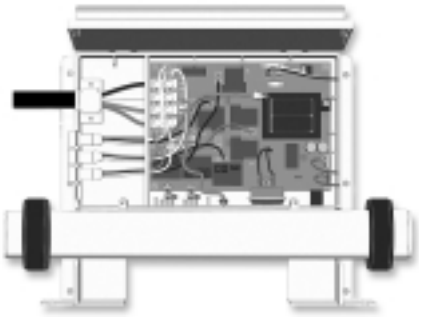
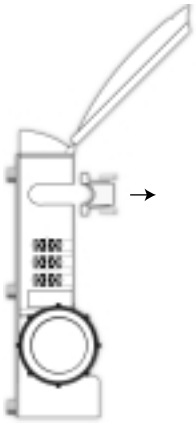


With conduit

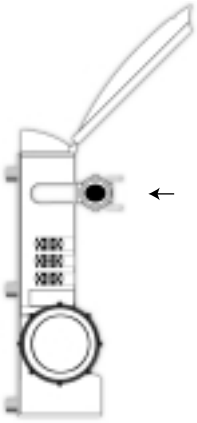
Powering the pack

If you are using a conduit for the power cable:

1) Remove the strain relief.
2) Install the conduit adaptor.
3) Bring the 4 wires to the pack and connect them to the terminal block.



1



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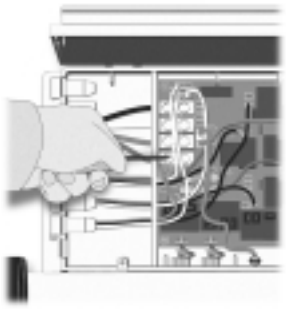

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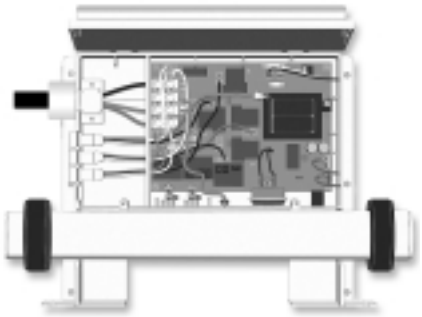
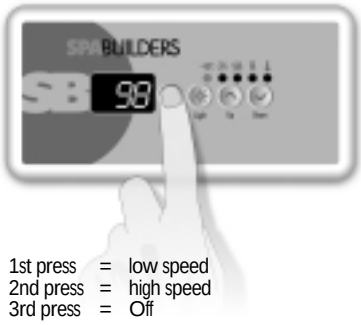


Notes:

Pump Key

Pump key is used to turn pump on or to select between off, low and high speeds.

Press **Pump** key to turn pump on. A second press will change pump speed. A third press will turn pump off.



A built-in timer will turn pump off 20 minutes after it has been started unless the user does so manually.

K-18 & K-19: The "Pump" indicator lights up on keypad display when pump is on.

Light Key

Light key is used to turn light on or off.

The first press of **Light** key will turn light on.

A second press will turn light off.

The light will automatically shut itself off after 2 hours.

K-18 & K-19: The "Light" indicator is displayed when light is on.

Instructions

Main Spa Side Control • Single Pump System

Up & Down Arrows

Up & **Down** arrow keys are used to set water temperature.

Keeping pressure on the keys will increase (or decrease) the current temperature setting. The new and desired temperature setting will remain for 5 seconds on the LED display as a confirmation of its new value.

The Set Point light indicator (K-18) or triangular icon (K-19) tells the user that the temperature shown is the desired and not the actual temperature of the water.The temperature can be adjusted in 1 degree increments from 59 to 104°F (15 to 40°C.).

Automatic Water Heater Start

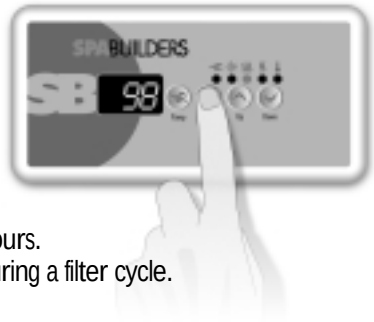
When the water temperature is 1°F lower than the set point, the heater will be turned on until the water temperature reaches the set point plus 1°F. The "Heater" indicator lights up when the heater is on.

The "Heater" indicator will flash if there is a request for more heat but the heater has not started yet.

Water Temperature Display

The 3-digit LED display shows the water temperature reading. The reading will be refreshed every second.

Filter Cycles



The system will automatically perform two filtering cycles per day, 12 hours apart. During a cycle, the pump will start in high speed for 1 minute then will run in low speed for a predetermined number of hours. The ozonator is always on during a filter cycle.

To set the duration of the filtering cycle (the amount of time the pump will be on), follow this procedure:

- Press **Light** key and hold for 5 seconds.
- The display will show a digit that represents the duration of the filter cycle in hours.
- Use **Up** & **Down** arrow keys to change setting.
  0 = no filtration
  12 = continuous filtration
- When the desired setting is displayed, press **Light** key again. The filter cycle will start.

  The "Filter" indicator lights up when a filter cycle is on.

Note that after a power failure, the filter cycle duration will return to its default value (6 hours, twice a day). In this case, the first filter cycle will start 12 hours after power has been restored.

Instructions

Main Spa Side Control • Dual Pump System

Pump 1 & 2 Keys

Pump 1 key is used to turn Pump 1 on or off and to select speeds.

Pump 2 key is used to either turn Pump 2 or blower on and off.

Pump 1:

Two-speed pump:

Pump 1 is a two-speed pump. **Pump 1** key is used to turn it on and to select between off, low and high speeds.

Press **Pump 1** key to turn Pump 1 on. A second press will change Pump 1 speed. A third press will turn Pump 1 off.

1st press = low speed
2nd press = high speed
3rd press = off

A built-in timer will shut the pump off 20 minutes after it has been started unless the user does so manually.

K-18: The "Pump 1" indicator will appear on the function panel when Pump 1 is running.

K-19: The "Pump 1" triangular icon will appear on the display when Pump 1 is running.

Pump 2 (or blower):

Single-speed pump (or blower):

Pump 2 (or blower) is a single-speed pump (or a single-speed blower). **Pump 2** key is used to turn it on or off.

Press **Pump 2** key to turn Pump 2 (or blower) on. A second press will turn Pump 2 (or blower) off.

A built-in timer will shut Pump 2 (or blower) off 20 minutes after it has been started unless the user does so manually.

K-18: The "Pump 2" indicator will appear on the function panel when Pump 2 or blower is running.

K-19: The "Pump 2" triangular icon will appear on the display when Pump 2 or blower is running.

Light key

Light key is used to turn light on or off.

The first press on **Light** key will turn light on. A second press will turn light off.

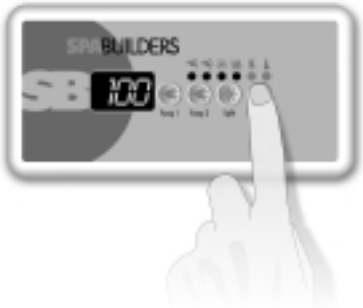
The light will automatically shut itself off after 2 hours.

The "Light" indicator is displayed when light is on.

Instructions

Main Spa Side Control • Dual Pump System

Up & Down Arrows



Up/Down arrow key is used to set water temperature.

A first press on the key will display the set point value. Keeping pressure on the key will increase the desired temperature value.

To decrease the value of the desired water temperature, press again on **Up/Down** arrow key and hold until the desired value is reached. The new and desired temperature setting will remain for 5 seconds on the LED display as a confirmation of its new value.

The Set Point light indicator (K-18) or triangular icon (K-19) tells the user that the temperature shown is the desired and not the actual temperature of the water. The temperature can be adjusted in 1 degree increments from 59 to 104°F (15 to 40°C.).

Water Heater Automatic Start

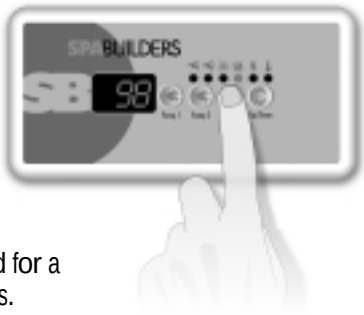
When the water temperature is 1°F lower than the set point, the heater will be turned on until the water temperature reaches the set point plus 1°F. The "Heater" indicator (K-18) or triangular icon (K-19) will appear when the heater is on.

The "Heater" indicator or icon will flash if there is a request for more heat but the heater has not started yet.

Water Temperature Display

The 3-digit LED display shows the water temperature reading. The reading will be refreshed every second.

Filter Cycles



The system will automatically perform two filtering cycles per day, 12 hours apart. During a cycle, Pump 2 (or blower) will run for one minute at the beginning of the cycle. Then Pump 1 will start in high speed for 1 minute and will run in low speed for a predetermined number of hours. The ozonator is always on during a filter cycle.

To set the duration of the filtering cycle (the amount of time pump 1 will be on), follow this procedure:

- Press and hold **Light** key for 5 seconds.
- The display will show a digit that represents the duration of the filter cycle in hours.
- Use **Up/Down** arrow key to change setting.
  0 = no filtration
  12 = continuous filtration
- When the desired setting is displayed, press **Light** key again. The filter cycle will start.

The "Filter" indicator lights up when a filter cycle is on.

Note that after a power failure, the filter cycle duration will return to its default value (6 hours, twice a day). In this case, the first filter cycle will start 12 hours after power has been restored.

Instructions

Main Spa Side Control

Alarms

The pump occasionally starts by itself for 1 minute and "Filter" indicator is flashing.

Not a bug but a feature! The Smart Winter Mode of your pack protects your spa from the cold by turning pump on for 1 minute several times a day to prevent water from freezing in the plumbing.

These packs are equipped with a sensor that measures the temperature of the air in the plumbing area of the spa. If the system monitors air cold enough to freeze the water in the pipes, it will automatically activate the Smart Winter Mode for a period of 24 hours.

The "Heater" indicator is flashing when pump is on at high speed.

Not a bug but a feature! The system is turning the heater off when pump is in high speed to limit the amount of electrical current drawn.

Error Conditions

3 flashing dots appear on the display.

A problem has been detected. Do not enter the water! Check and open water valves. Clean filter if necessary. Add water if needed. Shut power off and power the spa up again to reset the system.

Call your dealer or service supplier if problem persists.

The temperature flashes on the display.

Water temperature in the spa has reached 112˚F. Do not enter the water! Allow water to cool down. The system will reset automatically when water cools down to 109˚F.

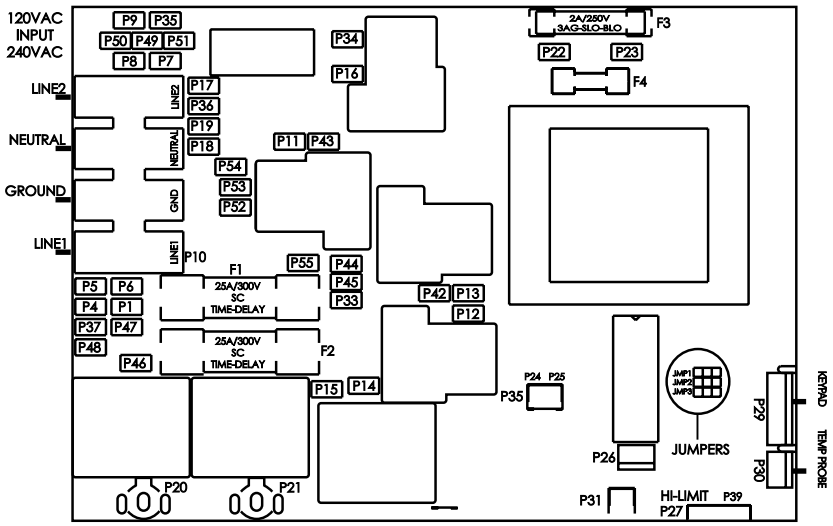
Call your dealer or service supplier if problem persists.

The display is flashing.

A power failure has occurred. Press any key to stop the flashing and reprogram your filter cycle.

Notes:

Wiring Diagram



Pump 1		
Voltage	120v	240v
Green / Ground	P4	P4
Black / Low Speed	P14	P14
Red / High Speed	P12	P12
White / Com	P7	P18

Pump 2/Blower		
Voltage	120v	240v
Green / Ground	P6	P6
Black / Line	P11	P11
Red / Line	P43	P43
White / Com	P9	P17

Jumper Settings

Refer to page 10

Ozonator	
Voltage	120v
Green / Ground	P5
Black / Line	P16
Red / Line	P16
White / Com	P8

Light Connector	
White / 0 VAC	P23
Black / 12 VAC	P22

Heater	
Black 1	P20
Black 2	P21

Pressure Switch	
Black	P25
Black	P24

Factory Default Settings

Filter Cycle	- Filter cycle duration:	6hrs
Jumpers	- Jumper default settings:	J1 = HC J2 = F° J3 = 2 Pump system *(or 1 Pump and 1 Blower)*
Outputs	- Pump 1: - Pump 2: - Ozonator:	120V output 120V output 120V output
Heaters	- 240V = 4Kw Heater - 120V = 1Kw Heater	
J&J	- J&J color connector for pump 2, 1 speed connector installed - Additional J&J color Blower connector plug also supplied	
Set Point	- Water temperature at 95ºF	

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