M·CLASS
Clearly Advanced Spa Systems!™

CLEARLY ADVANCED SPA SYSTEMS!™

OWNER'S MANUAL
MC-MP-SBD SPA SYSTEMS
INSTALLATION, INSTRUCTIONS & MORE!

SPABUILDERS
SYSTEMS GROUP

TAKING OVER THE WAVES!

Contents

Contents (cont.)

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

- 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.

⚠ • 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:

Preliminary

**Welcome to
Spa Builders**

Congratulations! You have just purchased one of the finest spa packs available on the market today. The present Owner's Manual has been prepared to provide you with everything you need to know to install, use and enjoy your MC-MP-SBD.

Please read the instructions provided in this manual carefully to ensure optimal use of your MC-MP-SBD. While great care has been taken to prepare this document, certain information may appear unclear to you. If so, please contact us and one of our agents will be glad to answer all of your questions. You can phone us at our toll-free number at 1.866.639.7274, or fax us at 1.909.667.2902. Or, if you prefer, you can write to us at:

> SPA BUILDERS
> 9225 Stellar Court
> Corona, California
> 92883.

**About your
MC-MP-SBD
Owner's Manual**

The present manual covers installation procedures and user instructions for your MC-MP-SBD only. It should NOT be confused with your spa owner's manual. Should you require more information about your spa, please refer to your spa manufacturer's written documentation.

All information given is subject to technical modifications without prior notice.

General Information

Important Notice   All electrical connections must be carried out by a qualified electrician in accordance with national and/or local electrical codes in force in the state or province at the time of installation. When connecting equipment, always refer to the wiring diagram included on the inside plastic cover of your spa pack power box. It will always take precedence over the wiring diagram provided at the end of the present manual.

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

Electrical Hazard   **RISK OF ELECTRICAL SHOCK!** Install at least 5 feet (1.5 m) from any metal surface. Do not allow any electrical appliance within 5 feet (1.5 m) of the spa. Strictly conform to all safety instructions provided by your spa manufacturer.

Caution   Low voltage or improper wiring may cause damage to the MC-MP-SBD control system. Carefully read and follow all wiring instructions when connecting to power supply. Damage caused by improper wiring or installation is not covered under the MC-MP-SBD warranty.

Repairs   This pack contains no user-serviceable parts. Please contact an authorized service center for service.

Description

The MC-MP-SBD is a mid-range spa pack perfect for most spas available on the market. It can control one or two single- or dual-speed pumps, a blower, circulation pump, heater, ozonator and mood light.

Features

- Automatic time-out on all outputs
- 3-digit LCD display
- Digital temperature display in °F or °C
- Spa side panel
- Sensor failure detection
- Programmable filter cycles
- High-Limit protection
- Pressure switch failure detection
- Current limiting option
- Smart Winter Mode
- Temperature measurement within ≈1°F (≈0.5°C)
- Fiber light compatible

For large spas, a second top side control may be installed offering access to basic spa functions only.

Control
Keypad

- Temperature Set Point
- Temperature display in °F or °C
- Spa light control (3 intensities)
- Blower control
- Single- or dual-speed pump control
- High-Limit temperature reset
- Programmable filter cycles
- Keypad lock-out
- Inverted display

Specifications

Electrical

Input	240 VAC, 48 A, 60 Hz	

Outputs

Pump 1 & 2	(high)	240 VAC, 15 FLA / 80 LRA
	(low)	240 VAC, 15 FLA / 80 LRA
Blower	120 VAC, 8 A	
Circ. Pump	120 VAC, 2 A	
Heater	240 VAC, 16.7 A, 4 kW	
Ozonator	120 VAC, 3 A	
Light	12 VAC, 1 A	
Fiber Box	120 VAC, 2 A	

Temperature

Operating	0°F to 122°F
	-17°C to 50°C
Storage	-40°F to 160°F
	-40°C to 70°C
Humidity	Up to 80% non-condensing
Set Point	Adjustable in 1° increments from 59°F to 104°F (15°C to 40°C)
Temp. Accuracy	Better than 1°F (0.5°C)

Dimensions of the Top Side Control

All MC-MP-SBDs are designed to work with the K-8 main top side control. An optional second top side control, the K-3, is also available. The K-3 is useful for large spas, offering access to the basic functions only.

All top side controls are sealed to watertight perfection ensuring years of trouble-free operation. Attention to design detail is a clear reflection of Spa Builder's commitment to excellence in product quality and reliability.

K-8

3 1/4"
82mm

7"
177 mm

K-3

2"
51 mm

4 1/2"
114 mm
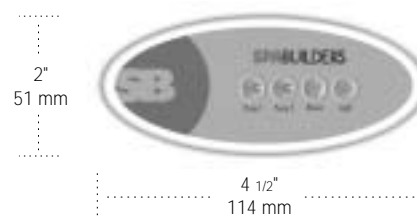
Specifications

Spa Pack Overall Dimensions

13 5/16"
338 mm

15 3/4"
400 mm

4 1/4"
108 mm

Mounting feet

Heater

18 3/8"
467 mm
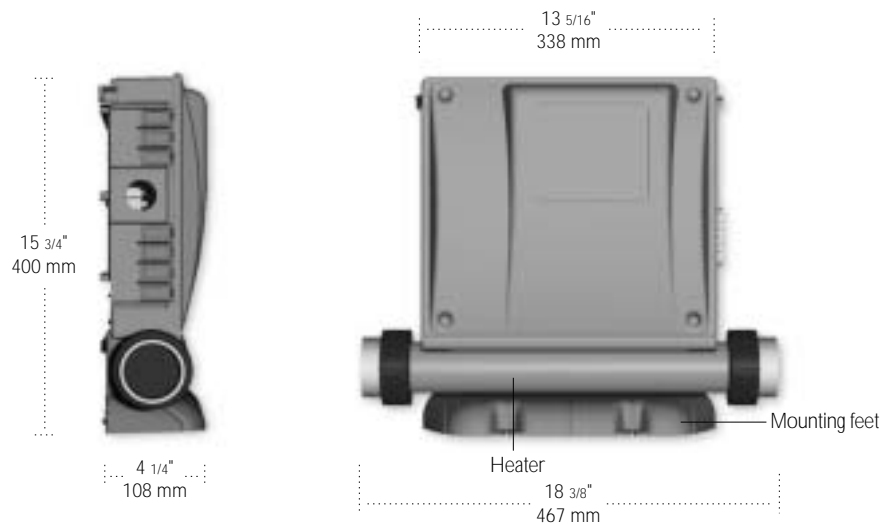
Removable Cover The cover of the MC-MP-SBD power box can easily be removed. Simply loosen the 4 front cover screws to access connectors and jumpers. Remove the plastic cover to access main board.

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

Overlays

Note

Please note that the following installation procedure is similar for K-8 and K-3 pack overlays.

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

K-8 overlays   **K-3 overlays**
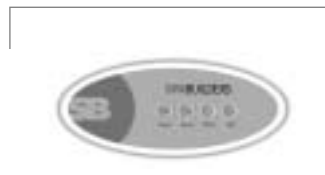
Installation

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.

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

Installation

Peel the protective paper
from the overlay.

Gently heat the back of the
overlay with the hair dryer.
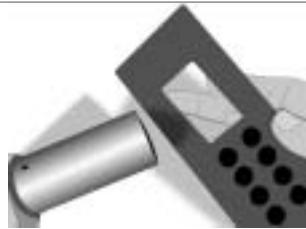
Heat the surface of the
keypad.

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.

Main Top Side Control (K-8)

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

Location   The control keypad may be installed either with brackets or adhesive, directly on the spa (or very close to it) within easy reach of the user.

Adhesive Installation

1•   Select the most appropriate location for the keypad.

2•   Cut out a 2 5/8" x 6 3/8" (67 x 162 mm) rectangular opening from the edge of the spa. Clean surface.
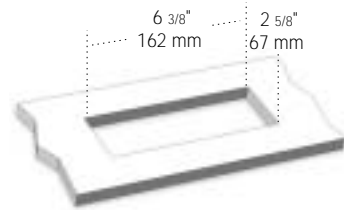
3•   Peel off the double-sided protective tape layer around the back.

4•   Insert keypad in position allowing the connecting cable attached to keypad bottom to hang below opening.

5•   Secure keypad in place by pressing firmly on it.

Installation

Main Top Side Control (K-8)

Bracket Installation

1 • Select the most appropriate location for the keypad.

6 3/8" 162 mm   2 5/8" 67 mm

2 • Cut out a 2 5/8" x 6 3/8" (67 x 162 mm) rectangular opening directly on the edge of the spa.

3 • Rotate self-positioning brackets toward the inside of keypad.

4 • Insert keypad, with bottom connecting cable hanging below opening.

5 • a) If installing keypad from above (if overlay has not been placed), use a Phillips screwdriver to tighten in place and properly seal unit (avoid overtightening). Brackets follow self-guiding edges, to lock themselves in position.

b) If installing from below, use a flat screwdriver to turn bracket screws counterclockwise, so that brackets follow self-guiding edges to lock into position.
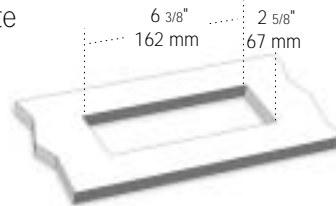
Installation is made easier with self-positioning brackets.

Optional Secondary Top Side Control (K-3)

Note

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

Location

The first step in the K-3 installation procedure is to select an appropriate location: the control keypad should be installed directly onto the spa (or very close to it) in order to be easily accessible to the user.

Installation

1 • Select the appropriate location for the control keypad.
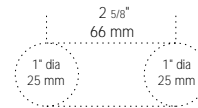
2 • Drill two 1″ (25 mm) holes at 2 5/8″ (66 mm) from center to center as illustrated opposite. Cut the material between the two holes.
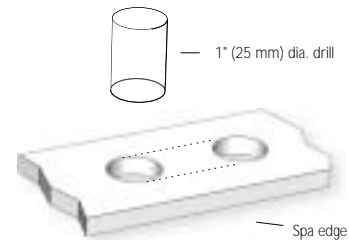
3 • Peel off the double-sided tape protective layer on the back.

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

Installation

The MC-MP-SBD provides for versatile installation: brackets allow wall installation and special mounting foot floor installation. In both cases a special plastic guide plate facilitates installation.

Standard floor installation procedure

1 • Select most appropriate location on floor for spa pack and firmly attach guide plate to wooden base with 3 standard screws.
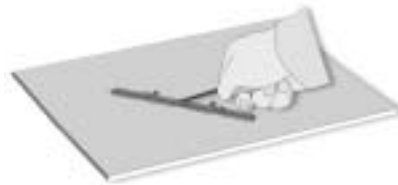
2 • Slide back side of the unit's mounting foot into guide plate. It should slide into place easily.

3 • Now firmly attach unit to wooden base by using two screws to fix the front side of the foot.

Standard wall installation procedure

1 • Select most appropriate location on the wall for spa pack and attach guide plate to wall with 3 standard screws.
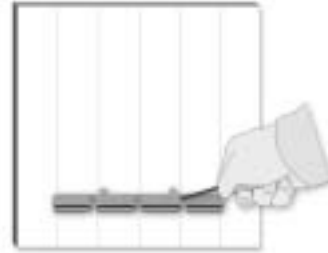
2 • Slide bottom of pack into place by positioning it over the two brackets on top edge of guide plate. It should slide into place easily.
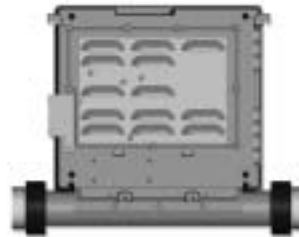
3 • Now firmly attach upper brackets on each side of spa pack to wall with two screws.

Installation

Optional Temperature Probe Holder

Optional Wet-End Fitting

Spa Builder's temperature probe holder is designed to securely hold a 3/8" (10 mm) by 2" (51 mm) long temperature probe to the spa.

1 3/8"
35 mm

1 1/2"
38 mm
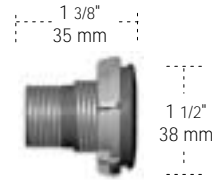
Installing the Probe Holder

1 • Select the best location to install the probe. It must be installed below water level in an easily accessible location as close to the pack as possible.

Water level

Spa edge

2 • Drill a 7/8" (22 mm) diameter hole in the spa wall.

3 • Assemble and install holder to spa wall. Turn nut counter-clockwise tightly enough to prevent water leakage.

Nut

Gasket

Receptacle

Spa wall

(1)   *(2)*
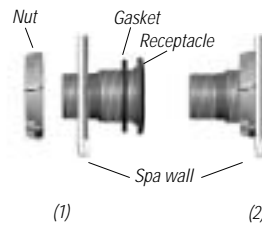
Installing the Temperature Probe

1 • Insert probe into small end of strain relief and push through to the other side (a).

(a)

2 • Force stopper nut over end of strain relief so it fits snugly (b). Then insert flat edge of probe into the strain relief (c).

(b)

3 • Insert probe assembly into the receptacle already installed on the spa wall and hand tighten (d).

(c)
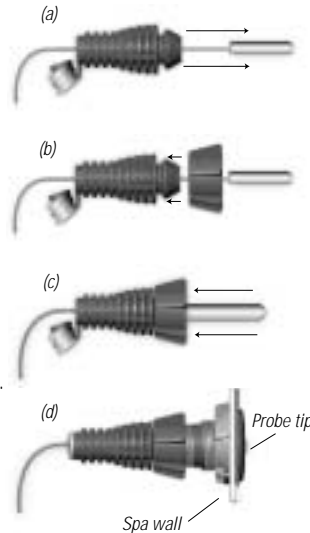
Insert end-plug into small end of strain relief (prevents air temp. variations from affecting readings). **Note:** *Probe must slightly protrude from spa wall to ensure acurate readings.*

(d)

Probe tip

Spa wall

Jumper Set-Up

Your MC-MP-SBD has been factory-adjusted to be operational as soon as it is under power.

However, it is possible to change some parameters of your MC-MP-SBD by repositioning specific jumpers located on the board or by setting the low level programming.

To access the jumpers:

1• Loosen the four screws that secure the plastic cover of your spa pack's power box and remove the cover.

To set the jumpers:

1• The jumpers are located in upper right side of the board.

Jumpers

2• To change a setting, simply pull jumper off and replace in desired position. (see jumper set-up positions)
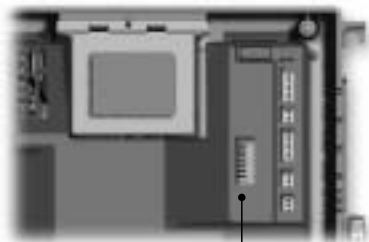
Position 1   **Position 2**

Installation

Jumper Set-Up Positions

JMP1: Current limiting option

Jumper JMP1 is used to limit the current drawn when either 2 pumps, or a pump and a blower are operating at the same time.

Position 1 (HC) [*]:   The heater may be turned on when both pumps are operating at high speed.

Position 2 (LC):   The heater may NOT be turned on if ANY pump (1 or 2) is on at high speed. The "Heater" indicator will flash on the display to advise you that more heat has been requested, but the heater is not allowed to start

*   *Factory default setting.*

Connecting to the Power Box

Loosen the four screws that secure the plastic cover of your spa pack's power box and remove the cover.

The main spa side keypad must be connected to the standard side panel port of the power box. A cable is provided to connect the control keypad to the board inside the power box. Attach the connector to the board as shown below.

Keypad

Proper way to connect keypad to standard "Side panel" port:

Keypad cable

Cable facing the left side of the box

Pins slide into the cable head

Power box

Header

Horizontal-heater model
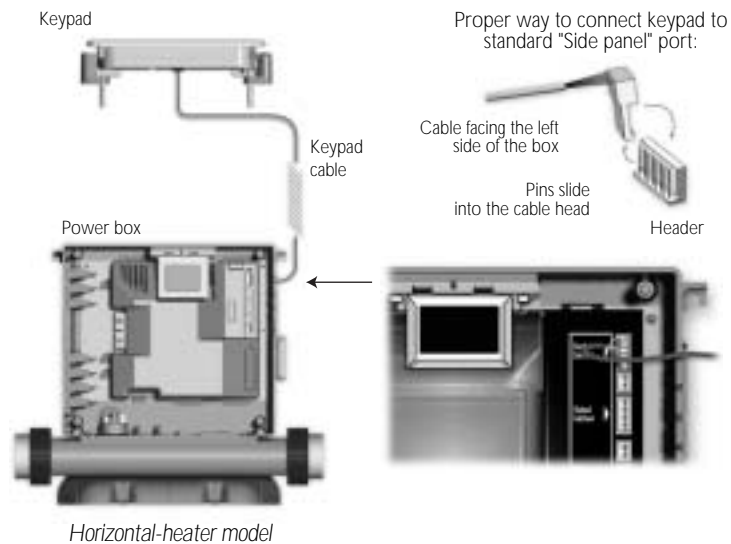
Warning

Clearance between low and high voltage conductors must be at least 1/4" (6 mm).

Connecting the Temperature Probe

The water temperature probe must be similarly connected to the port labelled "TEMP" on the board, with the cable following the same route as the main control keypad.

Installation

Connect to Spa Plumbing

The MC-MP-SBD must be connected to your spa's plumbing. Make connections to the tail pieces located on each side of the heater tube. Connections must be perfectly sealed.

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

Certain system operating parameters can be configured from the keypad. This is normally done by Spa Builders or the spa installer, but may be done any time.

Low level programming

To access low level programming, press and hold **On/Off** key for 20 seconds, the first parameter's code should appear on the display.

Use **Up/Down** keys to modify parameter values and **On/Off** key to change from one parameter to the next. You must go through all parameters to exit this mode. If you do not wish to change a parameter, simply press **On/Off** key to advance to the next parameter.

List of parameter configurations

1- **Pump 1**
   Display: P1 x
   Value of x: 1 = single-speed
               2 = two-speed

2- **Pump 2**
   Display: P2 x
   Value of x: 0 = not installed
               1 = single-speed
               2 = two-speed

3- **Pump 3**
   Display: P3 x
   Value of x: 0 = not installed
               1 = installed

4- **Blower**
   Display: bL x
   Value of x: 0 = not installed
               1 = single-speed
               2 = two-speed
               3 = three-speed

5- **Light**
   Display: LI x
   Value of x: 0 = not installed
               1 = 12 VAC (single-intensity)
               2 = 12 VAC (triple-intensity)
               3 = 120 VAC (single-intensity on auxiliary 1 relay)
               4 = Internal fiber box control mode (2-aux. relay)

6- **Ozone**
   Display: O3 x
   Value of x: 0 = not installed
               1 = on only in filter cycle
               2 = always on
               3 = on with circ. pump

7- **Circulation pump**
   Display: CP x
   Value of x: 0 = not installed
               1 = regulated (with spa temperature)
               2 = always on
               3 = on, except if 2 degrees over set point

8- **Filter cycle**
   Display: FC x
   Value of x: 1 = filter cycle enabled
               2 = filter cycle replaced by purge cycle

9- **Pressure switch status**
   Display: PS x
   Value of x: 0 = with Pump 1
               1 = with circ. pump (CP cannot be set to 0)

10- **Timeout output**
    Display: To x
    Value of x: 0 = 20 minutes
                1 = 30 minutes
                2 = 40 minutes

11- **Current Ratings**
    Value of x:
    C1 x = Select Pump 1 current (1-15A)
    C2 x = Select Pump 2 current (1-15A)
    C3 x = Select Pump 3 current (1-15A)
    Cb x = Select blower current (1- 8 A)
    CHx = Select Heater current (12-23A)

Notes:

Connecting Outputs

**Connecting
Equipment**

The pumps, blower, ozonator and circulation pump must be connected to their respective connectors. Connectors are located on the left side of the pack for the horizontal-heater model. They are clearly identified.

Your MC-MP-SBD also comes with a light socket that is ready to receive a lamp.

Pump 1

Pump 2

240 VAC input

Blower

Ozonator

Circulation pump

Fiber box
(option)
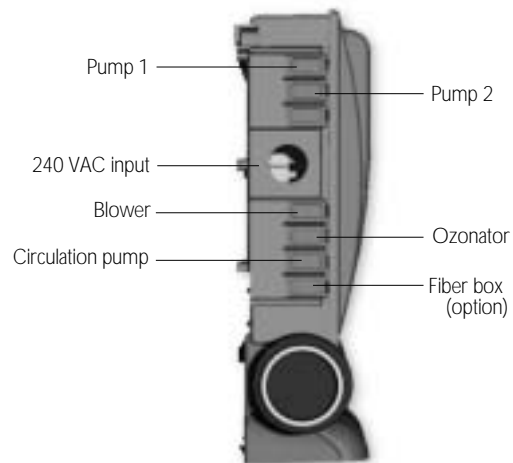
Notes:

Electrical Service Box, GFCI & and Spa Pack

- Refer to wiring diagrams supplied.
- Remember: Connections must be made by a certified electrician!
- **Warning: Total current ouput cannot exceed total input rating!**
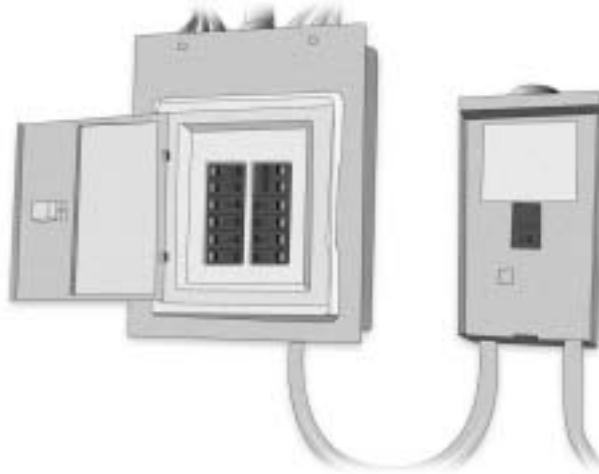
| Electrical box | GFCI | Pack terminal block |
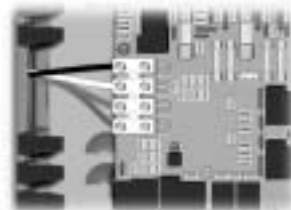
240 VAC input supply wiring
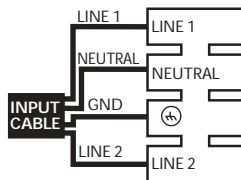
Notes:

On/Off Key

By default, the system is always on as soon as it is under power. The unit will regulate the spa temperature to the desired Set Point and the display will show the current water temperature.

Press **On/Off** key to shut the system down (i.e., to program Stand-By mode) for 30 minutes. The "OFF" message will be displayed. All keys will be disabled until you press **On/Off** again to reactivate the system before the expiration of the 30-minute delay.

Jet Keys

Pump keys are used to turn Pump 1, Pump 2 on or off, and to select between low and high speeds.

Press **Pump 1** or **Pump 2** to turn Pump 1or 2 on at low speed. Press a second time to change to high speed for dual-speed pump configuration. Press a third time to turn the pump off.
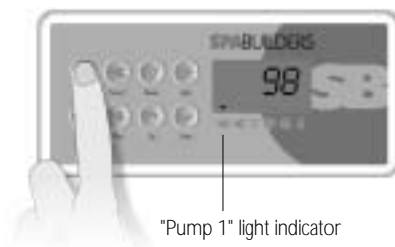
"Pump 1" light indicator

1st press = low speed
2nd press = high speed
(for dual-speed pump)
3rd press = off

The "Pump 1" or "Pump 2" indicator lights up on the display when either pump is on at high speed. It flashes when either pump is on at low speed.

A built-in timer will turn either pump off after a predetermined period of time (see low level programming page 25), unless they have been manually turned off first.

Operating Instructions

Blower Key

The **Blower** key is used to turn the blower on or off and to select between low and high speeds.

Press **Blower** to turn the blower on at high speed. Press a second time to change blower to low speed. Press a third time to turn blower off.

"Blower" light indicator
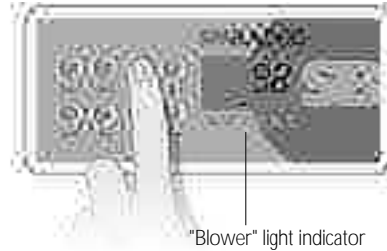
1st press = high speed
2nd press = low speed
3rd press = off

The "Blower" indicator will light up on the display when the blower is on at high speed. It will flash when blower is on at low speed.

A built-in timer will shut blower off after a predetermined period of time (see low level programming, page 25) unless you turn it off manually.

Light Key

The **Light** key is used to turn the light on or off and to select between low and high intensities.

Press **Light** once to turn light on at high intensity. Press a second time to turn the light to low intensity. Press a third time to turn the light off.
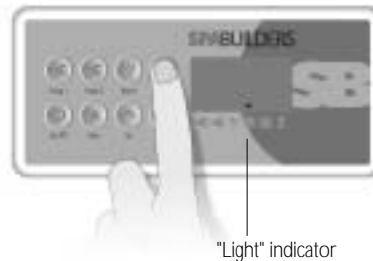
"Light" indicator

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

The "Light" indicator will light up on the display when the light is on at high intensity. It flashes when light is on at low intensity.

A built-in timer will shut the light off after 2 hours, unless you turn it off manually first.

**Light Key
(Fiber Box)**

For spas with an optional fiber box, press the **Light** key once to turn the fiber box on (motor & light). Pressing a second time turns fiber box motor off, but leaves light on, allowing you to select color options. Press a third time to turn both the fiber motor & light off.

When the fiber box light is on, the "Light" indicator will be solid (non-flashing). When both fiber box light and motor are on, the "Light" indicator will flash.

A built-in timer will turn the fiber box off after 2 hours, unless you turn it off manually first.

**Up & Down
Arrow Keys**

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

Press **Up** or **Down** key once to display Set Point temperature. Note: the Set Point symbol indicates the desired temperature, NOT the current temperature of the water.

"Set Point" symbol

Press and hold **Up** or **Down** key to regulate water temperature. The temperature setting will be displayed for 5 seconds to confirm your selection.

Water temperature can be adjusted by one degree increments from 59 to 104°F (15 to 40°C).
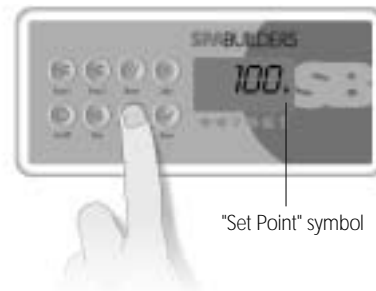
Operating Instructions

MC-MP-SBD Operation and Functions

Automatic Water Heater Start

If water temperature falls 1°F (0.5°C) lower than the Set Point, the heater automatically turns on until the water temperature reaches Set Point plus 1°F (0.5°C). The "Heater" indicator lights up on the display when the heater is on.

"Heater" indicator

Filter Cycle

The system automatically performs four filter cycles per day, at 6-hour intervals. During a filter cycle, the following sequence is executed:

- Pumps 2 & blower run at high speed for 1 minute.

- Pump 1 will then run at low speed for the programmed length of time (see next page).

Filter Cycle
(Continuation)

To program filter cycle duration:

- Press **Filter** key.

- The display will show "Fd xx", with "xx" representing the current set filter cycle duration in hours.

- Use **Up** & **Down** keys to set the number of hours:
  00 = no filter cycle,
  12 = continuous filter cycle.

- Press filter again.

- The display will show "FF xx" with "xx" representing the current set filter cycle frequency.

- Use **Up** & **Down** keys to set the number of filter cycles per day
  1 =   once a day,
  4 =   every 6 hours

- When desired setting is displayed:
  a) if no key is pressed for 5 seconds, the new setting will be saved but is effective only at the next cycle;
  b) if **Filter** key is pressed, a filter cycle will start immediately.

The "Filter" indicator will light up on the display when the filter cycle is on.

"Filter" indicator

A flashing "Filter" indicator means that the system has stopped filtering after 3 hours because the water temperature exceeds the Set Point by more than 2°F (1°C). This prevents excessive water temperature build-up caused by long filter cycles during warm weather periods. If the temperature cools down to 1°F (0.5°C) above Set Point before the scheduled end of the cycle, filtering will resume for the remainder of the programmed duration.

MC-MP-SBD Operation and Functions

**Filter Cycle
(Continuation)**

40-minute filter cycle time-out:

• If a pump, blower or light is turned on during a filter cycle, the cycle will be interrupted and will only be resumed 40 minutes after the last active output has been turned off. The "Filter" indicator will flash during the 40-minute time-out.

Purge cycle:

• The system automatically performs 6 purge cycles per day, at 4 hours intervals. During a purge cycle, the following sequence is executed:

• Pumps 2 & blower run at high speed for 1 minute.

• Pump 1 will then run for 1 minute.

To program a purge cycle:

• Press **Filter** key.

• The display will show "P xx", with "xx" representing the current set purge cycle frequency.

• Use **Up** & **Down** keys to set the number of purge cycles per day:
  1   =   once a day,
  24   =   every hour.

When setting is displayed:

a) If no key is pressed for 5 seconds the new setting will be saved, but it will be effective until the next cycle.

b) If filter key is pressed, a purge cycle will start immediately.

The "Filter" indicator will light up on the display when the purge cycle is on.

Keypad Lockout

Your spa keypad can be locked. This feature is especially useful if young children have access to the keypad.

To Partially lock the keypad:

Press and hold **Pump 1** key for 5 seconds.

If properly programmed, the "LOCP" message will appear briefly on the display. In this mode, only the pumps, blower and light keys are accessible.
If any other key is pressed, the attempted function is rejected and the "LOCP" message is displayed for 1 second.

To Fully lock the keypad:

Press and hold **Pump 1** key for 10 seconds.

If properly programmed, the "LOCF" message will appear briefly on the display. In this mode, only automatic functions are allowed. If any key is pressed, the attempted function is rejected and the "LOCF" message is displayed for 1 second.

To unlock the keypad:

Press and hold **Pump 1** key again for 5 seconds. If properly programmed, the system will return to Normal mode, and all functions will be accessible.

N.B.: A power failure will unlock the keypad causing it to return to Normal mode

Operating Instructions

MC-MP-SBD Operation and Functions

Inverted Display

A simple key press sequence inverts the display to make it readable from inside or outside the spa.

To invert the display:

- Press and hold **Filter** key for 5 seconds. Please note that in inverted mode some icons ie. "°F" or "°C" will not be displayed.

    To revert back to non-inverted mode, simply repeat the previous operation.

    N.B.: If a power failure occurs, the display always returns to non-inverted mode.
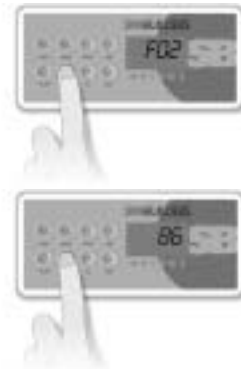
Second Top Side Control

The K-3 is an optional second top side control especially useful for large spas. It provides basic operating functions, allowing you to control Pump1, Pump 2, blower & light.

Ozonator	Depending on system configuration, the ozonator can be on during the filtering cycle, always on or it may operate at the same time as the circulation pump. If a pump, blower or spa light is turned on manually, the ozonator automatically turns off and comes back on 40 minutes after last active output has been turned off. On models without circulation pump, the ozonator comes on only during filter cycles.
Circulation Pump	Depending on system configuration, the circulation pump could be either on all the time or when heating and filtering only, except if the system has been programmed to Stand-By mode with the **On/Off** key. If the spa is turned off while heater is still on, the circulation pump will continue to run for 30 seconds to allow heater to cool down.
Power-Up Detection	Following a power failure, the display panel will continue flashing until any key is pressed. This feature notifies you that a power failure has occurred.
Smart Winter Mode	The MC-MP-SBD is equipped with a sensor that monitors the air temperature in the plumbing beneath the spa. If the system detects air cold enough to freeze water in the pipes, it will activate the Smart Winter Mode for a 24-hour period. In this mode, if pumps have not been turned on within 2 hours, the system automatically turns them on for 1 minute to prevent water from freezing in pipes.
	When pumps are operating in Smart Winter Mode, the "Filter" indicator will flash on the display.
Temperature Display Unit	The water temperature can be displayed in Fahrenheit (°F) or Celsius (°C) degrees. To toggle between °F and °C, simply press and hold **Light** key for 5 seconds.

Notes:

Alarm Displays

Pump starts by itself for 1 minute on several occasions and "Filter" indicator is flashing. (Also see page 39)

Not a bug, but a feature! The Smart Winter Mode is protecting your spa from the cold by turning pumps on for 1 minute several times a day to prevent water in pipes from freezing.

The system has detected air cold enough to freeze water in the pipes and has activated Smart Winter Mode for a 24-hour period (when pumps are not turned on within 2 hours, they are activated).

Filter cycle has stopped and "Filter" indicator is flashing. (Also see page 36)

Not a bug, but a feature! This indicates that either:
a) the filter cycle is in a 40-minute time-out to avoid ozonator activation while the spa is being used; or
b) the system has cancelled a filter cycle after 3 hours because water temperature exceeds set point by more than 2˚F in order to prevent excessive water temperature.

"Heater" indicator flashes when pump is on at high speed. (Also see page 22)

Not a bug, but a feature! The system is turning the heater off when pump is on at high speed to limit the amount of electrical current drawn (when jumper JMP1 set to "LC" mode).

The display panel is flashing.

A power failure has occurred. Press any key to reset the system.

Alarm & Error Displays

Error Displays

Flashing dots means the system has detected a problem with the pressure switch (water flow related error message) or the Hi-limit probe protection.

3 flashing dots are displayed:

A problem has been detected.

Do not enter the water! Check and open water valves. Clean filter if necessary. Check water level. Add water if necessary.

Shut power off and power your spa up again to reset the system.

Call your dealer or service supplier if problem persists.

Water temperature is flashing:

Water temperature in the spa has reached 112°F (44°C).

Do not enter the water! Allow water to cool down. The system will reset itself when water tem-perature reaches 109°F (43°C).

Call your dealer or service supplier if problem persists.

The wiring diagram below provides a general idea of MC-MP-SBD wiring, but it is important to note that it may not apply to all systems. The wiring diagram included on inside power box cover is the one to be used as main reference for the spa you are servicing.
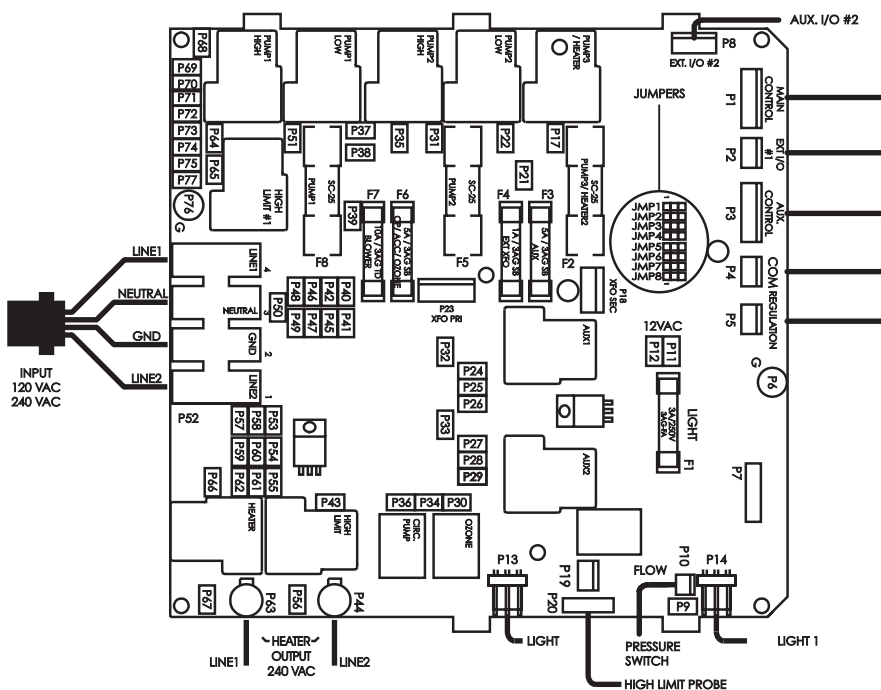
Pump 1

Voltage	120 v	240 v
Green / Ground	P69	P69
Red / Low Speed	P37	P37
Black / High Speed	P64	P64
White / Com	P48	P57

Pump 2

Voltage	120 v	240 v
Green / Ground	P70	P70
Red / Low Speed	P22	P22
Black / High Speed	P35	P35
White / Com	P45	P58

Jumper Settings

Refer to page 8

Blower

Voltage	120 v	240 v
Green / Ground	P72	P72
Black / Line	P43	P43
White / Com	P49	P49
Red / Line	P43	P43

Ozone

Voltage	120 v	240 v
Green / Ground	P73	P73
Black / Line	P30	P30
White / Com	P46	P60
Red / Line	P30	P30

Heater

Black 1	P63
Black 2	P44
Green / Ground	Ground

Circulation Pump

Voltage	120 v	240 v
Green / Ground	P74	P74
Black / Line	P36	P36
White / Com	P41	P54
Red / Line	P36	P36

Light Connector

Light 1		P14
Light 2		P13

Fiber Box

Voltage	120 v
Green / Ground	P74
Black / Light	P50
White / Com	P24
Red / Wheel	P28

Notes:

MC-MP-SBD Owner's Manual

Factory Default Settings

▶ Jumper   -   Jumper default setting: JMP1 = HC

▶ Outputs   -   Pump 1:   240 VAC output
               -   Pump 2:   240 VAC output
               -   Ozonator: 120 VAC output
               -   Circ. pump: 120 VAC output
               -   Blower: 120 VAC output
               -   Light: 12 VAC output
               -   Heater: 240 VAC output
               -   Fiber box: 120 VAC output

▶ Set Point   Water temperature at 95°F (35°C)

▶ Keypad   Normal Mode

▶ °F / °C   Fahrenheit (°F) temperature

▶ Lockout   Keypad unlocked
  Status

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