

# M-CLASS SPA SYSTEMS Dealer TechBook

• by Gecko Alliance •

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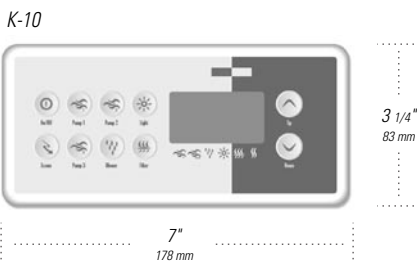
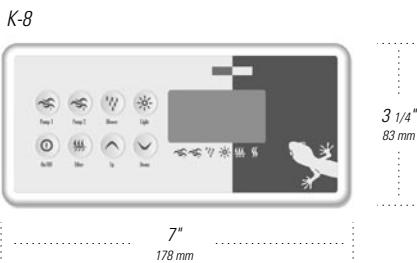
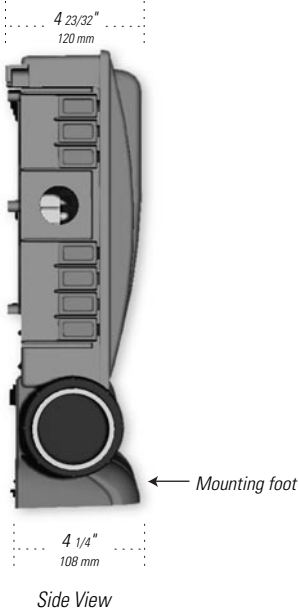
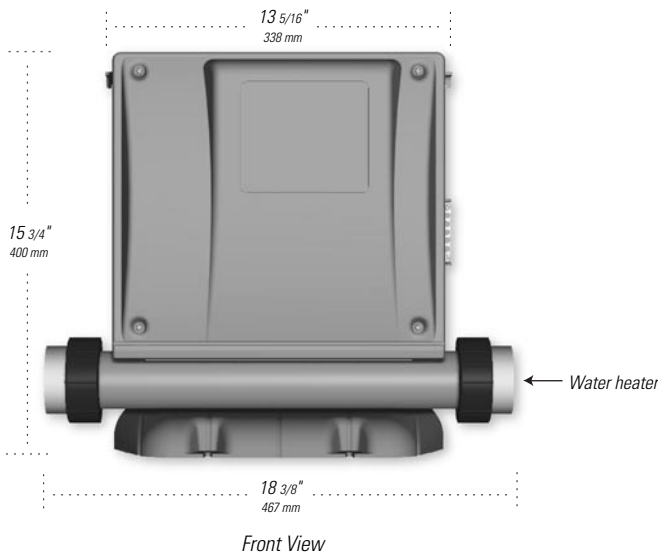
Technical Specifications, Programming,

Installation & User's Instructions!

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**Description**

The MC-MP is a mid-range spa pack perfect for most spas on the market. It can control 1 or 2 single or dual-speed pumps, a third single-speed pump, circulation pump, variable speed blower, 5.5 kW heater, dual light and ozonator.

The K-8 main keypad controls all functions and programming directly from spa side. For large spas, a second optional keypad is available (K-3) offering the basic functions only. For Pump 3 option and Economy mode, a k-8.10 keypad (10 keys) is mandatory. For Real Clock option, a K-4 is mandatory.

**System features**

- Automatic time-out on all outputs
- Custom backlight LCD display
- K-8.10 (10 keys)
- Digital temperature display
- Temperature sensor failure detection
- Ozone management
- Air channel clean-out
- Programmable filter cycle
- Purge cycle (with circ. pump option)
- High-Limit protection
- Power-up detection
- Pressure switch failure detection
- Current limiting option
- Smart Winter Mode
- Temperature accuracy +/- 1°F (0.5°C)
- Overtemp Mode protection
- Overtemp protection on filter cycle
- Fiber light compatible
- DJS-1 compatible
- Low level programming

**Available options**

- IRMT-1 (Infrared remote control)
- AC lights #1 and #2
- Auxiliary outputs #1 and #2
- Circulation pump
- Pump 3 (K-8.10 keypad required)
- K-3 optional second keypad
- RTC (K-4 mandatory)
- Economy Mode (K-8.10 required)
- Dual light switch (optional)
- Dual keypad (optional)
- Pocket-tek (optional)
- Fiber box

**From keypad**

- Temperature Set Point
- Temperature display in °F or °C
- Spa light intensity control
- Pumps and blower control
- Programmable filter cycle
- Standby Mode (Quiet)
- Inverted display
- Lock panel (full and partial)
- Low level programming
- Fiber box (optional)
- RTC option with K-4 keypad
- Economy + Pump 3 with K-8.10

**Electrical specifications**

**Input**

240 V, 50 A, 60 Hz (with or without neutral) Connector: Terminal Block

**Output**

*Pump 1*

(HS/LS) 120 V, 15 FLA / 80 LRA or (HS/LS) 240 V, 15 FLA / 80 LRA Connector: J&J

*Pump 2*

(HS) 120 V, 15 FLA / 80 LRA (LS) 120 V, 15 FLA / 80 LRA or (HS) 240 V, 15 FLA / 80 LRA (LS) 120 V, 15 FLA / 80 LRA Connector: J&J

*Pump 3*

120 V, 15 FLA / 80 LRA or 240 V, 15 FLA / 80 LRA Connector: J&J

*Heater*

120 V, 15A or 240 V, 23A No external connections required (wired internally), 5.5 Kw (240 V)

*Blower*

120 V, 60 Hz, 8 A max. variable or 240 V, 60 Hz, 8 A max. variable Connector: J&J

*Light*

12 V, 1 A Connector: AMP or direct lamp socket assembly

*Ozonator*

120 V, 5 A or 240 V, 5 A Connector: J&J

*Circulation pump (optional)*

120 V, 5 A or 240 V, 5 A Connector: J&J

Total output current must not exceed input rating!

**Environmental conditions**

*Operating temperature*

0 to 122°F (-17 to 50°C)

*Storage temperature*

-40 to 160°F (-40 to 70°C)

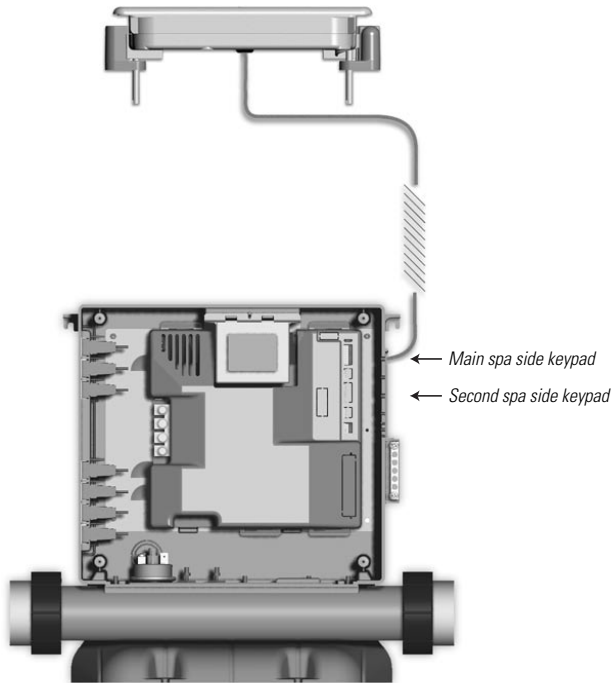
*Set point adjustment*

By 1-degree increments from 59 to 104°F (15 to 40°C)

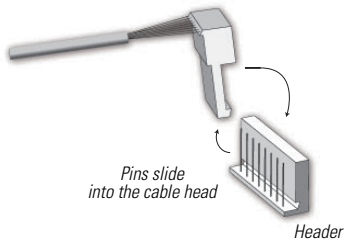
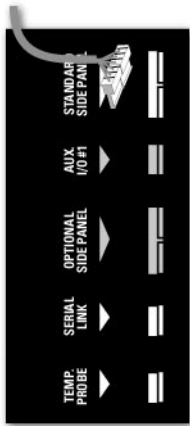
*Temperature accuracy*

Better than 1°F (0.5°C)





Correct procedure for connecting keypad to standard side panel port



**Connecting main top side keypad to power box**

The K-8 main spa side control keypad must be connected to the standard side panel port of the control box.

The connecting cable must follow the path as shown in illustration.

**Minimum 1/4" (6 mm) clearance between low and high voltage conductors!**

Correct connector alignment is essential to guaranteeing proper performance.

Optional K-3 second keypad, and K-8.10 (10 keys) keypad required for Pump 3 and Economy mode are similarly connected to the power box, with cable following the same route as main keypad.

Note: With RTC option, the use of a K-4 keypad is mandatory.

**Power input**

Connect the Input cable to the terminal block (labelled AC-Input). Make sure to respect proper color code alignment and ensure that screws are properly tightened.

**Pumps, blower, ozonator & lights**

If the unit is equipped with J&J or Amp connectors, simply connect equipment into the proper connectors.

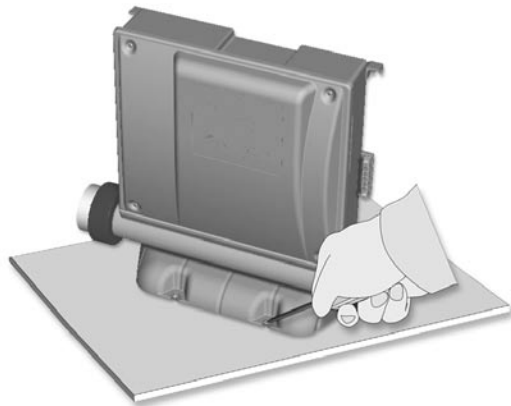
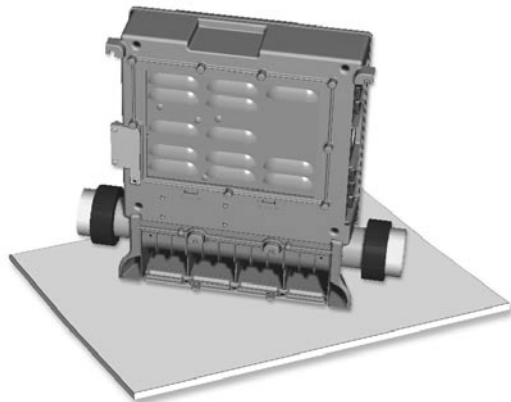
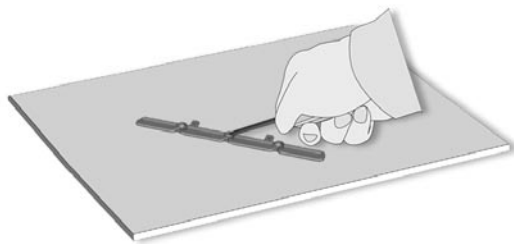
**Temperature probe**

Water temperature probes must also be connected to the power box, with cable following the same path as the main keypad.

Install temperature probe, ensuring that the end of the probe is in contact with water. Through-wall fittings are available from Gecko or other vendors.

Note that probes and units are factory matched and shipped together to ensure optimal precision of temperature measurements.





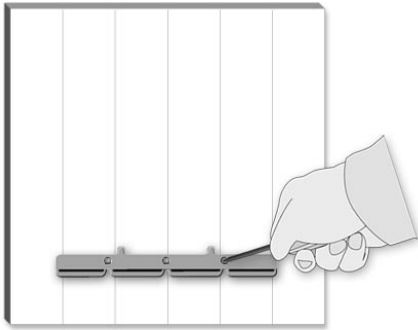
### Power box

The MC-MP provides for versatile installation: brackets allow wall installation and special mounting foot floor installation. In both case 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.

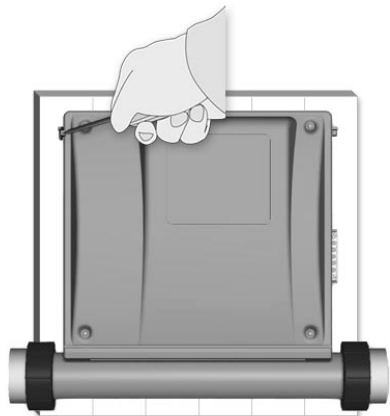
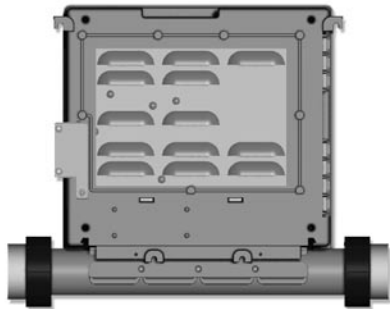




### Power box

#### 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 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.



Subject to technical modifications without notice.



**MC-MP Heater design**

The standard heater position is front-bottom-horizontal, but MC-MP can also be configured for horizontal-rear, side-vertical, or remote installation of heater, however this must be specified when ordering.

The heater cover plate design makes installation easy and also supports pressure switch latch cover and hi-limit probe.

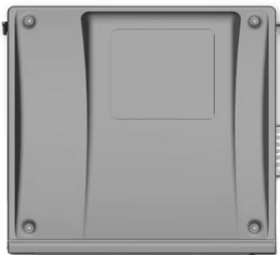
The various heater positions you may come across are shown here.



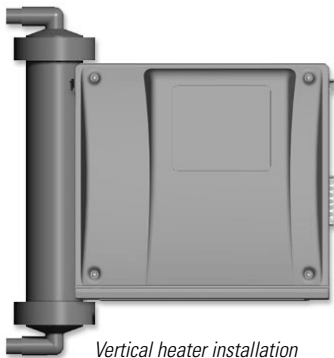
*Standard front installation*



*Rear installation*

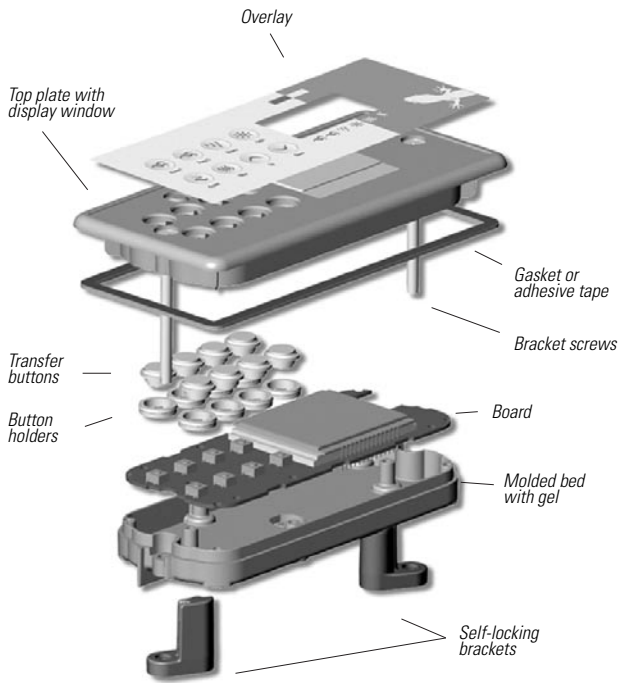


*Remote installation of heater*



*Vertical heater installation*

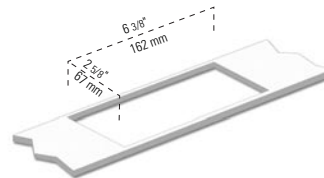




**Installing K-8\* with brackets**

The keypad should be installed directly on the spa (or very close to it) within easy reach of the user.

- 1- Select the appropriate location for the keypad.
- 2- Cut out a 2 5/8" x 6 3/8" (67 mm x 162 mm) rectangle directly on the edge of the spa. This will allow the keypad box to slide into position.



Installation of the K-8 main keypad is facilitated by 2 self-positioning lock brackets.

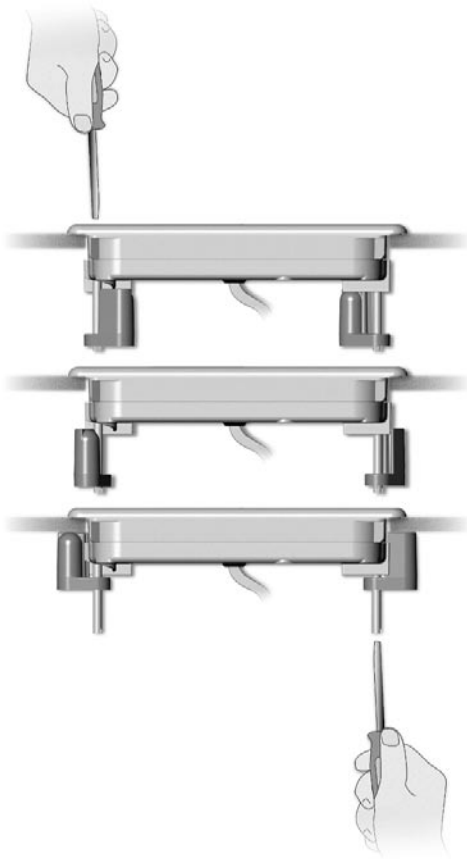


- 3- Rotate the brackets toward the inside of the keypad.
- 4- Place the keypad in position, allowing the connecting cable attached to keypad bottom to hang below opening.
- 5- a) If you want to secure the keypad from above the spa edge (if the overlay has not been placed), use a Phillips screwdriver to tighten the keypad in position and to properly seal the unit (avoid overtightening).

The brackets will follow the self-guiding edges to lock themselves into position.

- b) If you want to attach keypad from below spa edge, use a flat screwdriver to turn bracket screws counterclockwise so brackets follow self-guiding edges to lock themselves into position.

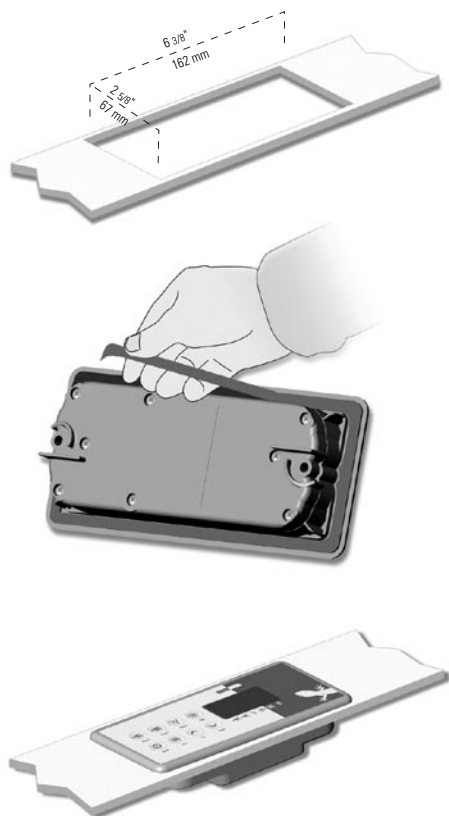
\*Note: Follow similar procedure for optional keypads.





**Installing K-8\* with adhesive**

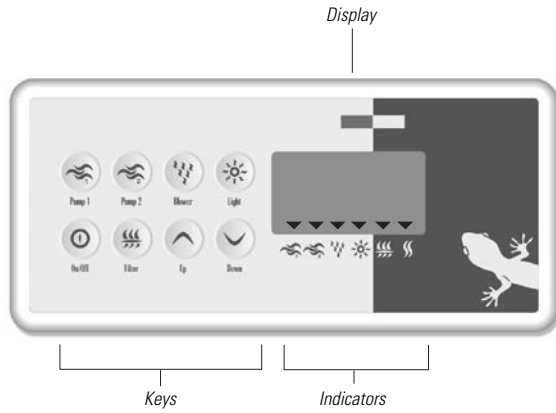
The keypad should be installed directly on the spa (or very close to it) within easy reach of the user.

**Procedure**

- 1- Select the most appropriate location for the keypad.
- 2- Cut out a 2 5/8" x 6 3/8" (67 mm x162 mm) rectangle directly on the edge of the spa. This allows keypad box to slide easily into position.
- 3- Clean surface.
- 4- Peel off the double-sided tape protective layer.
- 5- Place the keypad in position, allowing the connecting cable attached to keypad bottom to hang below opening.
- 6- Secure keypad in place by pressing firmly on it.

\*Note: Follow similar procedure for optional keypads.





Following are instructions for main K-8 keypad and K-8.10 keypad (required with Pump 3 and Economy options). Also, note that K-4 keypad is mandatory when Real Time Clock option is selected, and functionality of keys is different.

**Light key**

The **Light** key is used to turn the light on or off and to select light intensity. Intensity levels may vary depending on spa model.

Pressing **Light** key once turns light on at high intensity. Subsequent presses will change the intensity until the light is finally turned off.

A built-in timer will shut the light off 2 hours after turned on, unless turned off manually first.

The "Light" indicator will appear on LCD display while light is on.

Note: Functionality different if dual-light option is selected.

**Fiber Box Option:** if spa is equipped with an optional fiber box, pressing **Light** key once turns fiber box (motor and light) on. Pressing a second time turns fiber box motor off, but leaves light on. A third time turns both motor and light off. Thus, user can turn light on, and then stop fiber box at desired color output.

A built-in timer shuts fiber box off 2 hours after turned on, unless turned off manually first. The "Light" indicator will appear on LCD display when fiber box light is on. It will flash when fiber box motor and light are on at same time.

**Blower key**

The **Blower** key is used to turn blower on or off and to select blower speeds. The number of speeds varies depending on spa model.

One press turns blower on at high speed. Pressing a second time changes to low, and a third time off.

A built-in timer shuts blower off 20 minutes after turned on, unless turned off manually first.

The "Blower" indicator will appear on the LCD display when at high speed and will flash when in low.

**Up & Down arrow keys**

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

Pressing and holding keys will increase or decrease the current temperature setting.

The new and desired temperature setting (Set Point value) will remain for 5 seconds on the LCD display as a confirmation of the new value you have selected.

The "Set Point" icon on the display indicates that the temperature shown is the desired temperature, NOT the actual water temperature.

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

**Economy key** (only with K-10 keypad)

**Economy** key is used to turn the Economy mode on or off.

Economy mode maintains temperature 20 degrees below set point.

In Economy mode the display will toggle between the actual water temperature and "Econo".

**On/Off key**

The **On/Off** key is used to activate and deactivate all spa pack functions.

**Pump 1 key**

**Pump 1** key is used to turn Pump 1 on in the sequence Low, High, then Off.

A built-in timer shuts pump off 20 minutes after turned on, unless turned off manually first.

The "Pump 1" indicator will light up on the LCD display when Pump 1 is on and will flash if in low speed.

Note: Pump can be configured as a single-speed pump with low level programming.

**Pump 2 key**

**Pump 2** key is used to turn Pump 2 on in the sequence Low, High, then Off.

A built-in timer shuts pump off 20 minutes after turned on, unless turned off manually first.

The "Pump 2" indicator will light up on LCD display when Pump 2 is on and will flash if in low speed.

If a third pump is installed, the indicator will flash when Pump 2 is in low and will be a solid light when either Pump 2 is in high speed or Pump 3 is on.

Note: Pump can be configured as a single-speed pump with low level programming.

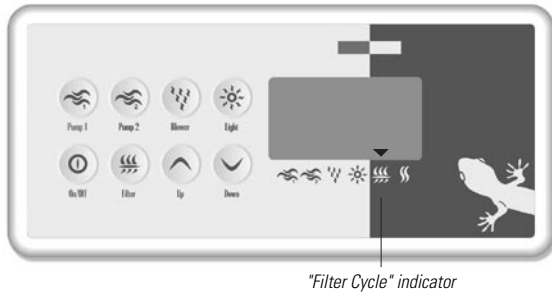
**Pump 3 key** (only with K-10 keypad)

**Pump 3** key is used to turn Pump 3 on or off.

A built-in timer shuts pump off 20 minutes after turned on, unless turned off manually first.

An indicator will light up above the Pump 2/3 icon on the display when pump is on.





"Filter Cycle" indicator



**Filter cycles**

The system automatically performs from 1 to 4 filter cycles daily (see filter cycle frequency). During a filter cycle:

- Pump 2, Pump 3 and blower run for 1 minute to purge piping, then,
- Pump 1 runs at low speed for the duration of the cycle and ozonator is turned on.

The "Filter Cycle" indicator will be displayed while filter cycle is on.

**To set filter cycle duration:**

- Press **Filter** key.
- Display will show "Fdxx", with "xx" representing currently set filter cycle duration in hours (0 to 12).
- Press **Up** or **Down** key to change the setting:  
0 = no filter cycle  
12 = continuous filter cycle
- When desired setting is displayed, press **Filter** key to confirm setting.

**Filter cycle frequency:**

- Press **Filter** key again to set the number of filter cycles per day.
- Display will show "FFxx", with "xx" representing current set filter cycle frequency.
- Press **Up** or **Down** key to adjust the setting from 1 to 4.

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

**Inverted display**

A simple key press sequence inverts the display so that it is readable from inside or outside the spa.

**To invert the display**

- Press and hold **Filter** key for 5 sec. to toggle between normal and inverted mode.

Note: At power-up display defaults to non-inverted mode.

**Keypad lockout**

- Your spa keypad can be locked. This feature is especially useful if young children have access to the keypad. There are two keypad lock modes:  
- Full lock: locks all keypad functions;  
- Partial lock: locks only programming functions; **Pump**, **Blower** and **Light** keys remain enabled.

**To lock/unlock keypad**

Press and hold **Pump 1** key for 5 sec. If key is released after initial 5 seconds, **LocP** will appear, indicating keypad is in partial lock.

If **Pump 1** key remains pressed for another 5 seconds, **LocF** will appear indicating keypad is now in full lock.

When keypad is locked, all automatic system functions run as usual. But, if a locked key is pressed, the attempted function is rejected and a "LocP" or "LocF" message will be displayed for 1 second.

Note: A power-up of the system will also unlock the keypad.



### High limit temperature

The High Limit temperature sensor will cause the system to shut down the heater because the water temperature AT THE HEATER has reached 119°F (48°C).

3 flashing dots will appear on the display and a small LED light up on the board.

### Overtemp mode protection

If water temperature IN THE SPA reaches 112°F (44°C), the display will start flashing and all pumps and accessories will be shut down until the water cools down to 109°F (43°C).

During Overtemp Mode only **Smart Winter Mode** and keys that don't start accessories will be functional.

Note: In the case of both Overtemp and High limit protection, DO NOT ENTER the water. Allow water to cool down to 109°F (43°C), then power down to reset the error.

### Automatic water heater start

When water temperature is 1°F (0.5°C) lower than the Set Point, the heater automatically comes on until the temperature reaches Set Point plus 1°F (0.5°C).

The "Heater" indicator will appear on the display when the heater is on. It will flash when more heat has been requested, but the heater is not functioning.

### Smart Winter Mode

MC-MP packs are equipped with a special sensor that measures the air temperature in the spa's plumbing area. If air cold enough to freeze water in the pipes is detected, the system automatically activates **Smart Winter Mode** for 24 hours. In this mode, if a pump or blower is not turned on within 2 hours, the system automatically turns it on for one minute to prevent freezing.

When pump is running, "Filter Cycle" indicator will flash on the display.

### Pressure switch

To prevent a "dry fire" in the heater, a pressure switch is installed in the pipes. The unit constantly verifies the status of the pressure switch.

If the pump used to circulate water through the heater is off and the pressure switch is closed, the system will display 3 flashing dots. This happens when the pressure switch adjustment is too low and the weight of the water is sufficient enough to close the switch.

If circulation pump is on and the pressure switch is open, the system will display 3 flashing dots, and the heater will not be allowed to run. This happens if the pressure switch adjustment is too high or if there is a bad connection between the board and switch.

Note that a dirty filter limiting water flow may cause a message to appear even if the system has been working well.

When the pump is turned on, there is a 5-second delay before the system starts to auto-check the status of the switch.

### Standby mode

Standby mode (Quiet) allows the spa's filter to be changed (or any other non-electrical maintenance). Once the maintenance is completed, the user simply exits Standby mode.

To activate Standby mode:

Press **On/Off** key to turn system down (i.e. to activate Standby mode) for 30 minutes. The message "Off" will be displayed. All keys will be disabled, unless **On/Off** key is pressed before the expiration of the 30-minute delay to reactivate the system.

Note: If the system is turned down using **On/Off** key while the heater is on, Pump 1 will continue running for an additional 3 minutes.

### Temperature probe

If the system detects a problem with the water temperature probe, the wrong temperature will be displayed. Check the connection to the board.

### Backlight display

The keypad is equipped with a backlight that illuminates the display and keys in the dark. The backlight comes on whenever any key is pressed and remains on until 30 minutes after the last spa system (pumps, blower, etc.) has been turned off.

### Power-up detection

If a power failure occurs, the system will be able to retain the time of day for 48 hours. If the power failure lasts longer, the clock setting will be lost and must be reprogrammed. The display will flash when power is restored. Press any key to stop flashing.

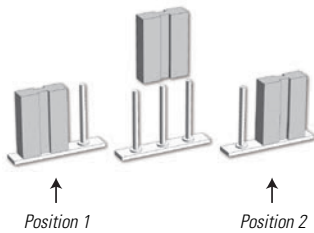
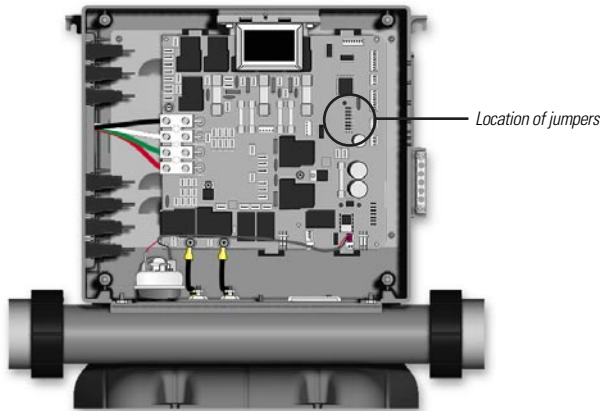
However, with Real Time Clock option, the current time is retained even after power failure (K-4 keypad mandatory with RTC).

### Temperature unit display

Temperature can be displayed in either Fahrenheit or Celsius.

Simply press and hold **Light** key for 5 seconds to toggle between °F and °C.





**Jumper selection**

It is possible to change parameters of the MC-MP pack by configuring specific jumpers located on the board.

To access jumpers, first unscrew the 5 screws holding on the plastic power box cover (requires a flat screwdriver).

Jumpers are located in the upper right of the board. To change a setting, simply pull jumper cover off pins and move it to the new desired position.

**Jumper 1**

**Current limiting option**

Jumper 1 is used to limit the current drawn when more than 1 pump (or a pump and blower) are activated at the same time.

Position 1 =  
HC (High Current) mode  
Heater will be turned off if more than 1 pump is on at high speed.

Position 2 =  
LC (Low Current) mode  
The heater may not be turned on if any pump (1, 2 or 3) is on at high speed.

The "Heater" indicator will flash to indicate a request for heat, but the heater will not be allowed to start.

**Jumper 2**

**Touchpad**

Keypad configuration:

Position 1 =  
10-key configuration.

Position 2 =  
8-key configuration.

**Low level programming**

*Note: Restricted to Gecko factory or authorized installer.*

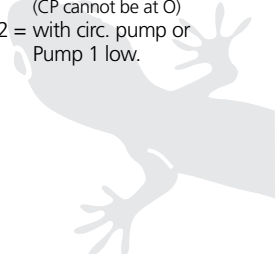
Certain system operating parameters can be configured from the keypad. This is normally done by Gecko or the spa installer, but may be done any time.

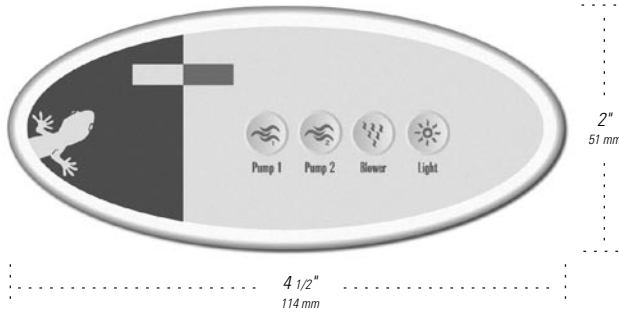
To access low level programming, press and hold **On/Off** key for 20 seconds, after which the first parameter code should appear on the display.

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 = single-speed
- 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  
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 deg.  
over set point
- 8- **Filter cycle**  
Display: FC x  
Value of x: 0 = filter cycle with  
Pump 1  
2 = filter cycle with  
circ. pump.  
1 = 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 at 0)  
2 = with circ. pump or  
Pump 1 low.





**Description**

For large spas, a second spa side keypad may be installed on the spa side offering access to the basic functions only.

The second spa side control performs the following functions:

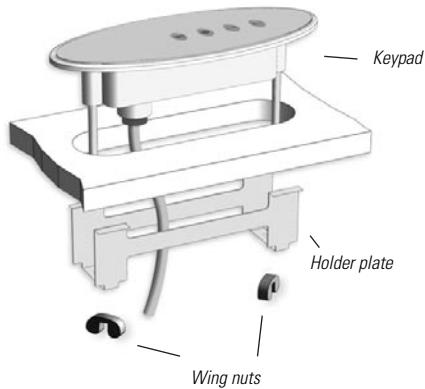
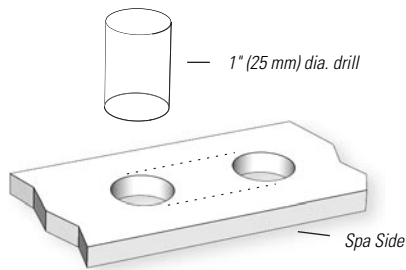
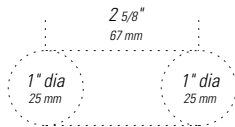
- Controls Pump 1
- Controls Pump 2
- Controls blower
- Controls light

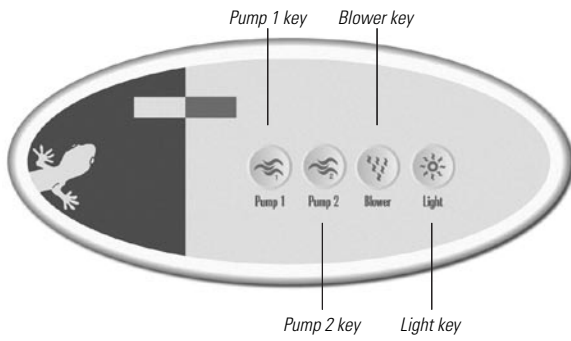
**Procedure**

To properly install the K-3 second spa side keypad, drill two 1" (25 mm) diameter holes at a distance of 2 5/8" (67 mm) from center to center.

Cut out the material remaining between the holes to create the space necessary to slide the keypad into position.

Insert the keypad and use the holder plate and the wing nuts to secure the keypad in place.



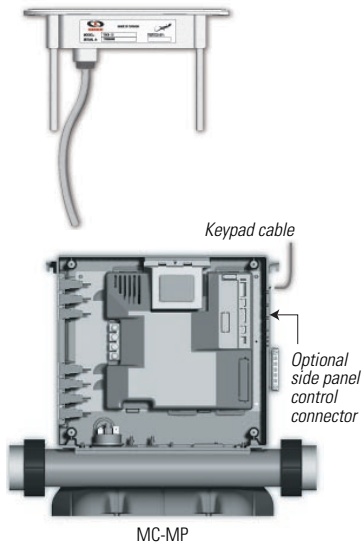


**Instructions**

The optional K-3 second spa side keypad shares the same four basic operational functions (Pumps 1 & 2, blower and light) as the main keypad.

**Cable connections**

Plug the opposite end of the cable into the optional side panel port of the power box, making sure to follow the illustrated cable route.





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