

SPA-QUIP

SP400P



User's Guide

Model : SP400P All Models



Spa-Quip Ltd
Spa-Power Equipment

www.spa-quip.com.au
service@spa-quip.com.au

Ph: 1300 797 828
Fax: 61 3 9730 9367

6 Lakeview Drive
Scoresby, VIC 3179 Australia

Spa-Quip Ltd
Spa-Power Equipment

www.spa-quip.co.nz
service@spa-quip.co.nz

Ph: 64 9 415 8622
Fax: 64 2 415 8621

2 Rothwell Ave
North Harbour Industrial Park, Auckland NZ

SPA-QUIP

SP400P User Guide .pdf
Booklet Part Number Q916324
10th April 2006

Contents

Section	Page
1	SP400P Touch Pads..... Pg 1
2	Temperature Control..... Pg 2
2.1	- Adjusting Set Temperature..... Pg 2
2.2	- Non Default Display Value..... Pg 2
2.3	- Heating Mode Selection(24hr circulation pump not fitted)..... Pg 2
3	Pump Operation..... Pg 3
3.1	- Pump 1 (Single speed pump, no 24hr circulation pump fitted)..... Pg 3
3.2	- Pump 1 (Single speed pump, 24hr circulation pump fitted)..... Pg 3
3.3	- Pump 1 (Two speed pump, no 24hr circulation pump fitted)..... Pg 4
3.4	- Pump 1 (Two speed pump, 24hr circulation pump fitted)..... Pg 4
4	Auxiliary/Air Button..... Pg 5
4.1	- Adjustable Speed Mode(SPVSB only)..... Pg 5
5	Light Operation..... Pg 6
5.1	- Adjustable Colour Mode(SPVCL only)..... Pg 6
5.2	- IndicatorLight..... Pg 6
6	Auto Sanitisation..... Pg 7
6.1	- No 24hr Circulation Pump Fitted..... Pg 7
6.1.1	- Adjusting Minimum Filtration..... Pg 7
6.1.2	- Clean Up Cycle..... Pg 7
6.2	- 24hr Circulation Pump Fitted..... Pg 7
6.3	- My Spa Is Too Hot In Summer..... Pg 7
7	Self Diagnostic Error Codes..... Pg 8

7 Self-Diagnostic Error Codes

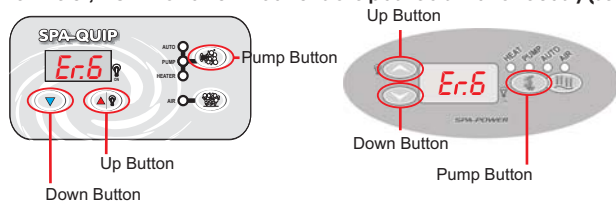
The Spa Power 400P controller has extensive self diagnostic capabilities. In the event of a problem it will indicate an error number according to the nature of the problem. The error numbers and their meanings are listed below. Note: When in an error state the alarm can be muted by pushing the AIR/AUX button.

Error 1 (H2O) - Prime Failed

This is not necessarily a problem with the SP400P itself, but indicates that no water is being detected in the heater housing. Prime failed is a special case in that it can be recovered from by pushing a button. A push of the pump button will run the pump for 10 seconds to try to get water to the heater. If successful normal operation will resume. If unsuccessful, Error 1 (H2O) will be indicated on the display again.

With any Error 3-8, spa operation will stop and not continue until the controller is reset. The controller can only be reset by pushing the UP, DOWN and PUMP buttons simultaneously.

The controller will remain in an error condition even when reset at mains power, controller will only continue normal operation after the UP, DOWN and PUMP buttons are pushed simultaneously (see below).



Error 3 - Stuck Button

This error indicates that one of the buttons in the touchpad is stuck or has been held down for more than one minute. This may be caused by the pool cover pressing on the touchpad or by water getting into the touchpad or by damage to the touchpad or its cable. Try to reset the spa. If there is still a problem then contact your spa pool supplier.

Error 4 - No Water Sensor

This error indicates a problem with the optical water sensor in the heater. The problem may be caused by the sensor being disconnected or by damage to the sensor. Try to reset the spa. If there is still a problem then contact your spa pool supplier.

Error 5 - Overtemperature

This error indicates that the digital temperature sensor in the heater or pool has detected a temperature of 45°C or more. This may not be a problem with the SP400P, it may be caused by excessive pump use in hot weather, or pump failure. Turn off the spa and allow time for the water to cool. If there is still a problem then contact your spa pool supplier.

Error 6 - Thermal Cut Out Tripped

This error indicates that the safety electromechanical over temperature cut out on the heater has operated. This is not necessarily a problem with the SP400P. It may have occurred from an air lock around the element, high temperatures during shipping, or failure of the pump. This automatic cut out will only reset once the element has cooled below about 38°C. The unit must then be reset before it will resume operation manually push the UP, DOWN and PUMP buttons simultaneously.

Error 7 - Stuck Relay

This error indicates a problem with the heater control circuitry inside the unit. Contact your spa pool supplier.

Error 8 - No Temperature Data

This error indicates a problem with the digital temperature sensor in the heater or pool wall or that both the in heater and in pool sensors are connected. Check that only one sensor is connected and that it has not become disconnected or damaged. Try to reset the spa. If there is still a problem then contact your spa pool supplier.

Safety Notes

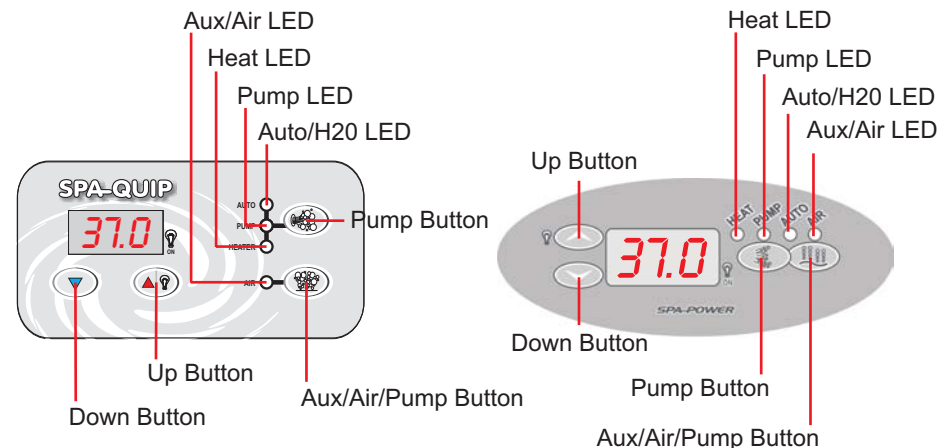
Before using ensure that the spa pool has been connected to a suitable weather protected outlet socket, equipped with a double pole isolating switch, which is of the correct rating and complies with the local wiring regulations.

When installing refer to your local wiring code. In particular refer to ECP 2 & ECP 25 (AS / NZ) and EN 60364-4-1 & EN 60364-7-1 (EU). The system must be installed in such a way that live parts are not accessible by a person in the pool. If a supply cord is not fitted the system must be permanently connected to fixed wiring through a 30mA or less RCD.

This appliance is not intended for use by young children or infirm persons without supervision. Young children should be supervised to ensure they do not play with the appliance.

Congratulations on choosing the latest Spa Power 400P control system. This controller makes use of the latest technology, including innovative optical and digital sensor designs. The great variety of optional accessories, user-friendly touchpad and reliable components provide you with the most sophisticated controller in its class.

1 SP400P Touch Pads



Auto LED (No 24hr circulation pump fitted)

The yellow or blue Auto indicator light will appear on the touch pad whenever the system is in full automatic control mode. In this mode the system automatically activates the pump and heater to filter the water and maintain the set water temperature. If this light is flashing the water sensor is not detecting any water.

H2O LED (24hr circulation pump fitted)

The yellow or blue H2O light indicates if water is present in the heater. If no water is detected then the LED will flash and the unit will not operate except to run the circulation pump to try to get water to the heater. If no water reaches the heater for one minute then an H2O error will occur. If this happens then pushing the pump button will run the circulation pump for another minute.

Pump LED

The green Pump indicator light will appear on the touch pad whenever the pump is running, in both auto and manual use mode.

Heat LED

The red Heater indicator light will appear on the touchpad whenever the heater element is on, in both auto and manual use mode. For safety the heater is always automatically controlled. Usually switching on the air blower accessory will cause the heater to switch off (loadshedding). This is in order to keep the total power load to a safe level. If this light is flashing the system has an error (see section 7).

Aux/Air LED

The Aux/Air indicator LED will appear on the touchpad whenever the Aux/Air button is pushed and conversly will disappear when the button is pushed again. Note: If the spa does not have a load connected to the controller the LED will still operate as described above.

2 Temperature Control

The Spa Power 400P automatically controls the pump and heater to filter the water and maintain it at the desired temperature set by the user (see below). The user can leave the system to look after the spa and know it will be at the correct temperature whenever he or she wants to use it.

2.1 Adjusting Set Temperature

The Spa Power 400P gives the user direct control of the pool temperature from the poolside control panel. Holding down the Up or Down button will adjust the temperature set point as shown on the digital readout. There is a slight delay before the buttons operate to reduce the risk of accidental adjustment. The pool temperature will be maintained very close to the set temperature.

 **UP** Increase the set temperature by 0.5°C per beep (Max = 41.5°C)

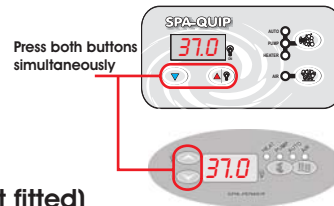
 **DOWN** Decrease the set temperature by 0.5°C per beep (Min = 10.0°C)

Default Display 

The display normally shows the temperature set point, unless the optional in pool temperature sensor is fitted in which case the sensed water temperature is displayed. In either case the temperature set point will be displayed while being adjusted as described above.

2.2 Non-Default Display Value

The non-default display value (either sensed water temperature or temperature set point) can be checked if necessary by pressing the Up & Down buttons simultaneously.



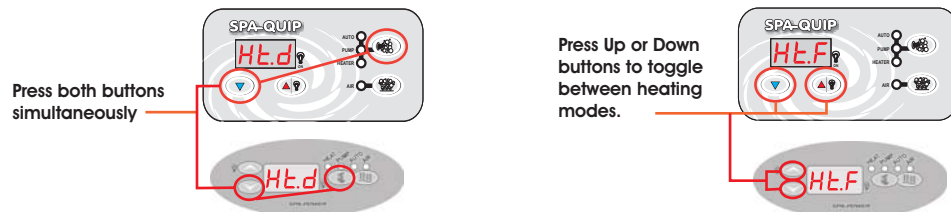
2.3 Heating Mode Selection (24hr circ pump not fitted)

In addition to the temperature setting the user can select the preferred heating mode. The two available heating modes are...

1/ Demand Heating (displayed as Ht.d). This is the default setting in which the pump and heater will come on automatically whenever the temperature drops slightly below the set point.

2/ Filtration Only Heating (displayed as Ht.F). In this mode the pump and heater will come on automatically no more than once per hour to filter and heat the water. This mode is provided as an option for those who prefer to limit the natural cycling of the system.

To select the heating mode first press the Pump and Down buttons simultaneously to display the current heating mode, then press and hold the Up or Down buttons to change modes.





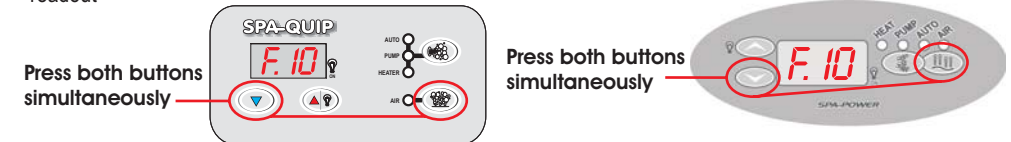
6 Auto Sanitising (Filtration)



6.1 No 24hr Circulation Pump Fitted

The Spa Power 400P automatically maintains the filtration/sanitising of the spa pool water. The minimum amount of filtration time is programmable by the user and can be adjusted between 0 and 15 minutes per hour (0 to 6 hours per day). In order to maintain correct filtration of the pool water, the SP400P monitors the time for which the pump runs in normal pool operation. If the pump has only run for a short time, the system will automatically run the pump for an additional period every hour to reach the minimum filtration time set by the user.


6.1.1 Adjusting Minimum Filtration Time (No 24hr circulation pump fitted)

First push the Down  and Air/Aux  buttons together to display the filtration time setting on the digital readout



The default setting is 10 minutes per hour (= 4 hours per day). Holding down the Up Button  or Down Button  will adjust the filtration time setting between 0 and 15 minutes per hour. (= 0 to 6 hrs per day).

6.1.2 Clean Up Cycle

If desired, a clean up cycle can be initiated to filter the water after the spa pool has been used. This is done by simply pushing the Pump Button  to leave auto mode and switch on the pump. This will circulate the water through the filter for 90 minutes. After 90 minutes the system will return to auto mode and maintain the temperature ready for the next time the spa pool is used.

6.2 24hr Circulation Pump Fitted

The Spa Power 400P continuously filters the spa pool to ensure the water is clean and crystal clear for each and every spa use. A near silent energy efficient circulation pump constantly passes water through the filter and since the circulation pump runs all the time (except in an error condition) and the heater is controlled automatically there is no need for any user controls for these features. With a 24hr circulation pump fitted there is no need to program any filtration cycles, and the noise of a large jet pump running during filtration has been removed.


6.3 My Spa Is Too Hot In Summer!

During warm periods of the year there may be times when the actual water temperature exceeds the desired temperature set by the user. E.g. If the spa is set to heat to 35°C, but the actual water temperature is hotter than 35°C. Please consider this - In the winter your spa gets cold because the air temperature is cold. To combat this we heat the water and keep the spa covered when not in use. If the spa is turned off and the ambient temperature is 15°C, eventually the spa water will lose heat until it too is 15°C. In the summer the same applies but in reverse - you can turn the heater down, even turn the pump off, but if the ambient daytime temperature is 35°C - 42°C then the spa water will also remain at that temperature.

Manufacturers make no attempt to supply a system that cools water. The quickest way to combat the problem is to change the water, but even this new water will eventually heat up to the air temperature. Turn the set temperature down so the heater does not come on. Reduce the minimum filtration time (non circ pump models only) so the pump runs less. The less the pump runs the more the water will cool. If the nighttime temperature is low, leave the cover off the spa to let heat escape, but put it back on during the day to keep heat out. Also make sure the spa is shaded from direct sunlight.

5 Light Operation

Your spa may have been fitted with either of two different LED lights; a Spa Power Coloured Light (SPCL) or a Spa power Variable Coloured Light (SPVCL). The Spa Power Coloured Light is a single coloured light that is either on or off. The Spa Power Variable Coloured light is a light that has the ability to change between 12 different colours and white (see below for user instructions).

The multi-function Light Button  is used to turn the light on and off (SPCL) and select through the different operating modes of the Spa Power Variable Colour Light. Two short presses of the button will turn the Spa Power Coloured Light on and off or five short presses of the button will cycle the Spa Power Variable Coloured Light as follows:

Light Button

Push 1 - Light ON (SPCL - On) (SPVCL Colour - White)

Push 2 - Light ADJUST (SPCL - Off) (SPVCL Adjustable Colour Mode)

Push 3 - Light CYCLE SLOW (SPVCL Cycle through colours - slowly)

Push 4 - Light CYCLE FAST (SPVCL Cycle through colours - quickly)

Push 5 - Light OFF (Default State)

Note: This is a multi-function button which performs the following -

- 1) Short presses of this button activate the light functions as detailed above.
- 2) Holding this button will begin to increase the set temperature of the spa.
- 3) When a Spa Power Variable Speed Blower is fitted and is turned on this button increases the blower speed.

5.1 Adjustable Colour Mode (SPVCL only)

When the light is on, short presses of the Down button  will put the light into adjustable colour mode and then sequentially select through all the available colours. The last colour set in this mode will be remembered the next time the light is used.

5.2 Indicator Light

A small red dot in the bottom corner of the digital readout indicates when the light is turned on. If left on the light will automatically switch off after 30 minutes.



3 Pump Operation

There are four possible variations of pump 1 that may have been fitted to your spa, this user guide covers all variations of pump 1 that could have been fitted. Please read sections 3.1 through to 3.4 then follow the section which matches your spa operation.

Note: Even if a 24hr circulation pump is fitted there is no button to control it. The 24hr circulation pump operation is completely automatic (it only turns off in an error condition).

3.1 Pump 1 (Single speed pump, no 24hr circulation pump fitted)

Pump 1 is controlled by just one touch pad button pushing the pump button three times cycles its operation through three modes Automatic, Manual and Standby. When the spa is running in automatic mode, pressing the pump button will deactivate auto mode and set the pump running in Manual Mode. The auto LED is orange when auto mode is enabled and off when in Manual Mode. When the pump is in standby mode all indicator LED's are off.

Push 1 (Manual Mode)



Push 2 (Standby Mode)



Push 3 (Auto Mode)



Notes:

- 1) If Pump 1 is left in "Manual or "Standby" modes it will automatically revert to "Auto" mode after 90 minutes.
- 2) There is no direct user control over the heater. The heater may come on automatically whenever Pump 1 is on.

3.2 Pump 1 (Single speed pump, 24hr circulation pump fitted)

Pushing the pump button two times turns the pump on and then off. The pump LED is green when the pump is running and off when the pump is off.

Push 1 (Pump on)



Push 2 (Pump off)

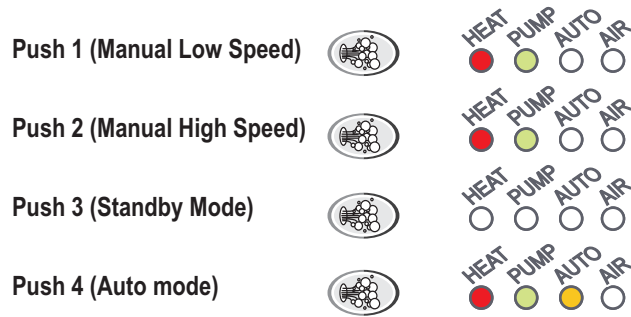


Notes:

- 1) If Pump 1 is left on, it will automatically switch off after 20 minutes.
- 2) There is no direct user control over the heater. The heater may come on automatically whenever the 24hr circulation pump is on.
- 3) If the heater element is on, running the pump may cause the heater to load shed and switch off. If this occurs the heater will come back on approximately 5 seconds after the pump is deselected.

3.3 Pump 1 (Two speed, no 24HR circulation pump fitted)

Pump 1 is controlled by just one touch pad button pushing the pump button 4 times cycles its operation through 4 modes Automatic, Manual Low Speed, Manual High Speed and Standby. When the spa is running in automatic mode, pressing the pump 1 button will deactivate auto mode and set the pump running in Manual low speed. The auto LED is orange when auto mode is enabled and off when in manual low speed or manual high speed. When the pump is in standby mode all indicator LED's are off.



Notes:

- 1) If Pump 1 is left in "Manual or "Standby" modes, it will automatically revert to "Auto" mode after 90 minutes.
- 2) There is no direct user control over the heater. The heater may come on automatically whenever Pump 1 is on.
- 3) If the heater element is on, running the pump in high speed may cause the heater to load shed and switch off.

3.4 Pump 1 (Two speed, 24HR circulation pump fitted)

Pushing the pump button three times cycles the pump through its two speeds then off. The pump LED is green when the pump is running in low or high speed and off when pump is off.



Notes:

- 1) If Pump 1 is left on, it will automatically switch off after 20 minutes.
- 2) There is no direct user control over the heater. The heater may come on automatically whenever the 24hr circulation pump is on.
- 3) If the heater element is on, running the pump in high speed may cause the heater to load shed and switch off. If this occurs the heater will come back on approximately 5 seconds after the pump is deselected.

4 Auxiliary Air Button

The Air Button controls an auxiliary air blower. It is used to turn the blower on and off, and select different operating modes if a Spa Power Variable-Speed Blower (SPVSB) has been fitted. 2 pushes (STD) or 4 pushes (SPVSB) of the air button cycles the blower as follows:

Note: In some spas an additional jet pump or pool light etc may be fitted instead of a standard air blower.

Standard Air Blower (STD)

Push 1 - Blower ON

Push 2 - Blower OFF

Spa Power Variable-Speed Blower (SPVSB) (if fitted)

Push 1 - Blower ON (Full Speed)



Push 2 - Blower ADJUSTABLE (Adjustable Speed)



Push 3 - Blower OSCILLATING (Oscillating Speed)



Push 4 - Blower OFF (Default State)



Note: If left on, this accessory will automatically switch off after 20 minutes. If the heater element is on, switching on this accessory may cause the heater to loadshed and switch off. This is to keep the total power load to a safe level.

4.1 Adjustable Speed Mode (SPVSB only)

If a Spa Power Variable-Speed Blower is fitted, the spa user has the ability to adjust the blower speed to any desired setting. The Up and Down buttons are used to set the desired blower speed. Note: If the blower is in Full Speed or Oscillating modes then pushing the Up or Down button will put it into Adjustable Speed mode and then adjust the speed.

Step 1) Press Air Button **twice** to set Adjustable Speed Mode



Step 2) Press Up to **increase** speed of blower

Step 3) Press Down to **decrease** speed of blower