

Error Codes Explained

Applicable to SP400, SP54500, SP500A MKI/MKII, SP600, SP601, SP750, SP800 & SP1200

The SP400, SP500A MKI/MKII, SP600/601, SP750, SP800 & SP1200 controllers have extensive self-diagnostic capabilities. In the event of a problem it will sound an alarm (beep) and indicate an error number according to the nature of the problem. Pushing the Air/Aux button (SP400, SP500A MKI/MKII, SP600/601 & SP750) or Scroll button (SP800 & SP1200) will mute the alarm but if left alone it will stop after four minutes. The error numbers and their meanings are listed below.

Error 1 or H2O = PRIME FAILED

This is not a latching error. It is not necessarily a problem with the SP400, SP500A MKI/MKII, SP600/601, SP750, SP800 & SP1200 itself but indicates that no water is being detected in the heater. The SP400, SP500A MKI/MKII, SP600/601 & SP750 will display H2O on the touch pad, so pressing the Pump button will try to prime the line. The SP800 & SP1200 LCD display will show three options on the bottom line of text: Retry:Mute:Demo. Pressing the Down button (Retry) will run the pump associated with the heater (Pump1 or Circ Pump) for 10 or 60 seconds respectively, to try to flood the heater tube. Normal operation will resume if successful. If unsuccessful, Error 1 or H2O will be indicated again.

- *Check valves and jets are open correctly, filter is not blocked, that the filter pump is working and that there is enough water flow through the heater tube.*
- *Check that air is not trapped in the heater tube. See the 'Circulation Pump' section.*
- *Check for leaks (water or air) in pipe work, O-rings, seals and loose fittings. If there is air around the water sensor the controller will think the heater is empty. This may occur if there is a small leak so that the water drains out of the heater over time.*
- *If there is water flow then the water sensor may be dirty or faulty. Remove and inspect, replace if necessary. Check the water sensor to circuit board connection for water, corrosion or fouling.*
- *When all other options have been exhausted change the circuit board.*

Error 2 is not used. If this comes up please contact the Davey Service Centre in your state.

Errors 3-8 are latching errors.

Operation will stop and will not continue until the controller is reset (see the Resets for Controllers document).

Error 3 = STUCK BUTTON

This error indicates that one of the buttons in the control panel is stuck or has been held down for more than one minute. This may be caused by water getting into the panel, damage to the control panel or its cable, or by the pool cover pressing on the touchpad.

- *Inspect the control panel for damage; test the operation of each button by checking that they all feel the same.*
- *Check the control panel to main circuit board connection and the cable itself for any damage or corrosion.*
- *Disconnect the control panel and run the controller for one minute. If it cuts out on Error 3, then the problem is in the controller.*
- *When all other options have been exhausted change the main circuit board.*

Error 4 = NO WATER SENSOR

This error indicates a problem with the optical water sensor in the heater. It may be caused by the sensor being disconnected or by damage to the sensor.

- *Check the water sensor to circuit board connection for water, corrosion or fouling.*
- *Remove the water sensor and inspect, replace if necessary.*
- *Check water sensor lead for damage (SP400 only).*
- *When all other options have been exhausted change the circuit board.*

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 is not necessarily a problem with the SP400, SP500A MKI/MKII, SP600/601, SP750, SP800 & SP1200 itself. It might be caused by excessive pump use during hot weather. In this case reduce the filtration time and increase the sleep time.

- *Check that another source of heat is not heating the pool excessively. Look at pumps operating for long durations, solar heating, heat pumps, lighting etc.*

Error Codes Explained

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- *Check that the ambient temperature is not above or close to 45 °C.*
- *If an in heater temperature sensor is used check that there is adequate water flow through the heater. Check that the filter and pump are not blocked and that the jets and valves are open.*
- *Measure the pool temperature and verify the controller's reading. If the controller has an in heater sensor then circulate the water for a few minutes first. If the controller is reading an incorrect temperature then the temperature sensor may be damaged or faulty. Connect another sensor and check that the controller is operating correctly. If it is then change the temperature sensor, if not change the circuit board.*

Error 6 = THERMAL CUTOUT 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 SP400, SP500A MKI/MKII, SP600/601, SP750, SP800 & SP1200 itself. It may have been caused by high temperatures during shipping or by disconnection or failure of the pump. Waiting for the heater to cool below about 38°C and switching the power off and on again will clear this error.

- *Check valves are open correctly; pumps are working and that there is adequate water flow through the heater tube.*
- *Check that filters are clean and jets are open.*
- *Check thermal cut-outs in pumps and other equipment. (Run pump directly from mains to see if it overheats and cuts out.)*
- *Check that the capacitors in the pump are within their operating specification and replace if necessary.*
- *Check all connections in the controller are tight and clean.*
- *Check for overheated or burnt wires from the relays to the thermal overloads and onto the element posts.*
- *Make sure air cannot collect in the heater tube. See the '24Hr Circulation Pump Recommendations' of the Installation and Service Manual for your Spa Controller.*
- *Check the thermal overloads and make sure that they are not visually damaged and that they are still electrically connected and not open circuit.*
- *When all options have been exhausted change the circuit board.*

Error 7 = STUCK RELAY

This error indicates a problem with the heater control circuitry inside the unit.

- *Check that there are no short circuits across the relay terminals or associated wiring.*
- *Check that all internal wiring is correct and that terminals are tight and clean.*
- *When all options have been exhausted change the circuit board.*

Error 8 = NO TEMPERATURE DATA

This error indicates a problem with the digital temperature sensor in the heater or pool. It might be caused by the sensor being disconnected or by damage to the sensor or cable.

- *Check temp sensor lead for damage.*
- *Check the temperature sensor to circuit board connection for water, corrosion or fouling.*
- *Connect another sensor and check that the controller is operating correctly. If it is, then change the temperature sensor, if not change the circuit board.*
- *Make sure there is only one sensor plugged into the circuit board. Either 'in-heater' or 'in-pool' sensor, not both (SP600/601 only).*
- *Use the diagnostic display to determine which temperature sensor is at fault (see Diagnostic Displays section for SP800 & SP1200 only).*

Error 9 (SP800 & SP1200 only)

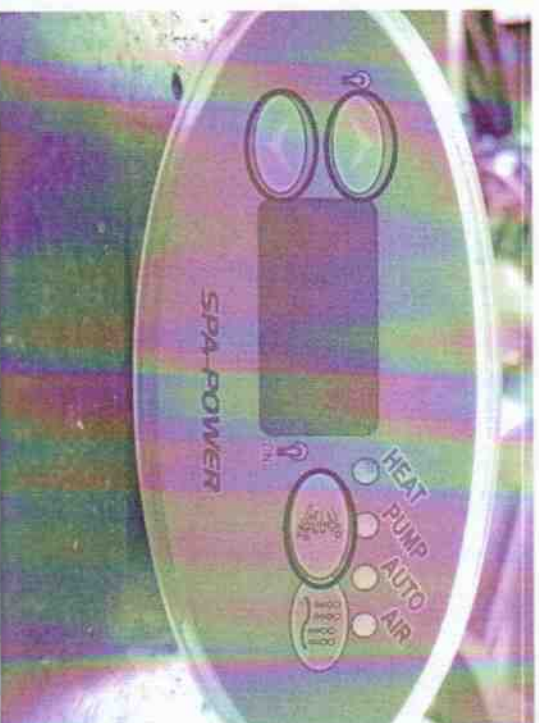
This error indicates a problem with the real time clock within the SP800 & SP1200.

- *Try resetting the unit (see the Resets for Controllers document).*
- *If fault continues to occur, change PCB.*

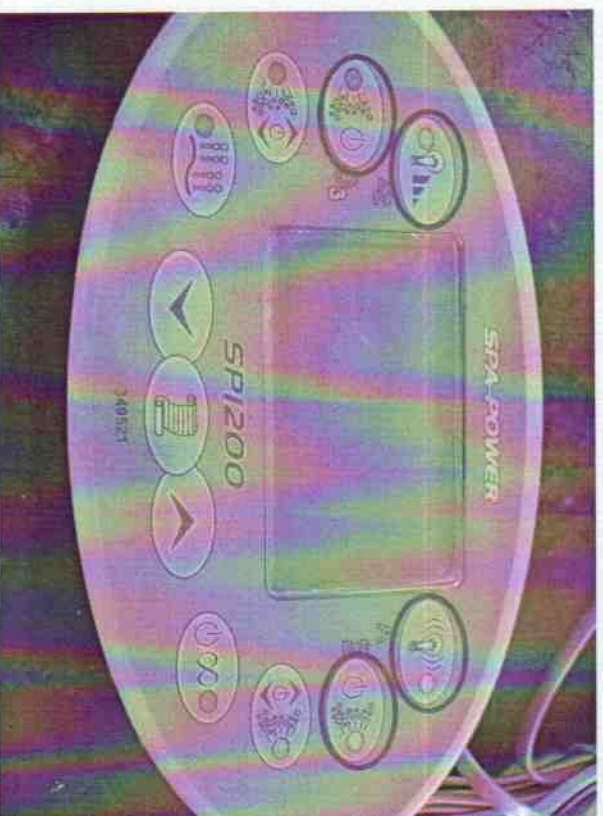
To Reset the SP500A MKI/MKII, SP750 & SP1000 you will need to turn the Power Off then back On again to the spa.



To Reset the SP400/600/601 and Xcelstior Spa Pump press the down, up and pump buttons all simultaneously and hold for 3 seconds.



To Reset the SP800 & SP1200 press the two light buttons and the blower/pump2 on/off and pump1 on/off button all simultaneously and hold for 3



Troubleshooting Davey Spa Power Controllers

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Touchpad Buttons Don't Work – All Models

Check the touch pad ribbon cable for the SP400, 500A MKI/MKII, SP600/601, SP750 and Xcelsior Spa Pool to see if it has been damaged, and if so, replace the touch pad. With the SP800 and SP1200 check for a crushed cable or to see if there is any damage to the cable at the touch pad end, as just because the power wires aren't damaged, the data wires maybe damaged and this will cause the buttons not to work. Also check to see if the overlay has any small cracks in it, if any are found then check for water ingress. If water ingress is found, replace the touch pad. The SP800, SP1200 and Xcelsior Spa Pool controllers have a key lock function which may possibly be applied inadvertently. If this happens, the touchpad buttons do not work and the display shows "KEYS LOCKED" on the SP800 & SP1200 and all lights will illuminate on the Xcelsior Spa Pool touch pad when a button is pushed. The user can disengage the key lock on the SP800 & SP1200 by pressing the button sequence; Down, Scroll, Down, Up, Scroll. To disable on Xcelsior Spa Pool press and hold the Jet1 and Jet2 buttons simultaneously for 2 seconds. See SP800 or SP1200 User's Guide section 8.3 and Xcelsior Spa Pool User's Guide section Touch Pad Child Lock.

H2O/CHE or Error 1 – All Models

- Check that all of the air has been bled from the system.
- Make sure that the circ/filtration pump is operational.
- Make sure that you have the minimum chemical levels in the water for the Xcelsior Spa Pool controller.

The Thermal Cut-Out Keeps Operating – All Models

- Check that the plumbing is clear and that there is adequate water flowing through the heater tube.
- Check that filters are clean, water valves are open and jets are open.
- Check the thermal cut-out in the circulation pump. If the pump stops the controller cut-out will operate.
- Check the circulation pump is well ventilated and cannot overheat.
- Check the circulation pump is securely plugged in and connected.
- Check the motor start capacitor(s) in the circulation pump is the correct value and in good condition.
- Turn the power supply to the unit off and allow the unit to cool. Turn the power back on.
- Check no pumps are running continuously. A large pump will heat the pool until the cut-out operates or the power to it is cut.
- If a small circulation pump is in use check there is enough flow through the heater tube and that air is not collecting in the heater tube. Try to measure the flow from the circ pump outlet jet. This can be done by holding a hose on the jet's outlet and timing how long it takes to fill a bucket. Aim for more than 50 L/m. i.e. it should take no longer than 24 seconds to fill a 20 litre bucket.
- Check for overheated or burnt wires from the relays to the thermal overloads and onto the element posts.
- Check the thermal overloads and make sure that they are not visually damaged and that they are still electrically connected and not open circuit.
- If all else fails the controller may be faulty and need to be returned for service.

The Unit Won't Power Up – All Models

- Check there is power to the unit and that the touchpad is plugged in correctly.
- Check the touchpad for damage or corrosion. Try another touchpad.
- Check all connections are correct, tight and clean.
- Check the RCD/Circuit Breaker and have it renewed if necessary.
- Replace the unit.

The Unit Leaks – All Models

- First ascertain where the leak is. Check that nearby glued plumbing joints are well made.
- Check that the mac-unions are tight, have O-rings fitted, are well aligned and not distorted.
- Inspect the water sensor body for cracks and O-ring location. Replace if necessary. Do NOT over tighten as there is a risk of cracking the body. Hand tighten only and then back off ¼ turn.
- Inspect the element boss screws and tighten if necessary to compress the O-ring.
- Check and make sure that the boss O-ring is not twisted or damaged and replace if necessary.
- Check for cracks in the top of the heater tube and replace the heater tube if necessary.

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The RCD Keeps Tripping Out – All Models

- Check for shorts to earth and loose, dangling wires. Check the element earth leakage. Try disconnecting equipment piece by piece until you can identify what is causing the fault.
- Check that other household equipment is not causing the tripping. Any equipment connected through the RCD could contribute to it tripping. Try a dedicated RCD circuit for the spa.
- Check that the RCD is not also an over-current circuit breaker. If it is, make sure it is rated for motor start up surges and is not overloaded.
- Make sure the unit is not drawing too much current from the supply – see loading calculations.
- Check for damage to wiring, pumps, blowers, and lights.
- Check for water ingress or leaks onto live parts or into the supply conduit.
- Check earth connections.
- Check Neutral connections.
- Check the supply is wired correctly. In the case of multiple phased houses, make sure that phases are balanced.
- Some older switchboard RCDs are not compatible with EMC filtered equipment and must be replaced.
- The RCD may be faulty and require replacement.

My Pool is Getting Too Hot – All Models

- Check that another source of heat is not heating the pool excessively. Look at pumps operating for long durations, solar heating, heat pumps, lighting etc.
- In extreme climatic conditions where there is a high ambient temperature the normal operation of the unit and water pump may cause the water to overheat. To counter this, remove the pool cover over night to allow the pool to cool. Be sure the pool is safe to leave uncovered. Consider access by children, animals etc.
- To reduce pump run times increase the sleep time and minimise the filtration time.
- In extreme heat consider adding cold water or ice to cool the pool.

Sometimes I Get Tingles From My Pool! – All Models

Low voltage 'tingles', which can be quite painful and alarming, are usually caused by poor or overloaded connections in the power supply wiring to the house or a nearby house. When this happens, small but significant voltage differences can occur in the earth/neutral wiring network so that the water in the pool and the ground around the pool might be at slightly different voltages. This can result in tingles, especially when stepping out of the pool wet. This is a dangerous situation as the tingles may hurt the user directly or indirectly through falls. Any pool which gives tingles should be isolated at the main supply and not used until a professional electrician has corrected the problem. This may well require the involvement of the local supply authorities. Each SP800 and SP1200 controller is supplied with a "Recommended Pre-Installation Supply Checks" sheet (part no. Q916333), which details the electrical tests required to identify a problem supply situation (for Multiple Earthed Neutral Supplies as used in Australia and New Zealand only). Ensure that this check sheet is passed to any investigating electrician. Note that this situation is not peculiar to SP800 and SP1200 controllers but can occur on any pool with any model/brand of controller.

Touchpad Works but Pumps Won't Come On – SP800 and SP1200

The controllers have a demonstration mode, which can be entered by pressing the up button when in the Error 1 "PRIME FAILED" condition. This mode allows the controller to operate on a pool without water in it for demonstration purposes, without turning on the pumps etc. This mode may result in a service call if demo mode is entered inadvertently when trying to operate the spa normally. To fix this problem the power should be cycled off and on again so the controller restarts and primes normally.

Controller Behaves Unusually – SP800 and SP1200

The controllers have a lot of configuration settings which can be adjusted on the touchpad. If an inexperienced (or malicious) user sets unsuitable values there is potential to make the controller behave unusually, leading to service calls. E.g. Pool temperature setting, Clock setting, Sleep time settings, Filtration time settings and other more minor settings could be corrupted. In order to ensure that no unsuitable settings have been made on a system it may be desirable to reload the factory default settings. This can be done by the user through the display menu system. See SP800 or SP1200 User's Guide section 7.10.

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Touchpad LCD is Too Light/Dark – SP800 and SP1200

The touchpad display may appear too dark or too light for clear visibility, especially in extreme temperature conditions. If so then the user can correct the display contrast by holding down the top left light button, and either the up or down buttons, until the display looks correct. See SP800 or SP1200 User's Guide section 8.4.

Touchpad Shows a Foreign Language – SP800 and SP1200

The SP800 and SP1200 controllers are intended for an international market and have the ability to display the LCD user interface text in several different languages. The user can select their preferred language from the following choices: English, French, German, Dutch, Japanese, Spanish or Portuguese. This is done by first holding the down button for four seconds to enter the language selection menu, then selecting the desired language using the up and down buttons and finally setting this language by pressing the scroll button. See SP800 or SP1200 User's Guide section 8.6.