

# **Pool & Spa Systems & Equipment**

## **(2008 California Energy Code)**

1-14-2010

### **Mandatory Requirements - Section 114**

1. **Certification:** Any pool or spa heating system or equipment installed shall be certified by the manufacturer that the system or equipment has all of the following:
  - 1.1 A thermal efficiency that complies with the Appliance Efficiency Regulations; and
  - 1.2 A readily accessible on-off switch, mounted on the outside of the heater that allows shutting off the heater without adjusting the thermostat setting; and
  - 1.3 A permanent, easily readable, and weatherproof plate or card that gives instructions for the energy efficient operation of the pool or spa heater and for the proper care of pool or spa water when a cover is used; and
  - 1.4 No electric resistance heating is allowed; unless (1) it is a listed package unit with fully insulated enclosures, and with tight fitting covers that are insulated to a least R-6; or (2) the pool or spa delivers at least 60 percent of the annual heating energy from site solar energy or recovered energy.
  
2. **Installation:** Any pool or spa system shall be installed with all of the following:
  - 2.1 At least 36 inches of pipe shall be installed between the filter and the heater or dedicated suction and return lines, or built-in or built-up connections shall be installed to allow for the future addition of solar heating equipment; and
  - 2.2 A cover for outdoor pools or outdoor spas that have a heat pump or has a heater.
  - 2.3 If the system or equipment is for a pool, the following shall apply:
    - 2.3.1 The pool shall have directional inlets that adequately mix the pool water; and
    - 2.3.2 A time switch or similar mechanism shall be installed as part of the pool water circulation control system that will allow all pumps to be set or programmed to run only during the off-peak electric demand period and for the minimum time necessary to maintain the water in the condition required by applicable public health standards.

### **Pool Systems and Equipment Installation – Section 150(p)**

1. **Pump size and flow rate:**
  - 1.1 All pumps and pump motors installed shall be listed in the Commission's directory of certified equipment and shall comply with the Appliance Efficiency Regulations.

- 1.2 All pump flow rates shall be calculated using the following system equation:  
 $H = C \times F^2$

Where: H is the total system head in feet of water  
F is the total rate in gallons per minute (gpm)  
C is a coefficient based on the volume of the pool:  
0.0167 for pools less than or equal to 17,000 gallons, or  
0.0082 for pools greater than 17,000 gallons; and

- 1.3 The filtration pumps shall be sized, or if programmable, shall be programmed, so that the filtration flow is not greater than the rate needed to turn over the pool water volume in 6 hours or 36 gpm, whichever is greater; and
- 1.4 The pump motors used for filtration with a capacity of 1 hp or more shall be multi-speed; and
- 1.5 Each auxiliary pool load shall be served by either separate pumps or the system shall be served by a multi-speed pump, unless the pump is less than 1 hp; and
- 1.6 Multi-speed pumps shall have controls which default to the filtration flow rate when no auxiliary pool loads are operating; and
- 1.7 For multi-speed pumps, the controls shall default to the filtration flow rate setting within 24 hours and shall have an override capability for servicing.
- 2. System Piping:**
- 2.1 A length of straight pipe that is greater than or equal to at least 4 pipe diameters shall be installed before the pump; and
- 2.2 The pool piping shall be sized so that the velocity of the water at maximum flow for auxiliary pool loads does not exceed 8 feet per second in the return line and 6 feet per second in the suction line; and
- 2.3 All elbows shall be sweep elbows or elbow-type that have a pressure drop of less than the pressure drop of straight pipe with a length of 30 pipe diameters.
- 3. Filters:**
- 3.1 Filters shall be at least the size specified in NSF/ANSI 50 for public pool intended applications.
- 4. Valves:**
- 4.1 Minimum diameter of backwash valves shall be 2 inches or the diameter of the return pipe, whichever is greater.

**Appliance Efficiency Regulations (Database)** can be found on the Energy Commission's website at [www.appliances.energy.ca.gov](http://www.appliances.energy.ca.gov).