



Residential Pool Pumps Summary Sheet

Residential pool pumps are pumps used to circulate and filter pool water in order to maintain clarity and sanitation.

California and Connecticut have efficiency standards for residential pool pumps. The efficiency standards are uniform across both states. Excerpts from each state's standards are shown below; text in italics is directly excerpted from the state regulations.

The Multi-State Collaborative is providing these standard summaries as a courtesy; these materials are not intended to interpret state regulations. The user is responsible for reading and interpreting the regulations.

Which states have a standard?

Of the states participating in the Multi-State Appliance Collaborative, the following have a standard for residential pool pumps; the date in parentheses shows the effective date of the standard:

- California (2006, 2008)
- Connecticut (2010)

California

Effective January 1, 2006 (motors standard), January 1, 2008 (two speed capability standard)

Definitions

California Title 20 Section 1602(g)

Also see section 1602 (a) for general definitions.

"Residential pool pump" means a pump used to circulate and filter pool water in order to maintain clarity and sanitation.

Standard

California Title 20 Section 1605.3 (g) (5)

Energy Efficiency Standards for Residential Pool Pumps.

(A) Motor Efficiency. Pool pump motors manufactured on or after January 1, 2006 may not be split-phase or capacitor start - induction run type.

(B) Two-Speed Capability.

(i) Pump Motors. Pool pump motors with a capacity of 1 HP or more which are manufactured on or after January 1, 2008, shall have the capability of operating at two or more speeds with a low speed having a rotation rate that is no more than one-half of the motor's maximum rotation rate.

(ii) Pump Controls. Pool pump motor controls manufactured on or after January 1, 2008 shall have the capability of operating the pool pump at at least two

speeds. The default circulation speed shall be the lowest speed, with a high speed override capability being for a temporary period not to exceed one normal cycle.

Test Method

California Title 20 Section 1604 (g) (3)

The test method for residential pool pumps is as follows:

(A) IEEE 114-2001 shall be used for the measurement of motor efficiency.

(B) ANSI/HI 1.6-2000 shall be used for the measurement of pump and motor combinations efficiency.

(C) Two curves shall be calculated:

$$\text{Curve A: } H = 0.0167 \times F^2$$

$$\text{Curve B: } H = 0.050 \times F^2$$

Where:

H is the total system head in feet of water.

F is the flow rate in gallons per minute (gpm).

(D) For each curve (A&B), the pump head shall be adjusted until the flow and head lie on the curve. The following shall be reported for each curve and pump speed (two-speed pumps shall be tested at both high and low speeds):

1. Head (feet of water)
2. Flow (gallons per minute)
3. Power (watts and volt amps)
4. Energy Factor (gallons per watt hour)

Where the Energy Factor (EF) is calculated as:

$$EF = \text{Flow (gpm)} * 60 / \text{Power (watts)}$$

Labeling Requirements

California Title 20 Section 1607

All units must comply with section 1607, Marking of Appliances, which requires the following:

(a) Every unit of every appliance within the scope of Section 1601 shall comply with the applicable provisions of this Section. The effective dates of this section shall be the same as the effective dates shown in Section 1605.1, 1605.2 or 1605.3 for appliances for which there is an energy efficiency, energy consumption, energy design, water efficiency, water consumption, or water design standard in Section 1605.1, 1605.2, or 1605.3. For appliances with no energy efficiency, energy consumption, energy design, water efficiency, water consumption, or water design standard in Section 1605.1, 1605.2, or 1605.3, the effective date of this section shall be January 1, 2006.

(b) **Name, Model Number, and Date.**

Except as provided in Subsection (c), the following information shall be permanently, legibly, and conspicuously displayed on an accessible place on each unit:

(1) manufacturer's name or brand name or trademark (which shall be either the name, brand, or trademark of the listed manufacturer specified pursuant to Section 1606(a)(2)(A) or, if applicable, the designated manufacturer specified pursuant to Section 1606(f)(1)(F));

(2) model number; and

(3) date of manufacture, indicating (i) year and (ii) month or smaller (e.g. week) increment. If the date is in a code that is not readily understandable to the layperson, the manufacturer shall immediately, on request, provide the code to the Energy Commission.

California Title 20 Section 1607 (10)

Residential Pool Pumps.

(i) Each residential pool pump shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than 1/4", the rated horsepower of the pump.

(ii) Each residential pool pump motor shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than 1/4", the total horsepower of the motor.

Connecticut

Effective January 1, 2010

Definitions

Connecticut General Statutes Section 16a-48

"Residential pool pump" means a pump used to circulate and filter pool water to maintain clarity and sanitation;

Standard

Regulations and Procedures for Establishing Energy Efficiency Standards for Certain Appliances and Products, Section 16a-48-4 (r)

(r) Residential pool pumps sold, offered for sale, or installed on or after January 1, 2010 shall meet the following criteria:

(1) Pool pump motors shall not be split-phase or capacitor start-induction type.

(2) Pool pump motors ≥ 1 hp shall have the capability of operating at two or more speeds with the low speed having a rotation rate on more than $\frac{1}{2}$ of the motor's maximum rotation rate;

(3) Pool pump motor controls shall have the capability of operating the pool pump at least two speeds. The default circulation speed shall be the lowest speed, with a high speed override capability being for a temporary period not to exceed on normal cycle.

Test Method

Regulations and Procedures for Establishing Energy Efficiency Standards for Certain Appliances and Products, Section 16a-48-5 (q)

The test method for residential pool pumps is as follows:

(A) IEEE 114-2001 shall be used for the measurement of motor efficiency.

(B) ANSI/HI 1.6-2000 shall be used for the measurement of pump and motor combinations efficiency.

(C) Two curves shall be calculated:

$$\text{Curve A: } H = 0.0167 \times F^2$$

$$\text{Curve B: } H = 0.050 \times F^2$$

Where:

H is the total system head in feet of water.

F is the flow rate in gallons per minute (gpm).

(D) For each curve (A&B), the pump head shall be adjusted until the flow and head lie on the curve. The following shall be reported for each curve and pump speed (two-speed pumps shall be tested at both high and low speeds):

- 1. Head (feet of water)*
- 2. Flow (gallons per minute)*
- 3. Power (watts and volt amps)*
- 4. Energy Factor (gallons per watt hour)*

Where the Energy Factor (EF) is calculated as:

$$EF = \text{Flow (gpm)} * 60 / \text{Power (watts)}$$