

Requirements for Residential Pool Pump and Motor Combinations, and Replacement Residential Pool Pump Motors

California requires all residential, in-ground, swimming pool filtration pump and motor combinations (new and replacement motors) that are sold or offered for sale in the state (except those sold wholesale in California for final retail sale outside the state) to meet specific energy requirements. Section 1605.3(g)(5) of [California's Appliance Efficiency Regulations \(Title 20\)](#) requires:

- Pool Pump Motors
 - Pool pump motors manufactured on or after January 1, 2006 cannot be split-phase or capacitor start-induction run type.
 - Residential pool pump motors with a pool pump motor capacity (or total horsepower) of 1 horsepower (HP) or greater manufactured on or after January 1, 2010, must 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.
 - The pump motor must be operated with a control capable of running the pump at a minimum of two speeds.
- Pool Pump Motor Controls
 - Pool pump motor controls manufactured on or after January 1, 2008 and sold for use with a two- or more speed pump must be capable of operating at two or more speeds.
 - The control's default circulation speed setting cannot be more than one-half of the motor's maximum rotation rate.
 - Any high-speed override capability must be for a temporary period not to exceed one 24-hour cycle without resetting to default settings.



Why?

Historically, swimming pool pumps have accounted for up to 20% of pool owners' household energy consumption. With over 1.5 million residential swimming pools in California, the impact on the electric grid and pool owners is significant. To reduce energy use and associated costs, the California Energy Commission adopted standards requiring residential filtration pool pumps to use efficient motor designs and to be two-, multi- and variable-speed if the motor capacity is greater than 1 HP. These standards save up to 80% of the electricity needed to circulate and filter the water in residential swimming pools.



News Flash!

California Energy Commission Amends Title 20 Residential Pool Pump Motor Regulations Through Emergency Rulemaking

As of March 27, 2017, residential pool pumps powered by permanent magnet synchronous motors (PMSM) that are sold or offered for sale in California are now able to certify to the California Energy Commission (Energy Commission) and be listed in the Modernized Appliance Efficiency Database System. Manufacturers, test labs, and designated Third-Party Certifiers must certify residential pool pump and motor combinations and residential replacement pool pump motors that are to be sold or offered for sale in California.

A PMSM is defined in Title 20 as a motor that has a permanent magnet rotor, windings on the stator, and is controlled by single-phase or multi-phase sinusoidal alternating current. PMSMs are commonly used in storable pools.

This amendment to the Title 20 regulations will prevent the unavailability of storable pools with pumps powered by PMSM that would not otherwise be available for sale in California.

Relevant Code Sections

2016 California Appliance Efficiency Regulations, Title 20

- Section 1602(g) – Definitions
- Section 1604(g)(3) – Test Methods for Specific Appliances
- Section 1605.3(g)(5) – State Standards for Non-Federally Regulated Appliances
- Section 1606(a) Table X and 1606(a)(5)(g) – Filing by Manufacturers; Listing of Appliances in Database
- Section 1607(d)(9) – Marking of Appliances

What's Covered

Title 20 regulates residential pool pump and motor combinations, and replacement residential pool pump motors intended to be coupled to an existing residential pool pump that is used to circulate and filter pool water in order to maintain clarity and sanitation.

Pressure cleaner booster pumps, commercial pool pumps and motor combinations, and auxiliary pumps are not regulated by Title 20.

Frequently Asked Questions

- **Do the Title 20 regulations apply to newly constructed swimming pools?**
 - Though Title 20 regulates all new and replacement residential pool pumps and motor combinations sold or offered for sale in California, including those installed in existing swimming pools, newly constructed swimming pools are regulated under [California's Building Energy Efficiency Standards \(Energy Code or Title 24, Part 6\)](#), which directly references Title 20 and prohibits the installation of capacitor start–induction run or split-phase design residential in-ground filtration pump motors.
 - If the residential in-ground filtration pump motor has a motor capacity greater than 1 HP it must be capable of operating at two or more speeds (such as variable speed) and be controlled with a compliant controller, as required by Title 20.
- **Does Title 20 regulate above-ground or portable swimming pools?**
 - Yes, residential pool pump and motor combinations and replacement residential pool pump motors sold to filter water for above ground and portable pools are within the scope of the appliance regulations.
- **If a 1.5 HP single-speed pump motor fails but the pump is still operational, can I purchase a "like for like" 1.5 HP single-speed motor to replace it?**
 - No, for residential pool pump motors manufactured after January 1, 2010 that are over 1 HP in capacity, only two-, multi- and variable-speed retrofit replacement motors are legally allowed to be sold in California, even if purchased online. The requirement does not apply to non-filtration replacement pool pump motors.

How to Comply with Title 20

Compliance entails:

- Designing, marking and labeling products according to the regulations
- Testing regulated products using the required test methods and
- Certifying the product to the California Energy Commission

Even if a pool pump motor or motor combination meets all performance, testing and marking requirements outlined in Title 20, it is illegal to sell a regulated product in California if the model is not certified to the Energy Commission and listed in the [Modernized Appliance Efficiency Database System \(MAEDBS\)](#).

Everyone in the sales chain – including manufacturers, distributors, retailers, contractors, importers and installers – is responsible for ensuring regulated products are listed in the [MAEDBS](#).

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To begin your search enter model criteria and click search. Use the additional fields if necessary. The quick search also allows search results to be narrowed to currently approved models or to search historical models.

To search historical models, please set the status to archived which can be found on the appliance status tab.

Questions can be directed to Appliances@energy.ca.gov or to the Appliances Hotline, toll free at (888) 838-1467 or outside California (916) 651-7100. Search instructions are also available.

Model Number Appliance Type Company Brand Appliance Status

Select Category Select Appliance Type

Pool Products Residential Pool Pumps

Search Clear

For More Information

Primary Documents

- Title 20 Appliance Efficiency Regulations
[govt.westlaw.com/calregs/Browse/Home/CaliforniaCaliforniaCodeofRegulations?guid=I8F8F3BC0D44E11DEA95CA4428EC25FA0&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](http://govt.westlaw.com/calregs/Browse/Home/CaliforniaCaliforniaCodeofRegulations?guid=I8F8F3BC0D44E11DEA95CA4428EC25FA0&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))
- 2016 Title 24, Part 6 Building Energy Efficiency Standards (effective January 1, 2017)
energycodeace.com/content/reference-ace-2016-tool
- 2019 Title 24, Part 6 Building Energy Efficiency Standards (effective January 1, 2020)
energycodeace.com/content/reference-ace-2019-tool

California Energy Commission Information & Services

Title 20

- Appliances Hotline: (888) 838-1467 or outside California (916) 651-7100
- Questions may also be emailed to Appliances@energy.ca.gov
- California Appliance Efficiency Standards Site: energy.ca.gov/appliances
- Modernized Appliance Efficiency Database (MAEDBS):
<https://cacertappliances.energy.ca.gov/Login.aspx>

Title 24, Part 6

- Energy Standards Hotline: 1-800-772-3300 (Free) or Title24@energy.ca.gov
- Online Resource Center:
energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards
 - The Energy Commission’s main web portal for Energy Standards, including information, documents, and historical information

Additional Resources

- Energy Code Ace:
EnergyCodeAce.com
 - An online “one-stop-shop” providing free resources and training to help appliance and building industry professionals decode and comply with Title 24, Part 6 and Title 20. The site is administered by California’s investor-owned utilities.

Of special interest:

- Fact Sheets
energycodeace.com/content/resources-fact-sheets/
 - Title 20 Certification Overview, Process and FAQs
- Title 20 On-Demand Video Training:
energycodeace.com/content/title-20-training/

Please register with the site and select an industry role for your profile in order to receive messages about all our free offerings! You can also email us at Title20@energycodeace.com.

Energy Code Ace is here to help you ensure your products meet the requirements of California’s appliance and equipment efficiency energy code, Title 20 – which can help ensure that you don’t encounter issues that impact your sales and bottom line, including avoiding facing civil penalties under Title 20 Section 1609 for noncompliant products.



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