

Dedicated-Purpose Pool Pump (DPPP) Motors

Working Document

7/19/18

Definitions

Capacitor-start, induction-run means a single-phase induction motor configuration with a main winding arranged for direct connection to a source of power and an auxiliary winding connected in series with a capacitor. The motor configuration has a capacitor phase, which is in the circuit only during the starting period.

Dedicated-purpose pool pump motor means an electric motor that is single-phase or poly-phase which complies with and is certified to UL 1004-10 and/or is designed and/or marketed for use in dedicated-purpose pool pump applications.

Designed and marketed means that the equipment is designed to fulfill the intended application and, when distributed in commerce, is designated and marketed solely for that application, with the designation on all the packaging and all publicly available documents (e.g., product literature, catalogs, and packaging labels).

Designed and/or marketed means that the equipment is designed to fulfill the intended application and/or, when distributed in commerce, is designated and marketed for that application, with the designation on the packaging and/or any publicly available documents (e.g., product literature, catalogs, and packaging labels).

Integral cartridge-filter pool pump motor means a dedicated-purpose pool pump motor that is distributed in commerce as a component of an integral cartridge-filter pool pump as defined at 10 CFR 431.462.

Integral sand-filter pool pump motor means a dedicated-purpose pool pump motor that is distributed in commerce as a component of an integral sand-filter pool pump as defined at 10 CFR 431.462.

Maximum operating speed means the rated full-load speed of a motor powered by a 60 Hz alternating current (AC) source.

Rigid electric spa pump motor means a dedicated-purpose pool pump motor that does not have a C-flange or square flange mounting and that is labeled and designed and marketed for use only in rigid electric spas as defined at 10 CFR 431.462.

Split phase means a single-phase induction motor configuration with an auxiliary winding displaced in magnetic position from, and connected in parallel with the main winding. The auxiliary circuit is open when the motor has attained a predetermined speed.

Storable electric spa pump motor means a dedicated-purpose pool pump motor that is distributed in commerce as a component of a storable electric spa pump as defined at 10 CFR 431.462.

Waterfall pump motor means a dedicated-purpose pool pump motor with a maximum speed less than or equal to 1,800 rpm that is designed and marketed for waterfall pump applications and labeled for use only with waterfall pumps.

Scope of coverage

The standards will apply to dedicated-purpose pool pump (DPPP) motors, including DPPP motors incorporated in DPPPs produced domestically and imported, with dedicated-purpose pool pump motor total horsepower (THP) as defined at 10 CFR 431.462 less than or equal to 5 THP, with the following exemptions:

Exempted DPPP motors:

- Poly-phase motors capable of operating without a drive
- Waterfall pump motors
- Rigid electric spa pump motors
- Storable electric spa pump motors
- Integral cartridge-filter pool pump motors
- Integral sand-filter pool pump motors

Prescriptive requirements

There will be prescriptive requirements for all DPPP motors, for DPPP motors with a THP greater than or equal to 1.15 THP, and for DPPP motors with freeze protection controls.

DPPP motors

DPPP motors must not operate with a capacitor start induction run (CSIR) or split phase (SP) configuration at maximum operating speed.

DPPP motors with THP greater than or equal to 1.15 THP

DPPP motors with THP greater than or equal to 1.15 THP will have a prescriptive speed control requirement.

Prescriptive Requirement: Variable Speed Control

Each dedicated-purpose pool pump motor with a dedicated-purpose pool pump motor total horsepower greater than or equal to 1.15 THP shall meet the definition of a variable-speed control dedicated-purpose pool pump motor.

A variable-speed control dedicated-purpose pool pump motor means:

A dedicated-purpose pool pump motor that is capable of operating at four or more discrete, user- or pre-determined operating speeds where at least:

- One of the operating speeds is the maximum operating speed;
- One of the operating speeds is 75% to 85% of the maximum operating speed;
- One of the operating speeds is 45% to 55% of the maximum operating speed;
- One of the operating speeds is less than or equal to 40% of the maximum operating speed and greater than zero.

And that must be distributed in commerce either:

- (1) With a variable speed drive and with a user interface that changes the speed in response to pre-programmed user preferences and allows the user to select the duration of each speed and/or the on/off times;
- (2) With a variable speed drive and without a user interface that changes the speed in response to pre-programmed user preferences and allows the user to select the duration of each speed and/or the on/off times, but is unable to operate without the presence of a user interface; or
- (3) Without a variable speed drive and with or without a user interface, but is unable to operate without the presence of a variable speed drive.

And:

- (1) Any high speed override capability shall be for a temporary period not to exceed one 24-hour cycle without resetting to default settings or resuming normal operation according to pre-programmed user preferences; and
- (2) Any factory default setting for daily run time schedule may not include more hours at an operating speed above 55% of maximum operating speed than the hours at or below 55% of maximum operating speed; or if a motor is distributed in commerce without a default setting for daily run time schedule, the default operating speed after any priming cycle (if applicable) must be no greater than 55% of the maximum operating speed.

Note: This definition includes dedicated-purpose pool pump motors that are capable of operating at a variety of user-determined speeds, where all the speeds are separated by at most 100 rpm increments over the operating range and the lowest operating speed is less than or equal to one-third of the maximum operating speed and greater than zero.

DPPP motors with freeze protection controls

For all dedicated-purpose pool pump motors distributed in commerce with freeze protection controls, the motor must be shipped with freeze protection disabled or with the following default, user-adjustable settings:

- (1) The default dry-bulb air temperature setting is no greater than 40 °F;
- (2) The default run time setting shall be no greater than 1 hour (before the temperature is rechecked); and
- (3) The default motor speed shall not be more than $\frac{1}{2}$ of the maximum speed.

Labeling

If DOE is able to implement labeling requirements, the permanent nameplate must be marked clearly with the following information:

- (A) The dedicated-purpose pool pump motor total horsepower; and
- (B) Either: single-speed, two-speed, multi-speed, or variable speed control.

Reporting

Certification reporting requirements should include, but not be limited to,:

- (A) True power factor at maximum speed and full load
- (B) For dedicated-purpose pool pump motors distributed in commerce with freeze protection controls, a statement regarding whether freeze protection is shipped enabled or disabled, and for dedicated-purpose pool pump motors distributed in commerce with freeze protection controls enabled, the default dry-bulb air temperature setting (in °F), default run time setting (in minutes), and default motor speed (in rpm).

Compliance date

The compliance date should be July 19, 2021 to align with the compliance date of the DPPP standards.

Verification of THP

For purposes of verifying THP, DOE should use the DPPP test procedure at 10 CFR 431 Appendix C to Subpart Y.