TECHNICAL SERVICE DEPARTMENT
Technical Service Bulletin
1-800-432-8373

Electrical Fluctuations and Proper Load Sizing with a Tankless Electric

In some cases, you may experience electrical fluctuations in your home when you have installed a tankless electric product. This may include flickering lights and appliances; or a 'brown out' period that may last a few moments.

A brownout is a temporary interruption of power service in which the electric power is reduced. Lights may flicker and dim during a brownout; and the event also may impact other electrical appliances such as computers, television sets, freezers and refrigerators. You may have inadvertently caused a brownout condition by overloading your home's capacity to carry power.

Here is what is going on inside your home if you have installed a tankless electric water heater.

What is a Circuit Breaker Panel?

An electrical circuit breaker panel is the main distribution point for electrical circuits in your home. It usually provides between 100 and 200 amps of power to your home, depending on your home's load demand. Power comes in to your home from the utility company, through a service entrance. It flows through an electrical meter, through an electrical disconnect and then to the main breaker in your electrical panel. The main breaker is marked with the value of protection (like 100 amps) on the breaker handle.

What is the Minimum Sized Panel Required and Why?

A 100-amp service is the minimum size service required for a new home. Homes that have a 60-amp service or less may need an update. Today we have microwaves, coffee pots, can openers, crock pots, toasters, waffle irons, pizza ovens, dish washers, air conditioners, hot tubs, air compressors, and many other things that draw an enormous amount of power.

What Size Panel Does My Home Need?

In a standard-sized home equipped with three or less major appliances, a 100-amp circuit breaker panel will provide an adequate amount of power to feed the home. If you have a much larger home with many more appliances, a good choice would be to install a 200-amp circuit breaker panel.

First, if the unit was properly installed, then you should not experience any electrical problems. The use and care manual provided with the product outlines the basic electrical installation requirements. A tankless electric water heater can consume up to 112 amps of power. In most homes with a 200 amp service, this means you will probably need to install a second service panel just for the tankless electric. For example, open up your service panel and add up all the amp ratings of each breaker. Then subtract that from your panels rated capacity. Also notice the two most common tankless electric units used for 'whole home' applications require two (2) breakers and two wire lines from the panel to the water heaters. A mid-range 13Kw tankless electric water heater needs the same amount of electrical energy as a heat pump air conditioning and heating system for your entire home. Installing a 27 Kw product is like adding two more air conditioning systems in addition to the one you have installed now.

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The only way to get this right is have a licensed electric conduct a load calculation on your home before you attempt to install a tankless electric – especially the 18 or 27 Kw products.

ELECTRICAL SPECIFICATIONS

KW	VOLTS	REQ. BREAKER	MAX POWER (AMP)	AWG WIRE
3	110	30	29	10
7	240	30	29	10
9	240	40	38	8
13	240	60	54	6
18	240	(2) 40	75	(2) 8
27	240	(2) 60	112	(2) 6

If you are experiencing any electrical problems with your home after installing a Rheem tankless electric, then the first thing we need to do is answer the following questions:

Is the water getting hot?	Yes – the unit is working fine.	No – call Rheem technical support at 800-432-8373
Is the product tripping circuit breakers?	Yes – call the installer or a licensed electrician to help	No - the unit is working fine.
Is the electricity acting different than before?	Yes – call the installer or a licensed electrician to help	No - the unit is working fine.

Here is a look inside the RTE-27 product. Notice there are four heating elements (tubes) that are used to heat the water. Also notice there are two field wiring connections at the bottom right of the unit. Each of these wiring connections needs its own 60 amp breaker for a total of 120 amps.