

Final Kiln Preorder and Install Checklist

Voltage, Phase, and Amperage Capacity

- Voltage has been checked by an electrician or is known with absolute certainty
- I have checked the amperage rating of the kiln with the intended voltage and checked (or had an electrician check) to see that I had enough amps available in my building power supply

Ventilation

- I have a room fan
- I will be using a kiln vent and have planned the installation.
- I am going to manually vent the kiln but I have adequate room ventilation for this.

Flammability Issues

- I can install the kiln at least 12" away from any wall.
- My kiln room floor is non-flammable.
- I will use an insulated floor and check temperatures when the kiln is at its highest point
- I have a dedicated fire extinguisher or sprinkler system for the kiln room or kiln.

Safety Standards & Codes

- I have checked if UL499 listing is required for my location.
- You are using a licensed electrician who knows the National Electrical Code and any other local codes.

Other Safety Issues

- Children will be adequately protected from hot kiln.
- There will be wall or other permanent fixture to attach the kiln lid safety chain.

Other Accessories

- I have checked into my need for shelves.
- I have decided about gloves and glasses.

What voltage do I get?

Sometimes we get asked "should I get a 208 V or a 240 V kiln?". This isn't a choice you make, it is determined by the power you have available. Every location will have a specific voltage, and you need to select a kiln that matches that voltage. We always confirm voltage with you when you place a kiln order.

With rare exception every home/residence in the USA will have 120 V and 240 V single phase power available. Industrial/commercial locations (and sometimes schools) will have 120 V as well, and well as either 240 V or 208 V power, in either a 3 phase or single phase form. (Some industrial locations might even have 480 V power.)

Only very small kilns (less than 1 cu ft) can operate on 120v power (normal household voltage). There just isn't enough power available on 120V circuits to heat a larger kiln. If you want a larger kiln, you will need to identify a 240 V circuit to use, or have a new circuit installed.

Your electrical circuit will be protected by a circuit breaker. You need to have a circuit/breaker that meets the amperage requirements for the kiln you selected. This may involve calling an electrician to come out and do some wiring for you. Most electricians will do free estimates, so you can get a couple to compare. You can get rough estimates over the phone, but they will have to look at your wiring to determine if it can handle the amount of amperage the kiln requires.

If you do not have a circuit that will provide the power you need, you will need to have a new circuit installed. You may be limited by the total available power in your home. If your total available power can handle it, we recommend wiring the new circuit sized for a kiln larger than what you are considering buying. You never know when your firing needs will grow and you'll need a larger kiln. When in doubt, get at least a 240 V, 60 amp circuit installed. That covers the vast majority of the kilns we sell. If you have enough power and just need an appropriate breaker installed, this usually runs \$200-\$300. If you need more power brought to the house it can cost \$5000 and up! Yikes!

Below is additional information to help you understand voltage and current. Electrical requirements can be the most confusing part of buying a kiln. Hopefully this will help.

Please note:






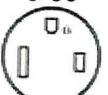


This is intended to be a guide to selecting a kiln and understanding the power available at your location. It is **not** to be taken as an authoritative or definitive document. **If you have any concerns or questions about the circuits in your location, please consult a qualified electrician and your local electrical codes before plugging in.**

Remember, you can always have electricians come out to your house for **free** to give you estimates. We had three estimates and they differed not only in price but in how they would do the job. In my area, electricians that publicized "small jobs" were the best value for this kind of work. Assuming your house has "modern" wiring, you can probably get any required work done for \$100-\$200. In some cases however, it could be much more, so especially if you're looking at a kiln that is over 30 amps, it is always better to get the free estimates before you order the kiln.

Voltage

120 Volts

240 ✓

6-20  20 amps	10-20  20 amps	
6-30  30 amps	10-30  30 amps	14-30  30 amps
6-50  50 amps	10-50  50 amps	14-50  50 amps

Phase

Single vs. 3-phase

Both 208 volts and 240 volt kilns can be wired in single phase or 3-phase configuration. Single phase is most common in household wiring, while 3-phase is exclusively used in industrial or commercial locations.

Single phase circuits deliver all the voltage in unison (a single sine wave). 3-phase delivers the current in 3 separate sine waves, all out of phase from each other by 120 degrees.

Again, kilns must be built differently for 3-phase, so please specify this when ordering. Many of the kilns are available in 3-phase models.

Current (amperage or "amps")

120 V kilns usually go up to 30 amps maximum.

208 V and 240 V Kilns are designed for 30, 40, 50 amps or more. At 48 amps and above, kilns do not come with plugs; instead they must be wired directly into your power supply. This is because good electrical design practice limits the amperage requirements of a kiln to 80% of the circuits rating. The largest rated commonly available plug/receptacle you can get is 50 amps. The next larger sized breaker is 60 amps. 80% of that is 48 amp, hence the limit.

The circuit/breaker requirement for a kiln is always about 20% greater than the kiln is expected to pull. This is to allow for short surges in power without tripping the breaker or blowing the fuse. So a 48 amp kiln needs a 60 amp breaker, etc.

Receptacles and plugs




Generally speaking, different receptacles are used to denote the different voltage and current configurations for the wiring in your house. This is to prevent something from being plugged into a circuit that can not safely provide the required power. It is not categorically true that receptacle rating never exceeds the circuit rating. Since there is nothing unsafe about putting an overrated receptacle on an underrated circuit, it can be done, However it can be a confusing to the next guy who goes to use it. What

110 V, 115 V and 120 V are standard household voltages. For the purpose of buying a kiln or an electrical appliance, all three of those are the same. Historically line voltage varied somewhat in the USA, so people got in the habit of calling it 110 V, or 115 V or 120 V, whatever their area had. However, in any modern electrical distribution system in the USA today, you will have a 120V power supply, with only slight variations.

Some 120v kilns need 20 amp circuits, and some need 30 amps.

120 V Electrical Receptacles

For reference, these are the most common plugs on kilns and their ratings.

<p>5-15</p>  <p>15 amps</p>	<p>120 V, 15 amp receptacle. Common in homes in the USA. It is most often protected by a 15 amp or 20 amp breaker. Verify the breaker and compare to the requirements of the kiln before purchasing.</p>
<p>5-20</p>  <p>20 amps</p>	<p>120 V, 20 amp receptacle. Sometimes seen, but not very common in homes. Some 120 V kilns we sell require it. It is often protected by a 20 amp or 30 amp breaker. Verify the breaker and compare to the requirements of the kiln before purchasing.</p>
<p>5-30</p>  <p>30 amps</p>	<p>120 V, 30 amp receptacle. Rarely seen in the USA but occasionally used in Canada. Very few kilns we sell would require this receptacle</p>


208/240 Volts

220 V, 230 V and 240 V. Similar to the explanation for 120 V, these are in essence the same thing. Voltage varies somewhat, so some people will call it 220 and some will call it 240v, etc. (It's based on 2 times a 110/115/120 volt circuit.) Virtually all USA households have this power available. It is commonly used for electric clothes dryers and kitchen stoves/ovens.

208 V is different. It is most often found in schools, industrial settings or occasionally residences where industrial power is available (like farms, or converted industrial areas). Most kilns we sell can be ordered in 208 V versions, but sometimes have different maximum firing temperatures because of it. Check the specifications or ask. 208V is created by using 2 legs of a 3 phase circuit, 120 degrees out of phase.

240 V Electrical Receptacles

For reference, these are the most common plugs on kilns and their ratings.

<p>6-15</p>  <p>15 amps</p>	<p>The 6-15 looks similar to a 6-30, but it is much smaller, like a 120 V receptacle</p>	
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is critically important is that the circuit breaker be correctly rated so it properly protects the wiring of your circuit.

Not all houses are consistent, however. So there are three important things to consider.

- First, make sure your wiring can handle the power needs of the kiln you want to purchase. You may have an existing circuit that is acceptable, or you may need an electrician to install a new circuit for you.
- Second, the plug on the kiln must match your receptacle. Sometimes this may mean changing the plug or the receptacle.
- Third, verify the breaker on the circuit (and it's wiring) is rated per the manufacturer's recommendations

(Note: Always be extremely careful when changing the plug/receptacle. For example, you do not want to put a plug or receptacle on a circuit that is lower rated than the amperage the circuit is expected to carry.)

What can make kilns confusing is that the plugs used on the kiln...

- a. might not match your wall receptacle, and
- b. might not even match the actual rating/requirement of the kiln.

a) For example, you might have a 6-30 receptacle (see above) while the kiln has a 10-30 plug. These are both 30 amps, but have different configurations. The same kiln can be used in each of these configurations, but your house receptacle might be one type and the kiln plug another.

b) Some houses are wired in a confusing manner. Sometimes builders will use receptacles that don't truly represent the wiring behind it. Check the breaker and check the actual wire in the wall. Again, consult a qualified electrician if you have any doubts.

Manufacturers ratings and provided plugs

Some manufacturers will give recommendations for the circuit size to be used. For example, a kiln might pull 24 amps, but a 30 amp circuit is recommended. Usually this margin is to make sure your circuit can handle the power of the kiln, even if it jumps up slightly for a short period of time. It prevents the circuit breaker from tripping when it doesn't have to.

Another example: Some 30 amp kilns have 50 amp plugs on them. Why? Sometimes this is because wired rings can be added to the kiln, and if fully expanded the kiln might draw up towards 50 amps. Other times (we believe) the kiln manufacturers just want to use the same part for multiple kilns. It could also be that there are so many options for types of receptacles that kiln manufacturers just have to choose something, and it may or may not match what you already have installed.

Here is another example. Let's say you want a 24 amp kiln that requires a 30 amp breaker. You have a 10-30 receptacle, but the kiln comes with a 6-50 plug. You can simply replace the plug on your kiln with a 10-30 plug.

Regardless of the reason, your options in this case are to plug the kiln into a 50 amp circuit with a matching receptacle, or to replace the plug on the kiln so it matches the receptacle you have. **Remember though, you must always use a circuit that has the same voltage and the same (or higher) amperage rating than the kiln requires. SAFETY always comes first.**

If you don't, your breaker will constantly be tripping (or your fuse blowing), or the breaker/fuse could malfunction and cause overheating of the wires which could lead to a fire.

Wire Gauge

Finally, the more amps you are pulling, the larger the diameter of wire that must be used in the circuit. (Larger diameter = smaller gauge.) The gauge requirements for various amounts of amps are generally understood, so your electrician should know the correct gauge to use. However, if there is any question about this, please contact us, or the kiln manufacturers, to get a recommendation on the appropriate gauge wire to use. Also, if you are running the circuit a long distance (greater than 50 feet), then you may need to drop the gauge (increase the diameter of the wire) to properly supply your kiln with power.

Summary

In summary, look at the plug that is provided with the kiln. Look at the receptacles you have available. If they match, you're probably in good shape. If they don't match, you have to do a few things.

- First determine if you have enough amps available on the circuit. For example, you might only have 20 amps available, and you need 30. To solve that, you will usually need an electrician.
- However, you may have a circuit that can provide plenty of amps, but just need a different receptacle on your wall or a different plug on your kiln. Again, consult an electrician.