



## Two-prong Electrical Outlets

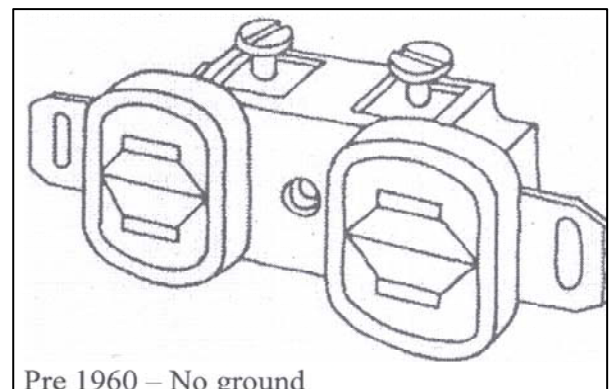
### How old is your home?

If it was built prior to 1965, chances are that it has a two-wire electrical system. And chances are that if it has a two wire electrical system, all or most of the old two-hole receptacles have been replaced. And if it has new three-conductor receptacles, chances are that an inspector is going to write it up. Why?

### Why should it matter how many holes the receptacles have?

It's a good question that requires a bit of background in order to provide an accurate answer.

Before the mid-60's, two-wire, ungrounded electrical systems were the norm. These systems used ungrounded two-hole receptacles because there wasn't any ground conductor to attach a third hole to. Beginning in the mid-60's three-wire, grounded electrical systems began to appear in single family residences. These systems utilized a dedicated ground conductor which was connected to the third hole in grounded receptacles



Skip to today. Computers, televisions, kitchen appliances, clocks, radios, cable boxes and just about everything else use a 3-conductor plug that is not compatible with the old 2-hole receptacles. So, well-meaning homeowners replace the original receptacles with modern 3-conductor outlets in order to be able to function normally. If they don't replace the receptacles outright, they may just install those neat little adapters that provide a hole for the ground conductor. This is where we run into a problem.

Besides the fact that many electronic devices may require a proper ground to function correctly, many times the ground of the new receptacle is tied to the white (neutral) wire, a condition called a “bootleg ground.” If the appliance has a metal housing or controls, a bootleg ground can cause the housing or switches to carry current. This of course means that you can come into contact with current, otherwise known as being shocked.

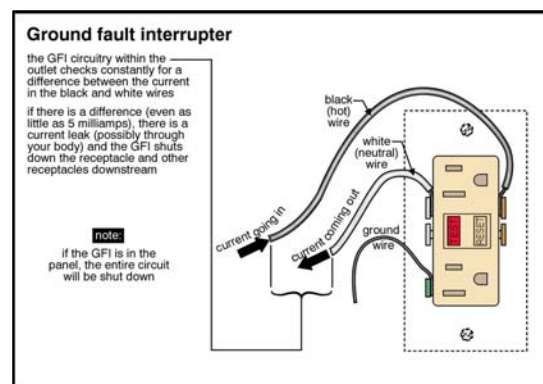
Adapters aren't any better. Even though they can be connected to the receptacle with a screw, they are still not grounded, so the same equipment function problems remain. What's worse is that most people think that these adapters provide a proper ground. They don't. If there's no ground conductor then there's no ground, period. No adapter, receptacle or power strip is going to change that.

So what's the solution – does the house need to be re-wired? First off, the house does not have to be re-wired!

There's nothing inherently wrong or unsafe with older two-wire electrical systems. Millions upon millions of homes were built using the system, and many of those are still in use. Even if the electrical utility and panel are updated, it's very expensive to retrofit an entire house to a 3-wire grounded service.

The good news is that there is a safe and acceptable way to install modern 3-hole receptacles on a two-wire system. A Ground Fault Circuit Interrupter (GFCI) may be installed to provide this function. GFCI outlets or breakers can be used to provide this protection, outlets are the lowest cost method.

- Option A – have an electrician install a GFCI breaker.
- Option B – (most economical) have an electrician identify the first outlet on each circuit and replace that outlet with a GFCI receptacle.



When either of these methods are used each protected or downstream receptacle must be labeled as “GFCI Protected, Ungrounded”.

It's important to understand that these methods do not provide a ground, so there may still be equipment issues. It does, however, provide a safe and acceptable method of adding modern 3-hole receptacles to an existing system.