

## What About My Old Two-Prong Outlets?

By Bill Higgins

This is a common question in older homes in and around Chattanooga. Homes wired many years ago, before the requirement of a 3-wire, grounded system, may still have only 2-prong outlets.



Generally speaking, a house is “grandfathered” to the edition of the National Electrical Code that was in force at the time of original construction, and updating an entire house to the current edition of the Code is not always required. Nevertheless, there are certain issues that a homeowner would do well to consider upgrading, for the sake of increased safety. And the issue of ungrounded outlets is one of those.

Basically, there are some things that should

NOT be done to an ungrounded outlet, and there are three legitimate options for dealing with the issue (depending on the specific circumstance).

One thing that is **NOT** an option is to simply replace an older 2-prong outlet with a 3-prong outlet. I have seen this situation far too many times, where someone has removed the older 2-prong outlet, replacing it with a 3-prong outlet, thinking they have solved the “problem.” In fact, this creates a hazardous situation, where it *appears* that there is a ground, when in fact there is not. If you were to plug a faulty 3-prong device into that outlet, there is a very real shock hazard, as electricity leaking to the casing would create an energized surface from which a person may be electrocuted.



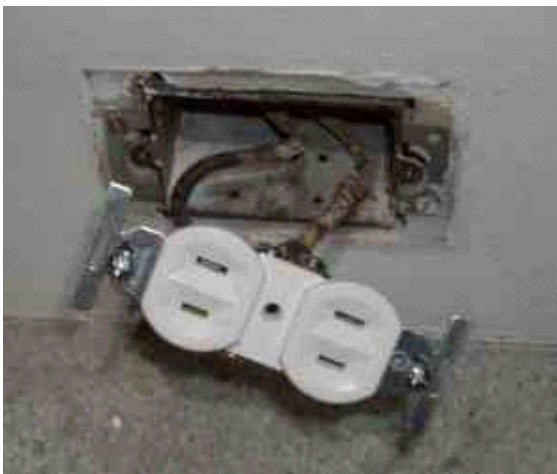
*Here a 3-prong outlet was used to replace on older 2-prong outlet in a 2-wire, ungrounded system. (The metal box here is not grounded.)*

*A faulty device with a 3-prong plug and metal casing, plugged into this outlet, would pose an electrocution hazard.*

*Also, any electronic device requiring a ground for shielding or transient protection would not have the necessary ground for proper functioning.*

Besides the risk of shock, this situation also poses a risk to electronic equipment. If, for example, this outlet were to be used as the power source for a \$1,000 surge protection device, and a \$6,000 HD plasma-screen TV, the TV would still be vulnerable to transient surge activity (*see my article on transient surge protection*). The surge-protection device relies on a solid ground to route any transient activity, and in this outlet with no ground the device will not be able to protect the TV from a surge. Surge protectors must have a solid ground, to function properly.

So what to do about your older 2-prong outlets? I usually recommend a homeowner assess each outlet location individually, to wisely choose between three alternatives:



1) Use a new 2-prong outlet. If the homeowner knows that the outlet in the entryway will only be used for that 2-prong lamp and nothing else, then keeping the 2-prong outlet there, or replacing a weak older one with a new 2-prong outlet may be the most economical alternative. 2-prong outlets are still available, for this very reason. And since a far greater percentage of devices manufactured today are double-insulated, 2-prong supply-cord devices (compared to 20 years ago), this may be sufficient for many applications.

2) GFCI protection. If that old 2-prong outlet is located in a bathroom, kitchen, garage, outside, or in close proximity to a sink or other wet or damp location, then you really want the added safety of GFCI protection (*see my article on GFCI protection*). That same double-insulated 2-prong supply-corded radio that might not pose a hazard on the table in the entryway, becomes a far more dangerous issue when you use it in the bathroom, where water can turn it into a deadly shock hazard. In this location, you really want to have that circuit GFCI protected. It is permissible to replace a 2-prong ungrounded outlet with a 3-prong GFCI outlet, where it is labeled, “GFCI Protected Outlet, No Equipment Ground.” This way, though there is not a grounding conductor, there is still protection against shock, provided by the GFCI outlet.



3) Rewire back to the panel with a 3-wire circuit. Where a GFCI outlet will protect against the shock hazard of a 2-wire system, it will not provide the needed ground for sensitive electronics. For that, there is no short-cut. You need to re-wire with a 3-wire, properly grounded circuit back to the panel. This will provide the necessary ground for your surge-protection device to do its job protecting that \$6,000 plasma TV, or that expensive computer or stereo system. This is, obviously, the more costly alternative. But it is less costly than replacing that expensive electronic device that was destroyed by a transient surge.

While some homeowners may want to assess each location and choose among these options for the most cost-effective result, I have had some homeowners who simply chose to re-wire all the outlet circuits in the home, so they would have the maximum flexibility in where they chose to locate any electronic equipment in the future. While it was more costly, it did provide the most long-term flexibility for a safer electrical system. If you have any question about specific applications in your circumstance, consult your electrician.