

DO I NEED EQUIPMENT GROUNDING?

By Stephen Night

As our demand for more electricity grows every year, the demand on the delivery system grows as well. This growth has made it necessary to change the way our electronic devices are constructed.

Fifty years ago, our homes' electrical systems were constructed using two conductors. The first conductor, called line, was used to deliver the electricity to our home. The second conductor, called return, was used to do provide a difference in potential. This difference in potential is what causes the electricity to move and power the electronic device.

Today, the way electronic devices use electricity is the same. Homes are constructed with a line and a return conductor, but a third conductor was added.

This third conductor, most commonly known as equipment ground, protects people and appliances from any stray voltages or differences in potential. It does this by connecting the metal frame of an appliance to a grounding rod located near the home. If the electricity powering the device were ever to become energized with electricity, due to a cut wire or short, then that electricity would immediately be directed to ground. This protects the equipment from electrical damage and people from electrocution.

When you look at a modern electrical receptacle or outlet, you will notice three points where the prongs of an electrical plug can be inserted. The two rectangular slots are for the line and the return legs. Upon closer inspection, you

notice that one of the two rectangular slots is slightly smaller in size. This opening is connected to the line conductor and brings power to the circuit. The longer rectangular opening is connected to the return conductor and provides the electricity a path to lower potential or voltage. When wired properly, the circular opening is used to connect the equipment ground of an appliance with the grounding system of the home.

In older homes, it is possible to find receptacles with only two openings. Those openings are for the line and return. The equipment ground is missing. Homes with this type of outlet were constructed before it was mandatory to include the equipment ground. They lack the grounding rod and the proper wiring



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to bond the electrical frame of an appliance to the point of ground. In order to protect people and property from stray voltages, homes without an equipment ground need to have some sort of protection installed.

There are two ways to completely protect yourself from stray voltage. The first is to hire a general contractor or a licensed electrical contractor. This individual will come into your home and install the needed wiring. A new wire will have to be routed through your existing home and capture every receptacle in it. A ground rod will have to be installed outside your home and, if necessary, a new circuit breaker box inside your home. The task will be very labor intensive and expensive.

The second is to replace the outlets in your home with ground fault interruption circuitry (GFCI). Most local codes will allow for a GFCI to be installed where there isn't an equipment ground available. The old two prong receptacle is removed and a GFCI is installed in its place. The GFCI has the ability to detect stray voltage. Once it

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detects this type of voltage, the circuit is immediately turned off and electricity is no longer allowed to flow to the electrical appliance.

Electricity, when used safely, makes modern living comfortable and convenient. As a home's electrical system evolves over time, it needs to be maintained to insure the safety of its occupants. Equipment ground is just one of the many safeguards put in place to keep the electricity flowing where it's supposed to go.

When not used correctly, electricity will kill. Look around your home. If you see any two prong outlets, make sure you take the time to upgrade them appropriately. Be proactive and protect you and your family.

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