

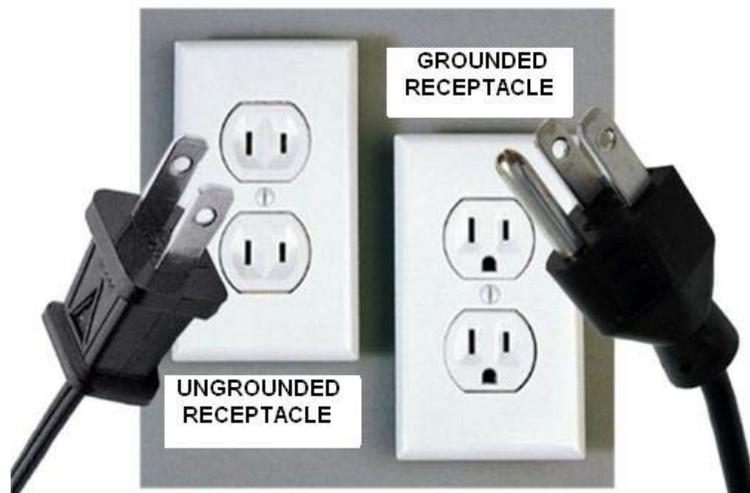


Ungrounded Electrical Receptacles

by Nick Gromicko

Grounding of electrical receptacles (which some laypeople refer to as outlets) is an important safety feature that has been required in new construction since 1962, as it minimizes the risk of electric shock and protects electrical equipment from damage. Modern, grounded 120-volt receptacles in the United States have a small, round ground slot centered below two vertical hot and neutral slots, and it provides an alternate path for electricity that may stray from an appliance. Older homes often have ungrounded, two-slot receptacles that are outdated and potentially dangerous. Homeowners sometimes attempt to perform the following dangerous modifications to ungrounded receptacles:

- the use of an adapter, also known as a "cheater plug." Adapters permit the ungrounded operation of appliances that are designed for grounded operation. These are a cheaper alternative to replacing ungrounded receptacles, but are less safe than properly grounding the connected appliance;
- replacing a two-slot receptacle with a three-slot receptacle without re-wiring the electrical system so that a path to ground is provided to the receptacle. While this measure may serve as a seemingly proper receptacle for three-pronged appliances, this "upgrade" is potentially more dangerous than the use of an adapter because the receptacle will appear to be grounded and future owners might never be aware that their system is not grounded. If a building





still uses knob-and-tube wiring, it is likely than any three-slot receptacles are ungrounded. To be sure, InterNACHI inspectors may test suspicious receptacles for grounding; and

- removal of the ground pin from an appliance. This common procedure not only prevents grounding but also bypasses the appliance's polarizing feature, since a de-pinned plug can be inserted into the receptacle upside-down.

While homeowners may be made aware of the limitations of ungrounded electrical receptacles, upgrades are not necessarily required. Many small electrical appliances, such as alarm clocks and coffee makers, are two-pronged and are thus unaffected by a lack of grounding in the building's electrical system.

Upgrading the system will bring it closer to modern safety standards, however, and this may be accomplished in the following ways:

- Install three-slot receptacles and wire them so that they're correctly grounded.
- Install ground-fault circuit interrupters (GFCIs). These can be installed upstream or at the receptacle itself. GFCIs are an accepted replacement because they will protect against electric shocks even in the absence of grounding, but they may not protect the powered appliance. Also, GFCI-protected ungrounded receptacles may not work effectively with surge protectors. Ungrounded GFCI-protected receptacles should be identified with labels that come with the new receptacles that state: "No Equipment Ground."
- Replace three-slot receptacles with two-slot receptacles. Two-slot receptacles correctly represent that the system is ungrounded, lessening the chance that they will be used improperly.

Homeowners and non-qualified professionals should never attempt to modify a building's electrical components. Misguided attempts to ground receptacles to a metallic water line or ground rod may be dangerous. InterNACHI inspectors may recommend that a qualified electrician evaluate electrical receptacles and wiring.

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In summary, adjustments should be made by qualified electricians -- not homeowners -- to an electrical system to upgrade ungrounded receptacles to meet modern safety standards and the requirements of today's typical household appliances.

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