Electrical: Ground Fault Circuit Interrupter

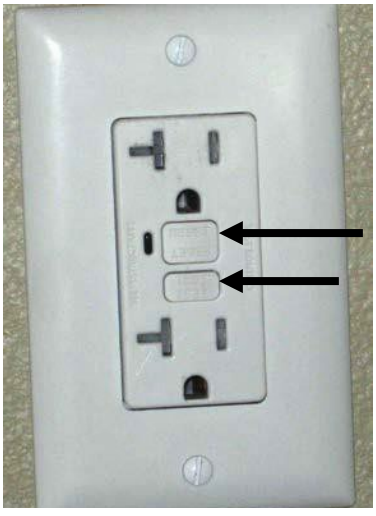
A ground fault circuit interrupter (GFCI) is an inexpensive electrical device that is designed to protect people from severe or fatal electric shocks by detecting ground faults. They also can prevent some electrical fires and reduce the severity of others by interrupting the flow of electric current.

In a building's wiring system, the GFCI constantly monitors electricity flowing in a circuit, to sense any loss of current. If the current flowing through the circuit differs by a small amount from that returning, the GFCI quickly switches off power to that circuit. The GFCI interrupts power quickly to prevent a lethal dose of electricity.

Types of Ground Fault Circuit Interrupters

- Wall Receptacle – This is the most widely used GFCI. These fit into a standard duplex electrical outlet and protect against ground faults whenever an electrical product is plugged into the outlet.
- Circuit Breaker – In buildings equipped with circuit breakers, this type of GFCI may be installed in a panel box to give protection to dedicated electrical circuits.
- Portable – There are two different types of portable GFCIs; one type is plugged directly into an existing outlet and the other type is an extension cord that has a GFCI built in. GFCI extension cords only should be used on a temporary basis.





The image on the left shows a standard electrical outlet that is installed too close to a water source. This outlet should be GFCI protected and installed with an outlet similar to the image on the right. GFCI outlets are easily identified as they have a "TEST" and "RESET" button.

Where to Install GFCIs

GFCI protection should be provided wherever water and electricity are in close proximity to each other. Standard rule of thumb is three feet or less from any water source. The National Electric Code (NEC) requires installation of GFCIs for outdoor receptacles and the following receptacle locations:

- Outdoors;
- Bathrooms;
- Garage walls;
- Kitchens;
- Crawl spaces and unfinished basements;
- Laundry and utility rooms; and
- Pool and spas.



This image shows an outdoor wiring installation that is not a GFCI protected receptacle.

Facilities without GFCI receptacles installed in these specific locations should have this completed. For broader protection, consider GFCI circuit breakers to replace ordinary circuit breakers. For buildings protected by fuses, you are limited to receptacle-type GFCIs, and these should be installed in areas having the highest exposure to a water source such as kitchens, bathrooms and outdoor circuits.

To further protect employees and volunteers from electric shock, GFCI protection should be provided when electric powered equipment is used. This would include items such as hedge trimmers, leaf blowers, lawn edgers, and hand-held power tools.

Testing GFCIs

Like all products, GFCIs can be damaged. GFCIs damaged by lightning or electrical surges may fail to provide adequate protection. All GFCIs should be tested monthly and after any severe lightning storm.

To protect people from severe or fatal electric shocks and to prevent possible electrical fires, GFCI protection should be provided wherever water and electricity are in close proximity to each other. Any electrical installation should be completed by a licensed electrical contractor and be in accordance with the NEC and local codes.

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