WEST BEND®

Building Safety Into All That You Do

Ground-Fault Circuit Interrupters

A ground-fault occurs when there's a break in the low-resistance grounding path from a tool or electrical system. The electrical current may then take an alternative path to the ground through the user, resulting in serious injuries or death. The ground-fault circuit interrupter, or GFCI, is a fast-acting circuit breaker designed to shut off electric power in the event of a ground-fault within as little as 1/40 of a second. It works by comparing the amount of current *going to* and *returning from* equipment along the circuit conductors. When the amount *going* differs from the amount *returning* by approximately five milliamperes, the GFCI interrupts the current.

The GFCI is rated to trip quickly enough to prevent an electrical incident. If it's properly installed and maintained, this will happen as soon as the faulty tool is plugged in. If the grounding conductor isn't intact or of low-impedance, the GFCI may not trip until a person provides a path. In this case, the person will receive a shock, but the GFCI should trip so quickly that the shock will not be harmful.

The GFCI wo*n't* protect you from line contact hazards (e.g., a person holding two "hot" wires, a hot and a neutral wire in each hand, or contacting an overhead power line). However, it protects against the most common form of electrical shock hazard, the ground-fault. It also protects against fires, overheating, and destruction of wire insulation.

For construction applications, there are several types of GFCIs available, with some variations below are a few samples.

Portable Type

Portable Type GFCIs come in several styles, all designed for easy transport. Some are designed to plug into existing non-GFCI outlets or connect with a cord and plug arrangement. The portable type also incorporates a no-voltage release device that will disconnect power to the outlets if any supply conductor is open. Units approved for outdoor use will be in enclosures suitable for the environment. If exposed to rain, they must be listed as waterproof.

Cord-Connected Type

The Cord-Connected Type of GFCI is an attachment plug incorporating the GFCI module. It protects the cord and any equipment attached to the cord. The attachment plug has a non-standard appearance with test and reset buttons. Like the portable type, it incorporates a no-voltage release device that will disconnect power to the load if any supply conductor is open.

Continuity Test

The continuity test ensures that the equipment grounding conductor is electrically continuous. Perform this test on all cord sets, receptacles that are not part of a building or structure's permanent wiring, and cord- and plug-connected equipment required to be grounded. Use a simple continuity tester, such as a lamp and battery, bell and battery, an ohmmeter, or a receptacle tester.

Terminal Connection Test

The terminal connection test ensures that the equipment grounding conductor is connected to its proper terminal. Perform this test with the same equipment used in the first test.

* Source material taken from www.osha.gov