



Ground Fault Circuit Interrupters (GFCI)

A ground-fault occurs when there is 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. 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 5 milliamperes, the GFCI interrupts the current.

The GFCI is rated to trip quickly enough to prevent an electrical incident. If it is properly installed and maintained, this will happen as soon as the faulty tool is plugged in. If the grounding conductor is not 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 will not protect you from line contact hazards (i.e. 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:

RECEPTACLE TYPE

The Receptacle Type incorporates a GFCI device within one or more receptacle outlets. Such devices are becoming popular because of their low cost.

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.

GFCI devices should only be used on a temporary basis and should be inspected and tested prior to every use. For construction site GFCI's, they should be tested before each use.

GFCI Inspections should look for external defects such as deformed or missing pins, insulation damage, and indications of internal damage. Damaged or defective equipment should not be used until repaired. Additional inspections are required if an outlet is returned to service following repairs and after any incident which can be reasonably suspected to have caused damage (for example, when a cord set is run over).

If it does not have the test and reset button on it then it is not a GFCI.

You will find that the smaller generators, such as the Honda 2000 which is common place on our sites, do not have GFCIs.

Source: www.osha.gov/etools/construction/electrical-incidents/ground-fault-circuit-interrupters. Accessed 28 Oct. 2022.

Source: [Weekly Safety Meeting - Electrical Safety — Using GFCIs - Safety Matters Weekly](https://www.safetymattersweekly.com/weekly-safety-meeting-electrical-safety-using-gfcis). [safetymattersweekly.com/weekly-safety-meeting-electrical-safety-using-gfcis](https://www.safetymattersweekly.com/weekly-safety-meeting-electrical-safety-using-gfcis). Accessed 31 Oct. 2022.

GCFI SAFETY

Electrical Shock

- Be sure that all temporary wiring is installed with GFCI protection.
- Ensure the GFCI unit remains untouched.
- Keep cords out of water and use watertight or sealed connectors to minimize nuisance tripping.
- Place GFCIs close to the power source.
- Always test GFCIs before use.

Inspections

Visual inspection of the following equipment is required:

- Cord sets
- Cap, plug, and receptacle of cord sets
- Equipment is connected by cord and plug

GFCI inspections should look for external defects such as missing or deformed pins, damage to insulation, and internal damage warning signs. Do not use damaged or defective equipment until it is repaired. Inspections following repairs to equipment are necessary, as it can be reasonably suspected to have caused damage (for example, when a cord set is run over).

Testing

GFCIs have test and reset buttons. It is necessary to conduct at least monthly tests and visual inspections. In addition, it's important to perform tests and inspections before each day's use.

Failure in the insulation or grounding protection of your tools or cords could result in ground faults. Be sure to use GFCI devices. Take a little extra care so that you will not have a SHOCKING experience.



OUR PURPOSE

Lead. Make a difference. Build a better future!

OUR VALUES

Safety: First. Last. Always!

Steadfast Integrity: Be honest. Treat other with respect.

Exceptional Service: Align goals. Add value. Develop lasting relationships.

Commitment to Excellence: Take ownership. Constantly improve.

Focus on Team: Listen. Collaborate. Communicate. Execute.

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