



SAFETY UNLIMITED, INC.

Weekly Safety Meeting

Electrical Incidents - Ground-Fault Circuit-Interrupters

According to the U.S. Department of Labor's Bureau of Labor Statistics, in 2016, there were 1,480 workplace injuries from electrical shock and 1,100 injuries caused by contact with electric current that resulted in burns.

The most common electric shock hazard, ground faults, can cause severe electrical shock or electrocution. In normal conditions, electricity runs in a closed circuit; electricity flows out on the "hot" wire and returns on the "neutral" wire, completing the circuit. A ground fault occurs when the electrical current does not complete its circuit and unintentionally flows to the ground. Ground faults can cause fires and are dangerous when they flow through a person to the ground.

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. 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 5 milliamperes, the GFCI interrupts the current.

Although most portable electric tools have an equipment-grounding conductor, and many are double insulated, these methods are not foolproof. A grounding wire could break, or a cord could become defective. Using a GFCI overcomes these insulation problems.

One disadvantage of this protection is that it is sometimes overly sensitive to moisture and humidity. On rainy or damp days, the GFCI units will occasionally cause what is called "nuisance" tripping.

The temptation then is to by-pass the GFCI to get on with our work.

This is not only unwise, but a violation of OSHA standards. OSHA requires GFCI protection on all 120-volt, single-phase, 15- and 20-ampere circuits on work sites, which are not part of the permanent wiring of the building or structure.

With these things in mind:

- Be sure that all temporary wiring is installed complete with GFCI protection.
- Do not let anyone tamper with or by-pass the GFCI unit.
- To minimize nuisance tripping, keep cords out of water and use watertight or seal connectors where possible.
- GFCIs must be placed as close to the power source as possible.
- Test GFCI before use.

GFCI General Information:

- It protects you against electric shock.
- It's a fast-acting circuit breaker.
- GFCIs continuously monitor amount of current going to a tool and compares it to the amount of current returning along the electrical path.
- If the difference is more than 5 milliamps, the GFCI will trip.
- When a GFCI trips, it shuts off the electricity in 1/40 of a second.
- The GFCI will not protect you from line to line contact hazards (i.e., holding two "hot" wires or a hot and a neutral wire in each hand).

Inspections:

- Visual inspection of the following equipment is required:
 - Cord sets;
 - Cap, plug, and receptacle of cord sets; and
 - Equipment connected by cord and plug.

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).

Testing:

GFCIs have test and reset buttons for a reason; a competent person should conduct at least monthly tests and visual inspections, and they should be tested and inspected before each day's use. Records of the competent person testing must be kept.

Always make sure the tools and cords you use are in good working condition and inspect them regularly for any visible damage.

Failure in the insulation or grounding protection of your tools or cords could result in ground faults. Use GFCI devices.

Take a little extra care so that you will not have a SHOCKING experience.

Protect yourself from electric shock...use safety equipment!!

Safety Meeting Sign-In Sheet

<i>Supervisor:</i>	<i>Subject:</i>
<i>Location:</i>	<i>Date:</i>
<i>Conducted By:</i>	<i>Trainer Signature:</i>

Name (print clearly)	Signature	Comments / Safety Concerns / Training Requests