2024-09-16 TBT GFCIs

Important Things to Know About GFCIs [Reference 1910 Subpart S / 1926 Subpart K]

During annual and onboarding trainings it is discussed how tools and equipment which are grounded or double insulated help prevent electrocutions as we perform our work. Today we will discuss an important safety device that helps prevent electrocution when we are using electrical tools or equipment near water or in wet environments; but it onl works as long as it is properly installed and maintained. That device is a ground fault circuit interrupter, also commonly referred to as a GFCI.

When a tool is plugged into an electrical receptacle, electricity flows from the receptacl to the tool through one of the electrical conductors in the power cord; this conductor is usually referred to as the hot wire. When the trigger or switch on the tool is activated, the current then flows through the tool to make it run, and then returns to the receptac via another conductor in the power cord; that one is referred to as the neutral wire. Ideally the same amount of current flows from the receptacle to the tool and then back to the receptacle - unless there is a short circuit, also called a ground fault.

Electrical receptacles and breakers equipped with a ground fault circuit interrupter monitor the amount of current flowing through this path, and if it senses a drop in returning current of just a few thousandths of an amp, it almost instantaneously trips a internal breaker and stops power flowing from the receptacle. You may find GFCI-protected receptacles or breaker switches installed on temporary power poles on construction sites, on many portable generators, and in areas of buildings or other structures where water may be present, such as in bathrooms, kitchens, mixing areas, garages, open sided shops, outdoor work areas, and on top of roofs. Also be aware that one of the receptacles in a circuit containing multiple receptacles is GFCI protected, the GFCI will protect all the other receptacles wired behind it in the circuit, but not any that are wired in front of it in the circuit.

You can usually distinguish a GFCI receptacle by its two buttons, typically marked “TES and “RESET”, placed in the center of the receptacle There are also GFCI breaker switch that can be installed inside of a breaker box which protects all receptacles in that circui There are also portable GFCI-equipped devices that can be plugged into an unprotected receptacle (see handout for examples of these devices) which protect equipment plugged into them. These breakers and portable devices also have the same two “TEST and “RESET” buttons as a GFCI receptacle.

Because GFCI devices do occasionally malfunction or wear out over time, it is vitally important that we test them at the beginning of each shift. This is typically done by depressing the “TEST” button on the receptacle or GFCI breaker; you should hear a fain

“click” sound as the device trips. You can further confirm the receptacle was de-energized by plugging in a tool such as a drill to the receptacle and try to operate it by depressing the trigger; it should not run if the GFCI tripped as designed.
Once you confirm that a GFCI receptacle or breaker switch is functioning properly, firml press the “Reset” button to re-energize the receptacle or circuit. And if any GFCI-protected device is not functioning properly, do not use it. Instead, mark it with a dange tag or similar manner to identify it is not to be used, and then immediately notify your supervisor so it can be repaired or replaced by a qualified electrician.

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