

GFCI's also known as Ground Fault Circuit Interrupters constantly monitor voltage in a power cord to detect an electrical leakage. If a difference of 5 milliamps occurs between the hot and the neutral wire in the powercord, the GFCI de-energizes the circuit in 25 milliseconds (1/40th of a second).

The purpose of the GFCI is to protect people from electrical shocks that could injure or kill. GFCI's are required in the construction industry any time hand tools are used.

OSHA requires in ...1926.404(b)(1)(ii)... *"All 120-volt, single-phase 15- and 20-ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure and which are in used by employees, shall have approved ground-fault circuit interrupters for personnel protection."*

OSHA further requires in ...1926.404(b)(1)(iii)... *"The employer shall establish and implement an assured equipment grounding conductor program on construction sites covering cord sets, receptacles which are not part of the building or structure, and equipment connected by cord and plug which are available for use or used by employees."* This section goes on to state who should perform tests to insure that all of the above conditions are met. When the tests should be performed and how they should be done and how often they should be done. Logbooks should be maintained recording this information and should be made available similar to the rules of the MSDS documentation.

Testing GFCI's

OSHA requires that GFCI's be tested as part of the "Assured equipment grounding conductor program" as described in 1926.404(b)(iii).

Most GFCI's have two buttons located at the outlet in order to test them. These are marked "TEST" and "RESET". When they are supplied or purchased they come with instructions about installation and testing methods. Most of them require testing once a month. The test procedure can be done with a simple light bulb tester. Plug the tester into the outlet, push the "TEST" button on the outlet and verify that the light on the tester goes out. Then push the button marked "RESET" and make sure that the tester light comes back on.

Some people have been led to believe that special GFCI testers needed to be purchased and used to establish compliance. In an OSHA standards interpretation letter from Roy F. Gurnham, Director Office of Construction and Maritime Compliance Assistance, dated February 16, 1994 on this topic: *"GFCI testers which are not an integral part of the GFCI shall not be used...because such testers often do not produce accurate results."* http://www.osha-slc.gov/OshDoc/Interp_data/I19940216.html

GFCI's and 220 Volts

There is no current OSHA regulation that mandates the use of GFCI's on 220-volt equipment. This being said there is still confusion over the requirements for 220-volt equipment.

Some of this confusion may have arisen out of the current revision of the National Electric Code (NEC) 1999 edition. The NEC has adopted the use of GFCI protection for 15-, 20-, 30-ampere, single phase, 125-volt receptacles for temporary power. Previously 30-ampere equipment was not listed and there in lies the confusion. 30-ampere circuit breakers are the general requirement for use with a swing stage. This is a 30-ampere breaker on 220-volt system, not a 125-volt system.

Had the NEC adopted the use of GFCI's for 30-ampere, 220-volt systems, it is only required if or when OSHA adopts this into the code. Although it is not current OSHA code to require a GFCI with the use of 30-ampere, 220-volt systems, 29CFR 1926.404(b)(iii) does require that an "assured equipment grounding conductor program" is in place.

If there was not a code within the OSHA regulations that specifically addressed your individual situation, and a clear hazard was foreseeable, OSHA would be able to write a citation under the general duty clause.

Although OSHA refers to and relies heavily on the information and directives of the NEC, the NEC does not write law. The writing of a law must go through the same process as other laws in this country and without that process we could be subjected to unjust laws. However good or bad it may be to have a law requiring the use of GFCI's on 220-volt, 30-ampere circuits, there is none currently. Even in the absence of such a law, there are other regulations in OSHA intended to protect personnel from the hazards of electricity and these must be complied with.

Facts about Electricity and GFCI's

- Electricity takes every path, not the path of least resistance.
- 2/1000th of an amp would give you only a mild sensation that electricity was present.
- 5/1000th of an amp is the setting that GFCI's are set to trip at. This is based upon the idea that at this level, 100% of the average healthy male population would be protected against serious harm.
- 6/1000th of amp would give you the sensation of shock and would not be painful.
- 9/1000th of an amp, you would experience a painful sensation, but you could still release the object that was shocking you.
- 10/1000th of an amp you would no longer be able to let go of what you were holding.
- 40/1000th of an amp breathing stops and this is often fatal.

*Amperage Hazard information is referenced from "Electrical Shock Hazard Due to Stray Current", Donald W. Zipse, P.E., Paper No. I&CPS-99-XX

Did You Know?

- Power Climber can provide you with suggested spare parts order forms and listings for the PC3, PC1 and Astro 85 Series Hoists. Call Customer Service at 1-800-560-2546.
- OSHA is not funded by the fines that they collect; they are funded by business and individual taxpayer dollars.
- Many workers survive small electrical shocks and yet die because they have lost their balance and fall from heights. This is one more reason for the use of fall arrest equipment.

Tips and Tricks

- Avoid the high cost of next day air charges for parts shipped overnight, keep a well-stocked inventory. You can also avoid delays on customer hoist repairs with a well-stocked spare parts inventory.

For questions or comments, contact Customer Service at 1-800-560-CLIMB (2546) or customerservice@safeworks.com.