



## **GROUND FAULT CIRCUIT INTERRUPTERS**

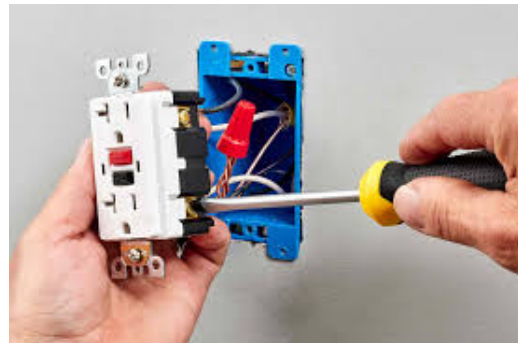
To reduce or eliminate electrical fault current which might be generated in any electrical system or tool during use. A Ground Fault Circuit Interrupter (GFCI) continuously monitors the amount of current going to an electrical tool or piece of equipment, comparing it to the amount of current returning along the “grounded neutral.” If the variance between the two is more than five milliamps, the GFCI will trip the circuit in about 1/40 of a second.

### **REQUIREMENTS**

All equipment (saws, drills, extension cords, etc.) that is capable of being plugged into a 110-volt receptacle shall have a GFCI device attached before the tool and/or extension cord. This is done to comply with OSHA Standard 1926.400 (h) and to eliminate the possibility of death or injury to the user.

GFCI protection also must be provided at any location having receptacles capable of being used for plug-in equipment, such as change shacks; exceptions would include office trailers and shops permanently wired in accordance with N.F.P.A. 70, National Electrical Code.

Portable or vehicle- mounted generators having receptacles for 2-wire single-phase power need not be GFCI-protected as long as the generator is rated at no more than 5 kW and the circuit conductors at the generator are insulated from the generator frame and all other grounded surfaces.)



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### **NUISANCE TRIPPING OF GFCI DEVICES**

The following items usually will cause tripping of GFCIs:

1. Water leaking into cord connection. (Note: This can usually be remedied by using a twist lock cord and cap. Raising connections out of wet locations will also correct this problem.)
2. Faulty or defective equipment plugged into a GFCI circuit. (Note: By plugging a tool into an entirely different spider or receptacle, you can determine if that tool is defective. The tool must be tagged “out of service” and sent for repairs when tripping occurs again.)
3. Very long runs of conductor cords will create a voltage drop, which may trip the GFCI.

## Ergonomics 2

### Ergonomics

Ergonomics is the study of the body's movements and postures to the performance of a certain task.

The ergonomic analysis of work activities among bricklayers and mason tenders focused on working in awkward postures, lifting, and wrist and arm movements in trowelling.

### High-risk Factors

In the masonry trade, conditions that carry a high risk of work-related musculoskeletal injuries were identified through site observations and ergonomic analysis.

- Workers often perform more than 1000 forward bending tasks per shift and are therefore at risk of developing low-back disorders.
- Workers who have to lay brick and block above shoulder height increase their risk of developing shoulder, arm, and wrist problems.
- Masonry workers are exposed to environmental factors such as wind and excessive heat and cold. Walking or working on uneven, muddy, or icy surfaces exposes bricklayers and mason tenders to the risk of slips, trips, and falls.
- Workers generally use large trowels (12-inch) that enable them to lay more mortar per application but also increase the risk of elbow and wrist injuries.
- Many workers wear gloves when lifting and placing block. Gloves *reduce* grip strength.
- Mortarboards are typically positioned at or below knee level. This forces workers to bend forward repetitively -- a contributing factor to low-back disorders.
- Bricklayers often work in restricted spaces where their freedom of movement is limited. As a result, they must adopt awkward, twisting movements when lifting and laying brick and block. This increases the risk of musculoskeletal injury.
- The stress of maintaining the expected production rate (about 200 blocks or 600 bricks per day) can lead to muscle tension and a greater likelihood of injury.

### Recommendations:

- Implement a pre-job exercise program and improve work/rest cycles to reduce fatigue and injury.

- Plan and organize sites to facilitate access, reduce unnecessary materials handling, and avoid work in constricted spaces that force workers into awkward postures and twisting movements.
- Use height-adjustable mortarboards to reduce forward bending. Similarly, keep platforms for stocking brick and block no lower than knee height.
- Educate workers regarding the importance of using a trowel suited to their size and strength.
- These recommendations are meant to help eliminate or reduce risk factors surrounding work-related musculoskeletal disorders in the masonry trade.