

Lesson: Electrical Part II

- Lesson Objectives:**
- Identify the effective control for common electrical hazards.
 - Describe two means of preventing electrical injuries: insulation and grounding.
 - Define ground-fault circuit interrupter (GFCI).
 - Explain the importance of testing a GFCI and how to test it.

- Topics:**
- Electrical Hazard Control
 - Insulation and Grounding
 - Ground-Fault Circuit Interrupter (GFCI)

Topic: Electrical Hazard Control

This topic addresses controls for common electrical hazards. Having completed this topic, you should be able to:

- Determine the effective control measures over most frequently cited serious violations
- Describe how to avoid the following common electrical hazards:
 - Contact with power lines
 - Path to ground missing or disconnected
 - Equipment not used in manner prescribed
 - Improper use of extension and flexible cords

Topic summary:

Please take a moment to review these major points before you continue with the next topic.

- Maintain at least ten feet clearance from overhead power lines.
- Make sure all equipment is properly grounded.
- Use all equipment according to the manufacturer's instructions.
- Inspect cords before each use.

Topic: Insulation and Grounding

This topic addresses two recognized means of preventing injury during electrical equipment operation: insulation and grounding. Having completed this topic, you should be able to:

- Define the class and type of insulated equipment
- Define grounding, including system grounding and equipment grounding
- Describe the assured equipment grounding conductor program
- Determine if equipment needs to be grounded given a situation

Topic summary:

Please take a moment to review these key points before you continue with the next topic.

- Insulated tools must be used when a qualified person is working on or near energized live conductors.
- Electrical protective equipment, also known as insulated equipment, includes items such as insulated blankets, matting, covers, line hose, gloves, and sleeves.
- Insulated equipment must be inspected before each day's use and immediately following an incident that may have caused damage.
- "Grounding" a tool or electrical system means intentionally creating a low-resistance path to the earth.
- There are two kinds of grounds: system or service ground and equipment ground. Both are required by the OSHA construction standard.
- Metal cable trays, metal raceways, and metal enclosures for conductors must be grounded.
- Exposed non-current-carrying metal parts of fixed equipment that may become energized must be grounded.
- Exposed non-current-carrying metal parts of cord- and plug-connected equipment that may become energized must be grounded.
- The metal parts of the following non-electrical equipment must be grounded:
 - Frames and tracks of electrically operated cranes
 - Frames of non-electrically driven elevator cars to which electric conductors are attached
 - Hand-operated metal shifting ropes or cables of electric elevators, and metal partitions, grill work, and similar metal enclosures around equipment of over 1kV between conductors.
- The assured equipment grounding conductor program covers all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and equipment connected by cord and plug which is available for use (or is used) by employees.

Topic: Ground-Fault Circuit Interrupter (GFCI)

This topic covers ground fault circuit interrupters (GFCI). Having completed this topic, you should be able to:

- Define GFCI
- Describe the importance of testing GFCI
- State two important steps to ensure GFCI functions properly

Topic summary:

Please take a moment to review these key points before you continue with the next topic.

- The ground-fault circuit interrupter (GFCI) is a fast-acting circuit breaker that senses small imbalances in the circuit caused by current leakage to ground and, in a fraction of a second, shuts off the electricity.
- You can help ensure that your GFCIs function as life-protecting devices by testing them monthly or as required.
- When a GFCI trips, reset and then trip it using either a GFCI tester or test buttons on the device. Reset and use the circuit!



Overview

- It is the employer's responsibility to provide GFCIs on construction sites for receptacle outlets in use that are not part of the permanent wiring of the building or structure.