



# Tailgate Safety Training for Landscaping and Horticultural Services

Agricultural Safety Program, 590 Woody Hayes Drive, Columbus, OH 43210

## Grounding Electricity

**Objective: Work safely around electricity on the job.**

### *How to Use This Module*

Working with electricity can be dangerous. This danger comes from a combination of things — voltage, amperage, resistance to the flow of the current, and duration of contact. For this module:

- Read the information below on electricity, hazards, and safety guidelines.
- Ask your supervisor to demonstrate proper and improper grounding.
- Review the illustration of 120-volt and 240-volt outlets.
- While your supervisor observes, inspect and test power tools for proper grounding.
- Ask your supervisor to demonstrate a Ground-Fault Circuit Interrupter (GFCI).
- Review the important points.
- Take the True/False quiz to check your learning.

### Background

Electricity always follows one or more paths of least resistance. Electricity follows a nonstop path. If the body becomes part of a path, electricity will pass through it. Dry hands and feet offer more resistance to electrical current than wet hands or feet. But the current can be lethal in either case — especially if the electricity passes through vital organs like the heart or lungs.

Grounding electricity means creating an easy path for the current — one that doesn't include your body.

### For Your Safety

- Have only a qualified electrician perform electrical installations or repairs.
- Moisture and electricity must never mix.
- Unplug tools immediately after use.
- Do not use water to put out an electrical fire.
- Electrical fires require a type C fire extinguisher.

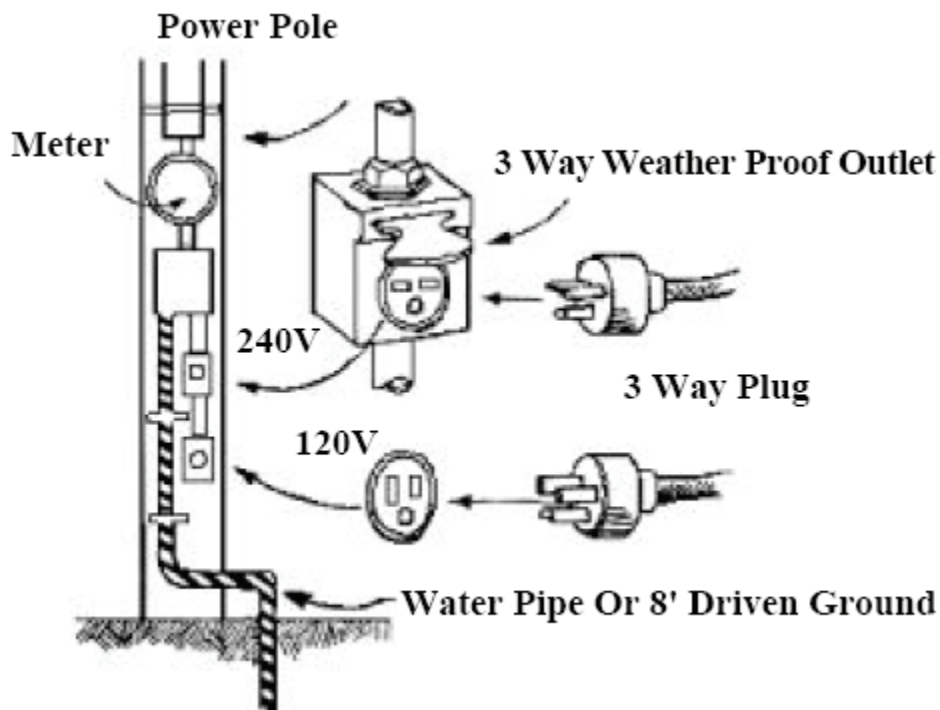
The diagram on the following page shows a 120-volt (120V) outlet and one type of 240-volt (240V) outlet.

Electrical power tools should have a true ground. Otherwise, they should be double-insulated. For example, a drill has a third wire incorporated in the design. This third wire acts as the ground wire. This means the cur-

rent will follow the ground wire — not the operator. Usually a three-prong plug in a three-hole outlet provides a proper ground. Never cut off the third ground prong.

If you have an old system with only two-prong plugs, it is not properly grounded. In that case, you **must** use an acceptable double-insulated electric power tool. Never use a spare piece of wire attached to a pipe or outlet housing as the ground. If a power tool develops a short, repair it before using it again.

Check that portable electric hand tools are properly grounded



## Inspect Wires and Connectors

- Inspect wires and plugs on power tools before each use. Repair or replace damaged wires or plugs before using the equipment. Do not tape over gashes. Instead, replace the wire. Do not splice wires.
- Extension cords are for temporary use. Have permanent wiring installed where needed. Where an equipment cord plugs into an extension cord, tie a half-knot to keep the plug from pulling out.
- Extension cords should be appropriate for outdoor use. The electrical load should not exceed the rated capacity. Use only one extension cord.
- Never use an electrical power tap or power strip for landscape and horticultural use. It is too easy to overload it. It may melt.
- Shield plugs and outlets. Protect plugs and outlets from moisture in the environment. Never leave a plug connection in a puddle or other collection of water.
- Only use one hand when touching plugs, outlets, or anything metal in a greenhouse. Water and electricity are both abundant. If you touch with both hands, the electric charge can pass across your heart. You could be electrocuted. You could die.

## Circuit Breakers

Overloads can cause fires. Circuit breakers protect the wiring system from an overload. They do not protect people.

## Ground-Fault Circuit Interrupter (GFCI)

A GFCI is specifically for people safety. A GFCI can be hard-wired into an electrical box. A portable GFCI can also be plugged into any electrical outlet. If there is an electrical short, the GFCI prevents an electrocution.

## Review These Important Points

- Electricity always follows one or more paths of least resistance.
- Use an effective ground.
- Only electricians should make electrical installations or repairs.

## About These Modules

The author team for the training modules in the landscape and horticultural tailgate training series includes Dee Jepsen, Program Director, Agricultural Safety and Health, Ohio State University Extension; Michael Wonacott, Research Specialist, Vocational Education; Peter Ling, Greenhouse Specialist; and Thomas Bean, Agricultural Safety Specialist. Modules were developed with funding from the Occupational Safety and Health Administration, U.S. Department of Labor, Grant Number 46E3-HT09.

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Answer Key: 1 = T, 2 = T, 3 = T, 4 = T, 5 = T.

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EXTENSION

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## Grounding Electricity

Name \_\_\_\_\_

### True or False?

- |  |   |   |
|--|---|---|
| 1. Never use a wire attached to a pipe to act as the ground.                                       | T | F |
| 2. Electricity always follows one or more paths of least resistance.                               | T | F |
| 3. If the ground prong is broken off the hand tool plug-in end, it should be taken out of service. | T | F |
| 4. If your body becomes part of the circuit, electricity will pass through it.                     | T | F |
| 5. If a person comes in contact with electricity, then they may become electrocuted.               | T | F |