Tool Box Talk
Electrical Safety

Don't let electrocution happen to you! Two-thirds of electrical incidents involve non-electrical workers.

A small amount of electrical current can cause injury, or even death. For example, the current from a 7.5-watt, 120-volt lamp passing across the chest is enough to cause fatal electrocution. Know what can you do to protect yourself.

Due to the nature of our work, normal use of electrical equipment causes wear and tear that results in insulation breaks, short-circuits, and exposed wires. Without ground-fault protection, these can cause a "ground-fault" that sends currents through the body, resulting in electrical burns, explosions, fire, or death.

A "ground-fault" is an unintentional flow of electricity between a source of electrical current and a grounded surface. One way to avoid a ground-fault is through the use of GFCI.

The ground-fault circuit interrupter, or GFCI, is a fast-acting circuit breaker designed to shut off electric power in the event of a ground-fault within as little as 1/40 of a second. It works by comparing the amount of current going to and returning from equipment along the circuit conductors. When the amount going differs from the amount returning by approximately 5 milliamperes, the GFCI interrupts the current.

The F&S Tool Room will be acquiring portable GFCI "pigtails" for checkout. These should be used with electrical power tools (i.e., drills, mowers, trimmers) and be tested before each use. All GFCIs have a built-in test circuit, with test and reset buttons that trigger an artificial ground-fault to verify protection. Test portable GFCIs each time they are used.

Generally, to test your GFCI, simply press the "TEST" button in. You will hear a snap sound that trips the outlet and cuts power off to the plugin connections. Follow the manufacturer's guidelines for specific testing procedures.

Proper grounding of equipment will also help to avoid electrical hazards. If the power supply to the electrical equipment at the job site is not grounded or the path has been broken, fault current may travel through the body, causing electrical burns or death. Even when the power system is properly grounded, electrical equipment can instantly change from safe to hazardous because of extreme conditions and rough treatment.

- Ground all power supply systems, electrical circuits, and electrical equipment.
- Frequently inspect electrical systems to insure that the path to ground is continuous.
- **Visually inspect all electrical equipment before use. Take any defective equipment out of service.**
- Do not remove ground prongs from cord- and plug-connected equipment or extension cords.
- Use double-insulated tools.
- Ground all exposed metal parts of equipment.
- **Do NOT use "cheater plug" adapters as this removes the path to ground.**
- Avoid standing in wet areas when using portable electrical power tools.
    - When a cord connector is wet, electric current can leak to the equipment grounding conductor, and to people who pick up that connector.
    - Leakage can occur on the face of the connector and at any wetted portion.
    - Limit exposure of connectors and tools to excessive moisture by using watertight or sealable connectors.

Normal wear and tear on extension cords can loosen or expose wires, creating hazardous conditions. Cords that are not 3-wire type, not designed for hard-usage, or that have been modified increase your risk of electrocution. Avoid hazards by:

- Storing all cords indoors when not in use.
- Never keep an extension cord plugged in when not in use, as it still conducts electricity.
- **Visually inspect all electrical equipment before use.**
    - External defects (loose parts, deformed/missing pins, damage to outer jacket or insulation)
    - Evidence of possible internal damage (pinched/crushed outer jacket)
- Do not modify cords or use them incorrectly.
- Use factory-assembled cord sets and only extension cords that are 3-wire type.
- Use only cords, connection devices, and fittings that are equipped with strain relief.
- Remove cords from receptacles by pulling on the plugs, not the cords.
- Return damaged extension cords or tools with damage to the cord to the tool room for repair or replacement.
- **DO NOT WRAP THE DAMAGED AREA IN ELECTRICAL TAPE.**
- To reduce hazards, avoid putting tension on cords.
- Flexible cords must be rated for hard or extra-hard usage. Cords will be labeled with: S, ST, SO, or STO for hard service.

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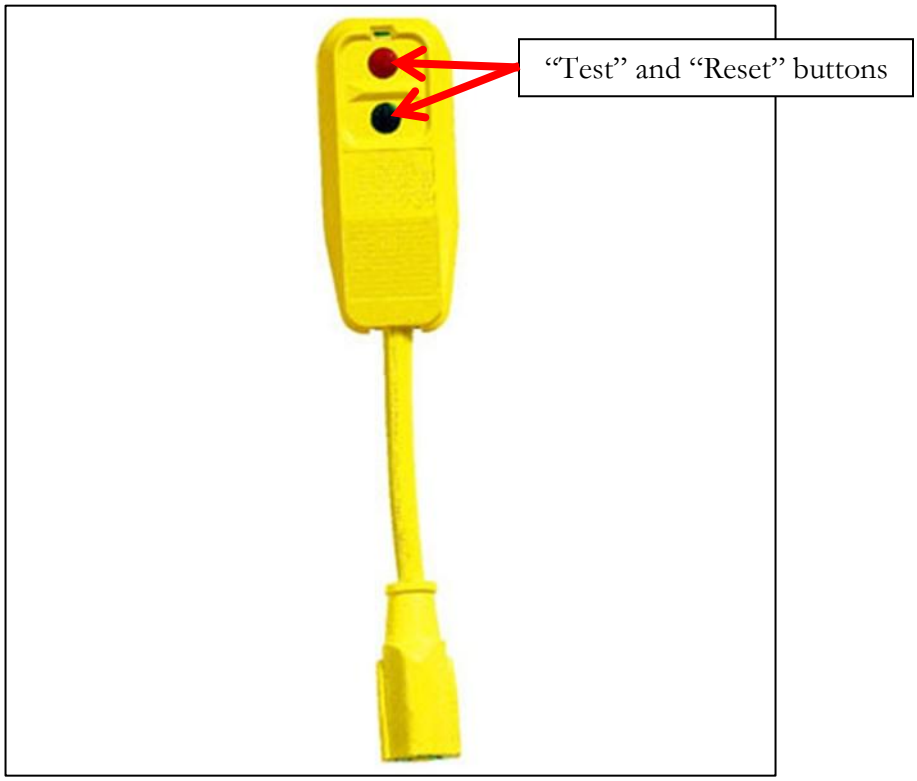

Example of a portable GFCI pigtail.

Damaged extension cord. Do not repair, return to tool room for replacement.