



POWER DOWN:

Electrical Safety for Service (NFPA 70E)

Skilled service technicians know that accidents can happen anytime—especially when workers are unaware or become complacent. Make sure you are up-to-date on how to best protect yourself against two very real electrical hazards: electric shock and arc flash.

The Hazards

Electric Shock. Since electricity always takes the easiest path, a human body can become an electrical current's path to ground, or part of an electrical circuit itself.

Arc Flash. Lesser known, an arc flash is an electrical explosion that generates light and heat in a high-energy electric arc.

The Danger

An electric shock can stop a human heart from beating and an arc flash can cause horrific burns. Arc flashes produce some of the hottest temperatures on earth—they can be four times hotter than the surface of the sun.

The Causes

- 70% caused by human error, such as a dropped conductive tool or material
- 20% caused by equipment failures, such as overheated or worn parts
- 10% caused by dust, dirt, debris, rust, or moisture

What You Can Do...

Wear the right clothing

Protect yourself by wearing the following Personal Protective Equipment:

- 8 calorie arc rated long sleeve shirt and pants, or coveralls
- 8 calorie arc rated balaclava
- Class E hard hat
- 8 calorie arc rated face shield with wraparound guarding
- Safety glasses
- Ear plugs
- Class double zero rubber gloves
- Leather protector gloves over the rubber gloves
- Leather footwear

Make sure there is no skin or non-arc rated clothing exposed.

Do not remove protective equipment unless power is off, locked out, and tested dead.

Check your equipment

- Make sure you have the right tools for the job
- Make sure your tools are insulated
- Test your meter on a known live source
- See to it that your meter is approved by Underwriters Laboratories (UL)
- Ensure that the equipment you'll be working on is properly labeled to show:
 - Nominal system voltage
 - Arc flash boundary
 - *And at least one of the following:*
 - Available incident energy and corresponding working distance
 - Arc flash PPE Category from the tables in the standard
 - The minimum arc rating of clothing
 - The site-specific level of Personal Protective Equipment

Immediately inform your supervisor anytime equipment isn't properly labeled.

Maintain safety boundaries

- Qualified Persons must maintain a 5-foot boundary for equipment pushing 480 volts or less
- Non-Qualified Persons must maintain a 10-foot boundary for equipment pushing 480 volts or less

Equipment pushing more than 480 volts calls for even greater boundaries and protective measures. Consult with your supervisor before approaching equipment pushing more than 480 volts.

Power Down

- When troubleshooting is completed, shut off the power, lock it out when required, release stored energy in capacitors, then perform repairs