1. **Use the Right Meter**
2. **Use the Meter Right**
3. **Use Fused Leads for Safety**

Electrical Safety Authority

Lead with Safety

Whether you are troubleshooting or testing electrical systems, The Electrical Safety Authority (ESA) encourages electrical trades workers to include these safety steps to reduce potential hazards:

- carefully define your meter needs to ensure you select the right meter,
- read and follow manufacturers instructions,
- use personal protective equipment as required, and
- always use fused leads with your multimeter – even if it has an internal fuse.

In the past 8 years user error has resulted in 26 reported multimeter incidents. Investigations of these incidents reinforce that operator error and improper category rating are the major contributor to incidents.

While performing live testing, meters can fail as a result of user error or other internal failure when :

- leads are in the incorrect slots when measuring voltage.
- the selector switch is on the wrong setting.
- subjected to higher voltages than the meter is rated for.
- equipment has not been properly checked.
- voltage surges in the system.

Fused Leads protect against common user error

As a result of the investigations into multimeter incidents, ESA commissioned a series of tests to simulate the impact of using fused leads as a protective measure. Fused leads used with multimeters prevented possible catastrophic results when the meter was used in an inappropriate way or experienced an internal failure. This included situations where:

- leads were placed in the incorrect slots when measuring voltage.
- the selector switch was placed on the wrong setting.
- there were internal failures.

Note: ***Fused leads worked as a safety mechanism in 90% of simulated tests.***
They did not work when voltage exceeded the rating of the fused lead – use properly rated fused leads and fuse replacements.

Use fused leads with:

- a minimum of 30 kA (200 kA desirable)
- a blown fuse indicator
- minimum CAT III or higher
- shrouded or limited exposure tips
- approved in accordance with the Ontario Electrical Safety Code

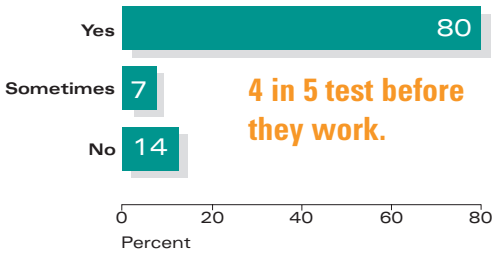
Achieve Maximum Protection

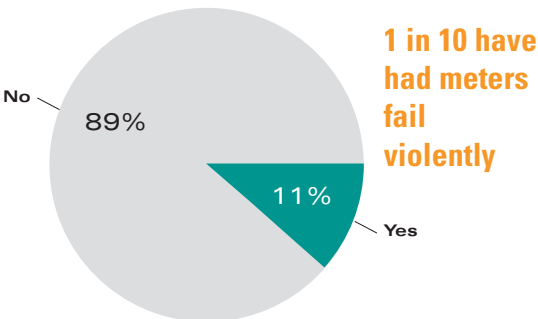
The Electrical Safety Authority warns that maximum protection is only achieved through the combination of the right tools and safe work practices including the use of fused leads. ESA recommends that you:

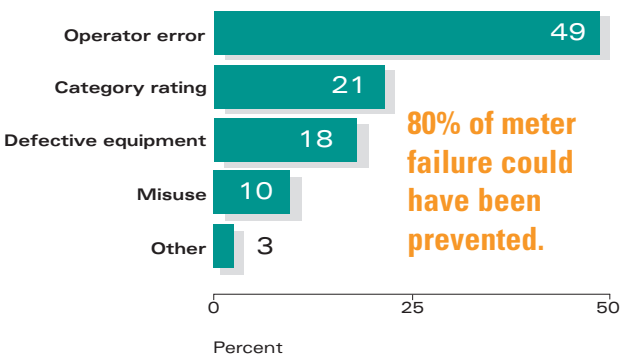
- Work on de-energized circuits whenever possible.
- Use proper lock-out/tag-out procedures.
- Use fused leads with multimeters as an additional protective measure.
- Use an approved minimum CAT III meter with fused leads.
- Select a multimeter that meets your highest voltage measurement needs – ensure fused leads match this voltage rating. Where possible check nameplate voltage ratings of the equipment or supply transformers.
- Follow a 3-step testing method to ensure your meter and fused leads are functioning properly. See accompanying video and, Health and Safety Guideline.
- Check that meter leads are connected to the correct terminals and the meter is on the right setting.
- Always use appropriate personal protective equipment.

The Stats are Alarming!

The Electrical Safety Authority (ESA) surveyed 5,000 electrical trades workers - did you know ...







Who is the Electrical Safety Authority (ESA) ?

The Electrical Safety Authority (ESA) was created in 1999 by the Ontario Government to:

- **assume responsibility for the electrical inspection activity previously held by Ontario Hydro; and**
- **introduce a broader public electrical safety mandate for Ontario.**

ESA tracks electrical incident statistics and is working with the electrical trades to reduce the number of electrical workplace incidents by encouraging safe work procedures. Fused meter leads are just one of these important initiatives.

For assistance contact:
fused.leads@electricalsafety.on.ca
www.esasafe.com

Electrical Safety Authority

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