

Electrical Safety Test Equipment

- Digital Volt/Ohm/Ammeter (VOM)
- Audio/Visual Voltage Detector - Tic Tracer
- Outlet Tester - Plug-in Polarity Tester



Examples of Hand Held Electrical Safety Equipment

The test equipment that is issued in your system might be a different model or make than the ones shown above. The operation of the safety equipment is basically the same. Read the manufacturer's user guide or manual for details on the use of the equipment you are issued before use.

Clamp-On Voltmeter (VOM)

The clamp-on volt/ohm/ammeter (VOM) is used to measure voltage AC and DC, AC current and depending on the model, DC current. The clamp-on VOM will also measure frequency, continuity and capacitance. Test current level prior to disconnecting/connecting any cable or ground wire. Figure below shows a clamp-on VOM.



The following safety precautions must be observed to ensure maximum personal safety during the operation of the meter:

- Review the operating instructions thoroughly. Pay attention to specific manufacturer's warning.
- Always inspect your meter, test leads and accessories for any sign of damage before each use. If a damaged condition exists, notify your supervisor immediately.
- Ensure that the transformer jaws are clean before taking a measurement.
- Never come into contact with a conductive object such as a metal conduit when taking electrical measurements.
- Never touch exposed wiring, connections or any other live circuits when attempting to take measurements.

- Remove any conductive jewelry.
- Always grasp the test probes so that your fingers are positioned behind the flash guards
- Always be alert for the presence of a buzzing sound, pale blue glow or an odor of ozone. All of these conditions may indicate the presence of high voltage. If this occurs, do not attempt to use your meter. Contact your supervisor or call for assistance.
- Always check and replace the batteries if a low battery level exists or is displayed.

Clamp-On VOM Construction and Controls

The transformer jaws (amp clamp) pick up the AC or AC/DC current flowing through the conductor. When measuring current, only place one conductor (wire) inside the jaws, not both. The trigger is pressed to open the transformer jaws. When the trigger is released, the jaws will close. The LCD display will display indications of measured values and feature symbols indicating function. The function selector allows the operator to select the signal to be measured and the range of scale: AC voltage, DC voltage, AC current, DC current, and continuity.

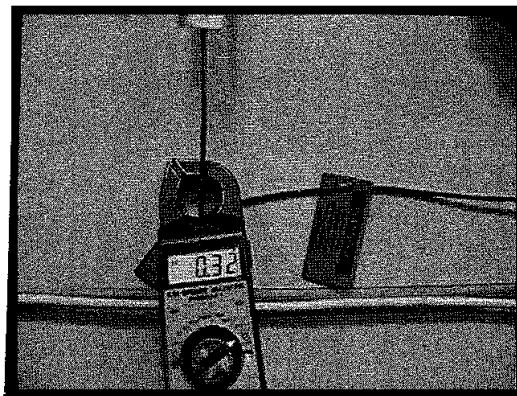
Using a Clamp-On VOM to Measure Current (A)

Current measurements are taken by setting the function switch to the ACA 700A range. Open the transformer jaws by pressing the trigger, and enclose one conductor (wire) only. Release the trigger and allow jaws to completely close before taking a reading. The reading will be indicated on the display.

Check Service Ground on an Install

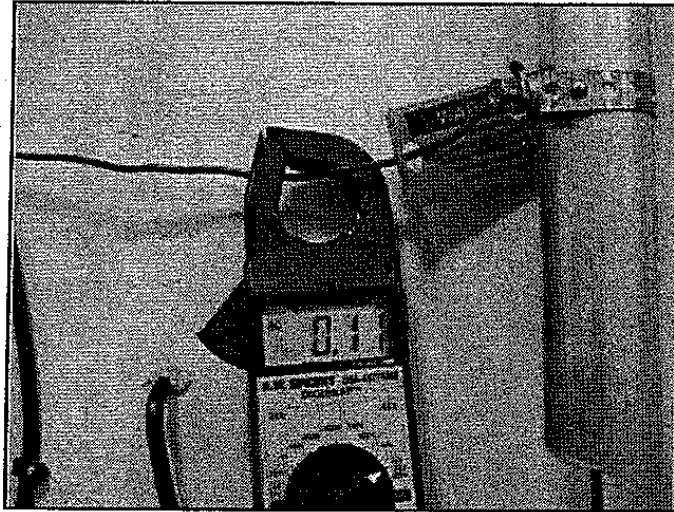
Taking a Reading on the Copper Service Ground

- Clamp around copper electric service ground before making new drop ground connection
- Must have a reading above 0.000 amps and less than 1amps



Check CATV Ground on a Disconnect or Before Maintenance Clamp Around Drop Ground

- To check drop ground for hazardous amperage before disconnecting or performing maintenance
- Make sure it is greater than 0.000 amps and below 1amps

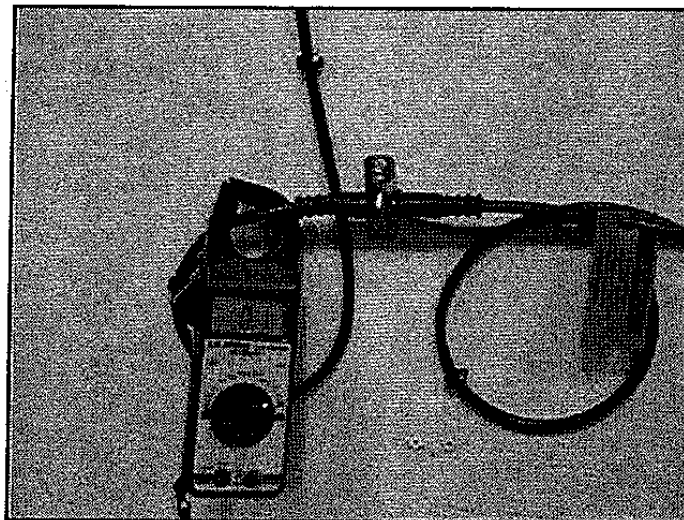


Check CATV Ground

Check For High Amperage On a Drop

Clamp Around Drop Wire Before Ground Block

- To check drop for high amperage, clamp around drop wire before ground block or grounding splitter, if no ground block is present.



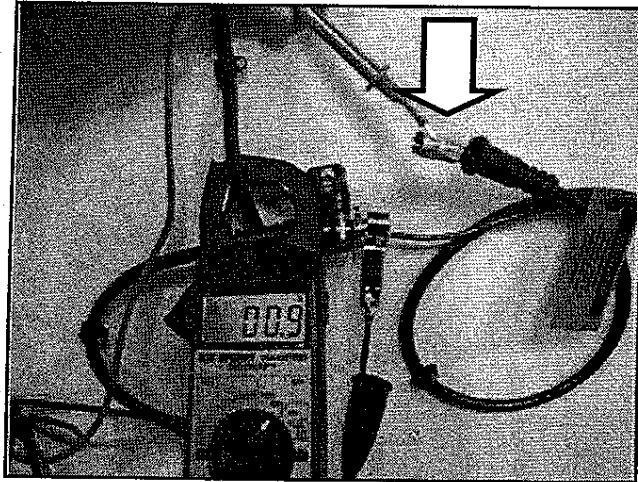
Check CATV Ground on Drop

If current is present, it just tell you that the drop is energized. Further testing is required to determine if the problem is from the house or tap.

Checking for Voltage on the Cable Shield

Reading Voltage on Shield of Cable

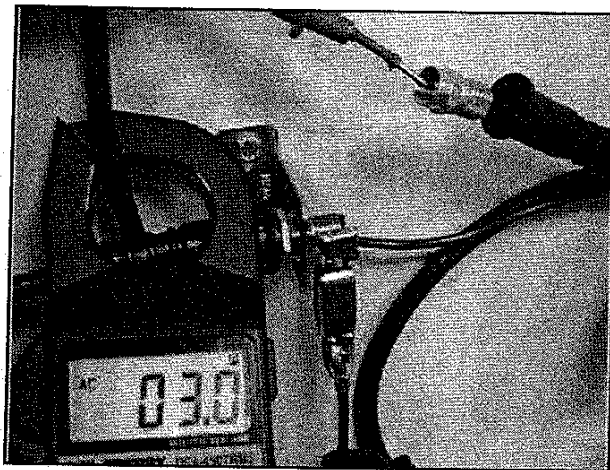
- After verifying that amperage on drop is within safe limits, you can remove cable from ground block and measure voltage on the shield to a good ground.



Checking for Voltage on the Cable Shield

Reading Voltage on a Center Conductor

- To read if voltage is present on the center conductor, place **Black** lead on a good ground, like the ground block and carefully probe center conductor with **Red** lead.
- Do not touch center conductor and shield at the same time.



Reading Voltage on a Center Conductor

Tic Tracer (Foreign Voltage Detector)

The Tic Tracer, shown below, is an instrument used to locate sources of AC voltage. The Tic Tracer voltage detector probe senses the electromagnetic field produced by an energized AC source such as electrical wires.



The Tic Tracer does not require contact with an energized source to detect voltage. The instrument does not indicate electrical current flow, only that a voltage (a difference in electrical potential) is present. When voltage is detected, the Tic Tracer emits a rapid audible ticking sound. The frequency of the ticking increases the closer the unit is positioned to the voltage source. The Tic Tracer has an alarm function that will always activate at a safe distance from the voltage source.

Outlet Tester

The Outlet Tester, shown in the figure below, is an instrument used to determine the existence and polarity of AC voltage at a customer's outlet.

A hazardous ground can exist in the customer's wiring inside a wall, a wall outlet, a multiple outlet strip or an extension cord. The outlet tester checks for the existence of a ground through testing for low ground impedance.



To use the Outlet Tester, plug it into the electrical outlet to be tested. Observe the end of the Outlet Tester for signs of light indications.

If there is no light, it means the outlet is not connected or no power is on it.