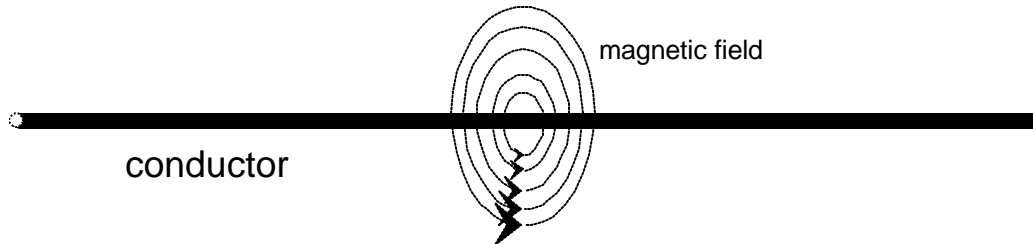
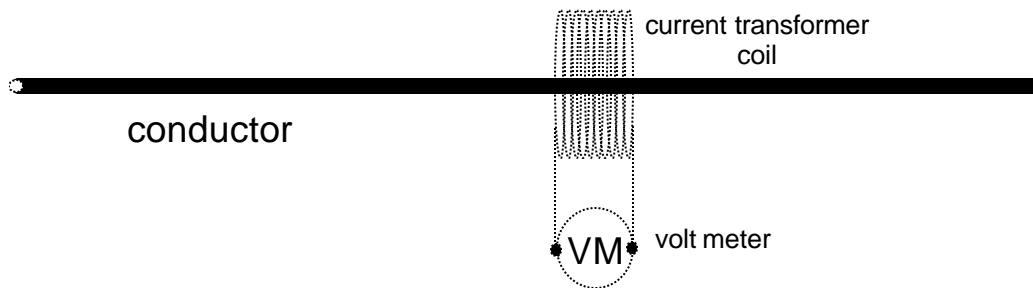


## Ground Fault Circuit Interrupter . . . Theory of Operation

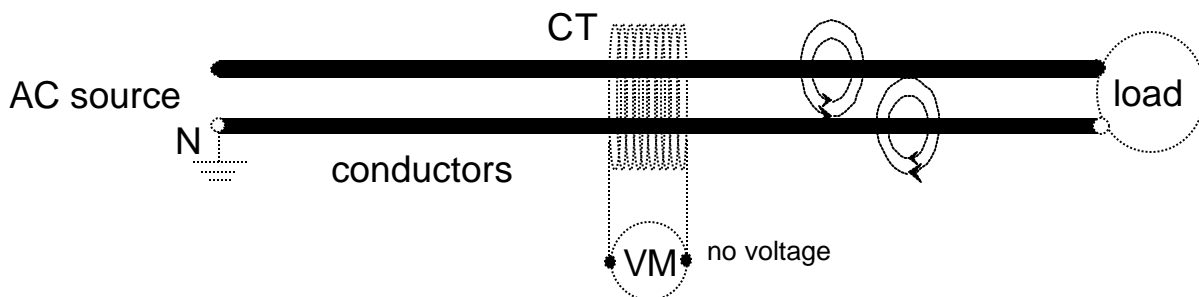
Ground Fault Circuit Interrupters use a current transformer "window" to detect current. When Alternating Current flows in a conductor, a magnetic field builds and collapses around the conductor . . . the more current flows, the stronger the magnetic field.



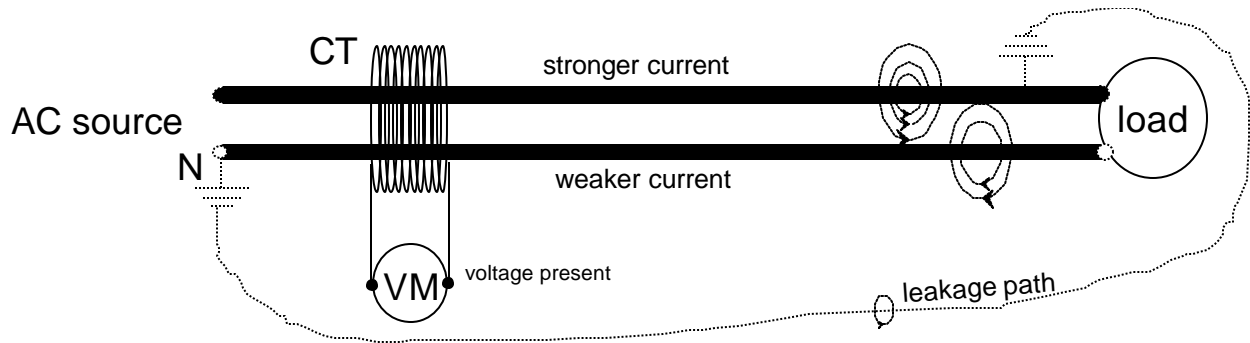
A current transformer is a coil of wire, and when a conductor that carries an Alternating Current is routed through the coil, the magnetic field around the conductor induces a voltage in the coil. The stronger the current in the conductor, the higher the induced voltage in the coil. A voltmeter can be connected to the CT to measure the induced voltage.



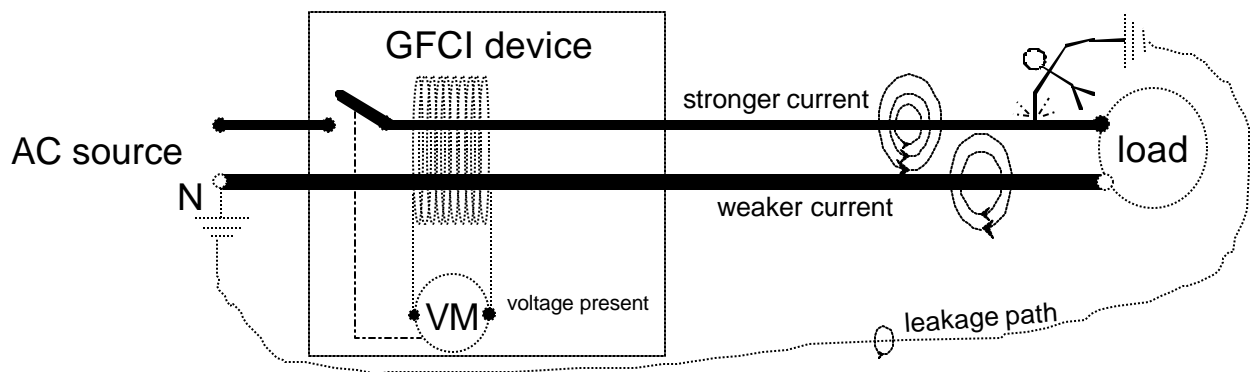
When both conductors of an AC circuit pass through a CT, the magnetic fields around the conductors cancel each other, and no voltage is induced in the coil.



If one of the conductors of the circuit goes to ground, part of the current supplied by the AC source will pass through one conductor, but not the other. This causes an imbalance in the strength of the magnetic fields, they no longer cancel each other, and a voltage is induced in the current transformer coil.



A GFCI device uses a very fast acting, voltage sensitive switch to disconnect the source voltage from the circuit, and prevent current from flowing in the unintentional fault path.



The use of GFCI devices for personnel protection against shock is required by the NEC in many residential locations including outside receptacles, basement and garage receptacles, and bath and kitchen outlets with-in six feet of a sink.

Got Questions?

e-mail your questions to [a.step@comcast.net](mailto:a.step@comcast.net)