

Guard & Ground Return Measurement

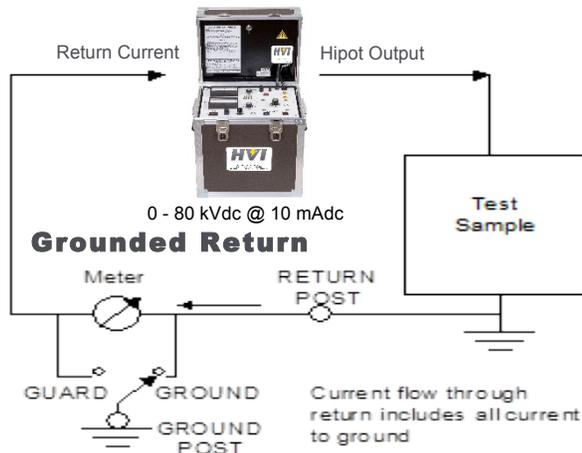
When measuring leakage currents while using a hipot, there are two modes of operation: **Guard and Ground**. Depending on the objective of the test, one or the other should be used. In both cases, the high voltage output from the hipot connects to one end of the load and the other end of the load is connected to either the coaxial Return wire, which connects back to the Return post on the hipot for Guarded Return measurements, or to a ground wire that connects to the Ground stud on the hipot. A switch on the hipot (HVI models) selects whether the current meter will read all leakage currents to ground (Ground Mode) or only those through the test object (Guard Mode), as long as Return side of the test object can be isolated from ground.

GROUND RETURN MODE

When using the **Ground Return** mode, all leakage currents to ground will run through the current meter. This includes the internal leakage current within the high voltage power supply, the output cable, and any and all other leakage currents to ground.

Example: If testing the leakage current of a transformer's windings against the steel core, the tank walls & core would be grounded, and the leakage currents monitored.

Example: If switchgear bus is to be tested, the HV output from the test set would attach to the bus and the return lead would come from the grounded chassis of the switchgear and connect to the **Ground** stud or **Load Return** post of the hipot. With this connection, all leakage currents from the bus to ground through all the insulating standoffs and other conductive parts would be measured.



GUARD RETURN MODE

The **Guard Return** mode is used to measure the leakage current through the test object only and not any other stray leakage currents. This permits the accurate reading of leakage currents through only the insulation area desired. When using the Guard Return mode, so long as the low end of the load (return wire connection) is insulated from ground, only the leakage currents through the load under test are directed through the current meter. All stray leakage currents to ground are shunted to ground and not indicated on the meter.

Example: If the insulation between two windings of a transformer is to be tested, one coil would attach to the high voltage output of the tester and the other coil would attach to the shielded return wire from the test set and connected to the **Guard Return** post of the hipot. Any leakage currents to the core of the transformer or any other ground points will not be measured.

