Application Note: No Output Cable Provided

Load Connection for high voltage test sets without a shielded output cable

HVI does not supply an output cable on AC test sets 65kVac and above, VLF hipots 140kVac peak and above, or DC hipots 300kVdc and above. This includes models that use a metal sphere, spinning, toroid, or bushing as the high voltage output termination. A shielded cable rated for the test voltage is not practical due to the size, weight, and/or high capacitance value. Use of a bare wire, test lead, or tubing is recommended instead. This output connection must be isolated from ground for the test voltage applied. The height of the high voltage section or output bushing are a good reference for the clearance needed. Refer to the manual for your exact equipment for more information. It is up to the user to ensure a safe and effective test setup.

Output test lead must be kept isolated from ground. Not rated for voltage

What to use

The Output of a hipot or dielectric test set is high voltage, but low current in the range of ~10uA to 1A depending on the model. Wire of small gauge is sufficient for this low level of current. Anything from a #18 AWG test lead to an aluminum pipe can be used, so long as they are isolated from ground for the test voltage applied. To minimize corona, or the electrical emissions discharged from the surface of the wire while at high voltage stress, the small output wire can be run inside aluminum ducting like used with a clothes dryer. This limits the EMI and static discharge in the local area and provides for a more stable voltage output and leakage current readings. With this setup, both wire and ducting will be at high voltage potential and must be isolated from ground.

Small aluminum wire connecting load. Larger diameter aluminum dryer duct for limiting corona. Both must be isolated from ground for greater than the test voltage applied

Shielded Output Cable Not Practical

There are several reasons why a shielded output cable is not a practical option. For DC and VLF test sets the issue is a matter of size, weight, and cost. The cable would be too heavy for a standard alligator clamp to keep its grasp on the test object or to move around and store. For AC, the shielded output cable adds to the capacitive charging currents of the test object and may draw more current than the hipot was designed for. This will result in a trip of the test set's overload circuit due to excessive current draw and not a dielectric breakdown of the test object.

PFT HPA ALT PAR PTS VLF

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