THE IMPORTANCE OF GROUNDING

MODEL N-100V VAN DE GRAAFF GENERATOR

Almost all electric equipment these days comes with a three wire line cord and plug. Your model N-100V Van de Graaff Generator is no exception. One of those three wires has green insulation (or green with yellow stripe) and the plug connects your machine to the building ground system. Inside the cabinet, the green wire is connected to the sheet metal on its own ground screw. This assures that the cabinet will always be at ground potential.

When the transport belt is turning, it pulls electrons away from the wool on the lower pulley. Over time, this pulley will, of course, become positively charged when there are no more electrons available for the belt. To sustain the belt current, there is an electrode brush, connected to ground, that is positioned to provide a current flow from ground to the pulley. With the wool re-supplied with electrons from ground, the charging process can continue.

There is a binding post mounted on the top of the cabinet that is used for grounding of demonstration accessories. Some of these accessories absolutely require grounding for proper operation, and it is up to the the user to read the product instructions to determine whether grounding is required for a particular accessory demonstration. For instance, if the N-122 Discharge Electrode is not grounded, the discharge arc will happily pass through whoever is holding the handle and find its way to ground through the soles of their shoes. And there are other accessories, such as the N-125 Electric Whirl, that do not require grounding. Be sure to read the instructions for your accessories so as to avoid any shocking surprises.

When your Van de Graaff Generator is operating, the dome voltage rises to a level where the leakage into the atmosphere is equal to the incoming belt charge. When the machine operator is nearby, the leakage will in a short time provide a significant personal charge. Now, when that person reaches for the on-off switch, there will be an arc discharge from the person to ground. If the operator holds a wire that is connected to ground, the personal charge will be drained away as fast as it arrives. It's important to remember that holding the wire only deflects charge acquired through the air; you can still receive a direct discharge from the dome if you get too close.

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