

Technical Note

GROUNDING

- A highly reliable grounding system is essential for safe operation of any HIGH VOLTAGE power supply. The preparation of this grounding system should be the first task of installation. The illustration below gives an overview of this system.
- Recommended installation is as follows:
 1. Drive two copper ground rods through the floor and into the earth at a maximum of 6 feet apart. Minimum dimensions for the rods are 0.75 inches (2 cm) in diameter by 8 feet (2.5 m) in length. The rods should be as close as possible to the vacuum tank or load.
 2. Measure the resistance between the two ground rods using an accurate resistance bridge. Add salt water or copper sulphate (CuSO₄) to the earth to lower the resistance to one Ω or less.
 3. Bond the two ground rods together with #6 AWG copper wire. Wrap and silver solder the wire at each rod.
 4. Connect the ground rods to the vacuum tank's low impedance ground stud by a copper conductor selected from the table below.
 5. Connect the vacuum tank's ground stud to the power supply mainframe's ground stud (designated "EARTH GROUND") with a similar conductor.

WARNING

1. BRAIDED WIRE HAS A HIGH IMPEDANCE TO RADIO FREQUENCY. DO NOT USE BRAIDED WIRE FOR GROUNDING CONNECTION. USE THE COPPER CONDUCTORS INDICATED BELOW.

GROUND CONDUCTOR SELECTOR

<u>ROD TO TANK DISTANCE</u>	<u>COPPER CONDUCTOR</u>
0 to 10 feet	#6 AWG wire (0 to 3 meters)
10 to 20 feet	#4 AWG wire (3 to 6 meters)
20 to 60 feet (6 to 28 meters)	0.035 X 2-inch strap (1 mm X 5 cm strap)
Over 60 feet	Consult

Note: In all cases flat strap, 2 inch (5 cm) minimum, is preferred and should be used when available.

2. Under some conditions, radio frequency energy is generated within the vacuum system and transmitted to the power supply through the high voltage and ground cables.
3. THE GROUND RETURN CABLE TO THE EARTH GROUND RODS MUST HAVE A LOW IMPEDANCE TO RADIO FREQUENCY ENERGY. THIS LOW IMPEDANCE GROUND RETURN MUST BE AS SHORT AS POSSIBLE AND MUST NOT BE COILED.
4. If the equipment is installed on the upper floors of a building, the vacuum tank can be grounded to the steel structure of the building. This should be done only after ascertaining that the structure has a good earth ground. If it does not, rods must be driven into the ground and connected to the steel structure to ensure a suitable ground.
5. ENSURE THAT EACH SYSTEM IS PROVIDED WITH ADEQUATE GROUNDING. NEVER USE WATER PIPES FOR THE SYSTEM GROUND CONNECTION. THE MULTIPLE JOINTS, TAPE AND SEALING COMPOUNDS MAKE THEM UNRELIABLE.
6. A GROUND HOOK MUST BE PROVIDED AT THE VACUUM SYSTEM AND THE POWER SUPPLY MAINFRAME FOR USE DURING SERVICING.

Angstrom Sciences, Inc. assumes no liability for damage or injury associated with the information provided in this data sheet. Always Consult a Professional Electrician to ensure your wiring needs are assessed correctly and always consult local Electrical Codes for proper compliance.

