



## Wimshurst Machine

Model: Vanguard II

**Please Read Completely Prior to Initial Use and Retain These Instructions**

### Note

To ensure quality, **this device is tested twice**, once at the factory, and again prior to shipment. Although we make every effort to ensure that this machine will function properly right out of the box, please take a moment to read and follow the instructions below, paying special attention to **line 5** under assembly and use.

### Safety

1. **Children should not use or operate this device.** If used for demonstration purposes around children, close adult supervision is required, and children should be kept at a safe viewing distance away from the device (> 3 feet).
2. **Proper care should be taken to avoid shock.** This device can produce high voltage (very low current), and the operator should never touch any surface (except for the handles) when in operation. Adjustments to the device should only be made after all of the static electricity is properly discharged.
3. Persons with known heart conditions or pace maker should not use or operate this device.

### Assembly & Use

1. Attach handle to main pulley located centrally toward the bottom of device.
2. Adjust the 4 wire brushes so that they are each in solid contact with the aluminum sectors on the acrylic discs. They should be positioned so they flow over the acrylic discs. The metal posts holding the brushes can be bent if necessary in order to make the brushes contact the disc surface.
3. Ensure that the metal spheres mounted on top of the Leyden jar capacitors are closely spaced (not touching) to begin.
4. Slowly turn the hand crank until sparks are generated. Sparks should appear quickly at first when the metal spheres are closer together, and then at longer intervals as the metal spheres are moved further away from each other.
5. When cranking the handle, you should hear a “hissing sound” emanating from the Leyden jars as they collect a charge, similar to the sound Rice Krispies make when the milk is added.
6. If you have proper contact with all 4 brushes and the device still will not work, try the following technique: Drag a piece of cloth (you can also use the plastic cover from the package, a glove, sock, or any small clothing item - if you have any old Styrofoam around, that works well too) over carpet to accumulate charge, then place the item close to the acrylic disc surface just above the aluminum sectors while rotating the handle **SLOWLY**. You can also move the item over top of and around the discharge spheres. The object is to create a charge imbalance in the Leyden jars. You can use anything that will carry and convey a charge, even yourself.
7. High humidity will adversely affect the performance of this device. The device will achieve maximum output in lower humidity conditions (especially in the winter).
8. After use, discharge any remaining charge by moving the metal spheres so that they are in contact with one another.
9. Lubricate spindles and pulleys periodically with a \*SMALL AMOUNT of light oil (gun oil). Do not get carried Away here, a small dab of oil goes a long way.