

# Hand-Crank Van De Graaff Generator

P6-3400



## BACKGROUND:

Congratulations on your purchase of the Hand-crank Van de Graaff generator. By following these simple instructions and photos you'll be up and running in no time.

## SET-UP INSTRUCTIONS:

### Step 1. Remove contents of box

Reach into the opened box and lift out the Van de Graaff dome and set it aside for later. Next lift the entire contents remaining in the box by pulling up on the plastic liner. Put the box aside and lift the Styrofoam packing from the bag and lay it down on its side.

Lift the top half of the Styrofoam packing to expose the contents.

1. Generator platform assembly
2. Discharge electrode wand & dome
3. Hand-crank wheel assembly



Image 1

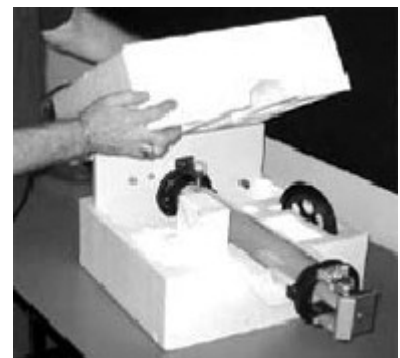


Image 2

## Step 2. Identify accessories

Set the Generator platform assembly upright on your workspace. Open the Accessories box to find the following contents.

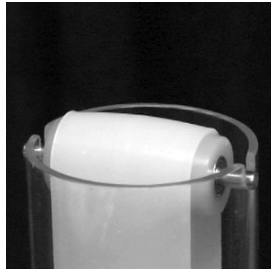
1. Dome Base Assembly
2. Discharge electrode hook-up wire (Red)
3. Aluminum Dome post & nut
4. Electric Whirl Arm & post (post has a protective case that it is enclosed in.)
5. Electric plume

Image 3



## Step 3. Assemble the dome post

Identify the Dome Base Post Assembly. This part will be used to complete the base that the large dome rests on. Locate the two notches on the top of the assembly and the four (4) pre-drill screw holes. When installing this part this side must face up.



The Dome Post Base assembly is installed atop the clear plastic dome tower shown in (image 4) at the left.

Image 4

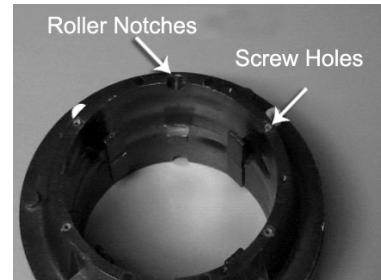


Image 5



Firmly grasp the belt and roller and pull upwards stretching the generator belt.

Image 6

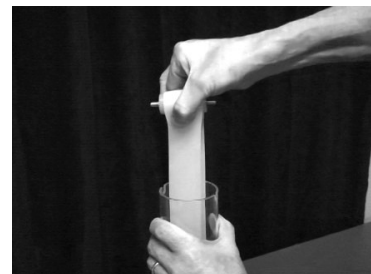
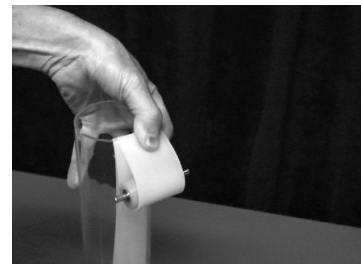


Image 7

While stretching the belt, fold the belt over the side of the plastic tower and hold it in place with your thumb (image 8).

Image 8



With your free hand grasp the Dome Post Base Assembly with the notches and the screw holes facing up and thread the belt and roller through the center of the assembly and lock the roller axel in the notches. Once the Roller is secure in the notches, release press from your thumb holding the belt and slide your hand out of the way, so that you may slide the assembly over the clear plastic tower and seat the Dome Post Base assembly onto the tower. Orient the assembly so that the belt is straight and the assembly is secured in the notches located at the top of the clear plastic tower.



Image 9

Finally, attach the aluminum dome post base to the assembly by aligning the holes with those on the top of the black plastic assembly and fastening with the provided screws (Image 10). Locate the aluminum dome post & nut. Screw the post into the top of the platform assembly. Note: The end with the hole in it should point up!

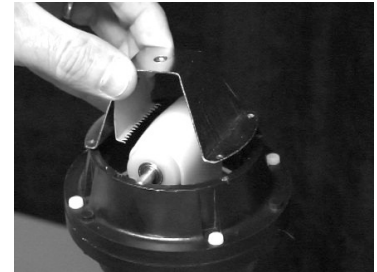


Image 10

Once you have confirmed that the dome post is seated completely, (hand tightened, and snug. Do not over tighten; the soft aluminum base can strip easily.) place the large dome on the brass post and secure with the post nut.



Image 11

#### Step 4. Assemble the Hand-crank wheel

Locate the hand-crank wheel and with the handle side facing you, install by sliding it under the two mounting screws and washers, that are attached to the platform assembly. (See image 12.) Just hand-tighten the screws at this time to hold the wheel assembly in place.

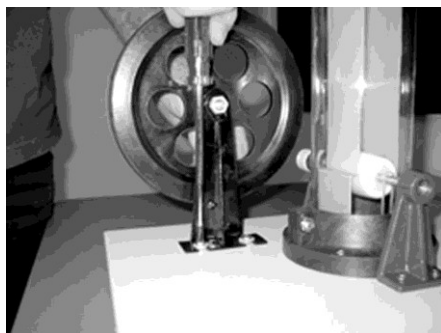


Image 12

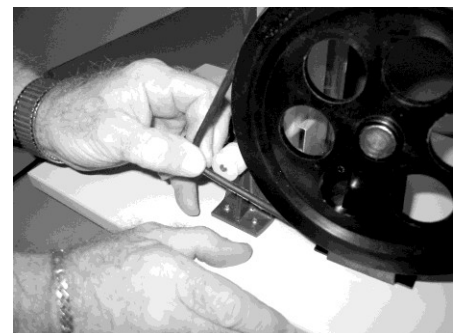


Image 13

Notice that the black hand-crank drive belt is already on the wheel. Pull one side of the belt from the wheel and slip it onto the white drive gear. (See image 13.) With the belt installed completely, adjust the hand-crank assembly so that it is parallel to the white drive gear and tighten in place with a Phillips screw driver.

### Step 5. Assemble the Discharge Electrode

Locate the Discharge Electrode dome (small chrome ball), the hook-up wire (Red) and wand (Clear plastic). Place the ring end of the hook-up wire over the attachment bolt of the electrode dome, and screw into the wand. Be careful to only snug the fitting and do not over tighten. (See Image 6)

Insert the jack end of the discharge wand wire into the red terminal located on the assembly platform and tighten to a snug fit.

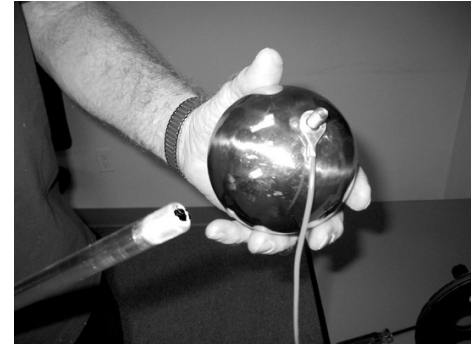


Image 14

### Step 6. Test

Test the setup by holding the Discharge electrode about an inch from the main dome and smoothly cranking the wheel. The wheel should turn the generator smoothly and create a spark between the electrode and the dome. If the belt comes off during cranking repeat step 4 to ensure the hand-crank wheel is parallel to the white drive wheel and then re-tighten.

### USE OF THE ELECTRIC WHIRL:

Place the whirl post (small post with black cap) into the hole at the brass attach post located at the top of the main dome. Remove the protective black cap to expose the pointed end. Place the “Z” shaped whirl arm onto the point of the post and the middle indentation. By cranking the generator you should see the whirl arm start to spin.

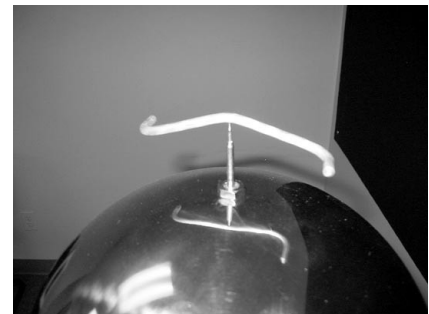


Image 15

### HOW TO CHANGE THE HAND CRANK VAN DE GRAAFF BELT:

#### Materials Needed

Replacement Belt (P6-3401)

Phillips head screwdriver

Meter stick

1. Remove the globe from the top of the Van de Graaff by removing the bolt on the top of the globe and lifting the globe from the rod. Remove the black hand-crank drive belt, and set aside.
2. Reverse the procedure listed previously for installation of the Dome Post Base Assembly, and return the belt and roller to the position shown in the image to the right..
3. Stretch the belt so you can slide out the roller from the belt and carefully release the tension on the belt and allow it to slide down into the cylinder. Once the pressure has been released the clear cylinder can be lift out of the lower tower assembly and access can be gained to the lower roller assembly.



Image 16

4. Once the cylinder has been completely removed from the base, remove the belt from the bottom roller and discard the belt. Remove the new belt from its packaging and place it on the bottom roller. Using the meter stick, push the new belt into the cylinder so that it lies flat on the inside of the cylinder as far as it will go.
5. Tilt both the base and the cylinder to the side so that the belt does not fall back down the tube, remove the meter stick, and affix the cylinder back into the base.
6. Carefully holding both the base and the cylinder, turn the entire apparatus upside down so that the belt falls near the top of the cylinder.
7. Lay the apparatus on its side once more, and pull the belt out of the top of the apparatus. You may need to use the screwdriver to initially grab the belt. (Be careful not to tear the belt with the screwdriver.) Once out the top of the cylinder, stretch the belt taught, and slide the top roller under the belt and re-install as shown in the previous procedures.

