

Experiment Accessories for the Van de Graaff

N99-B10-1323-EXPSET4

The universal activity kit provides the user with 4 exciting experiments that demonstrates the power of static energy. This kit is universal and functions with most Van de Graaff models.

Accessories:

1. Hamilton Flywheel (simple type)
2. Electric Umbrella (simple type)
3. Electrostatic Rocket (assembly kit)
4. Small Fluorescent Lamp (3 colors)

1. Simplified Hamilton Flywheel

Assembly:

The six discharge needles of the flywheel need to be bent. As shown in Fig. 1, bend the needles at a point about 40mm from the tip of one needle using your hands. Try varying the position and/or angle of the needles to see how the rotation of the flywheel varies.



Fig.1 Bending the Discharge Needles

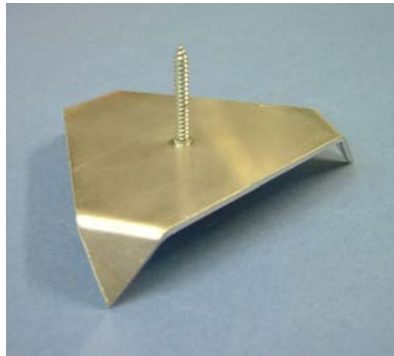


Fig.2. Hamilton Flywheel Supporting Base

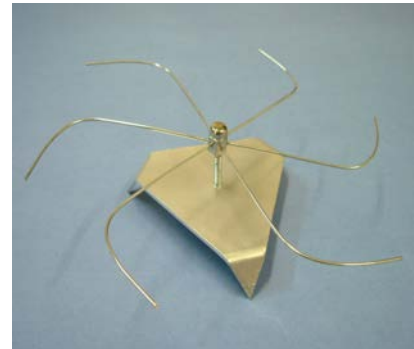


Fig.3. Completed Simplified Hamilton Flywheel.

Experiment:

Use the Hamilton flywheel by placing it on top of the collecting bulb as shown in Fig. 4. If the legs of the supporting base do not sit on the bulb successfully, re-bend the legs of the base (tips of the regular triangle-shaped aluminum base) to a suitable angle using pliers. We recommend wrapping PVC tape around the tips of the pliers. This allows you to finish the workpiece without damage.

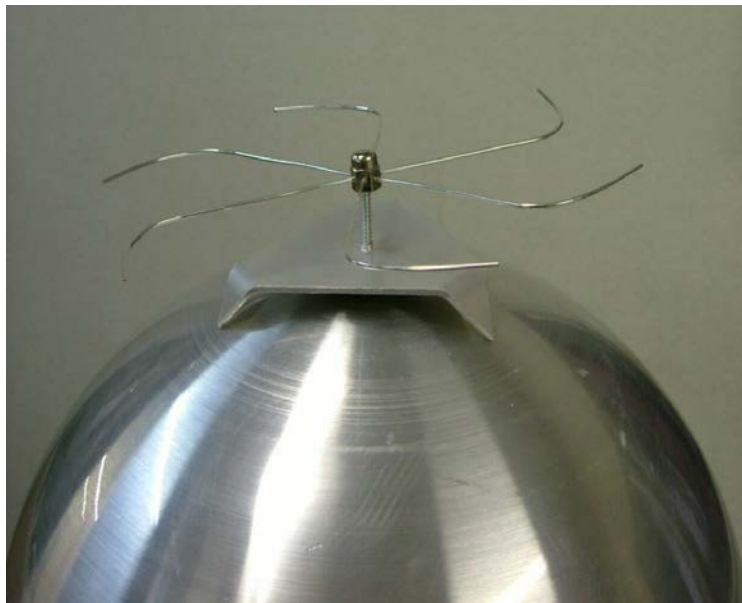


Fig.4. Simplified Hamilton Flywheel Sitting on the Collecting Bulb of Van de Graaff.

2. Electric Umbrella

Assembly:

There is a 50mm diameter white PVC disk with a black O-ring. Attached to it are approximately eight 90-mm long polypropylene strings. Separate these eight polypropylene strings into pieces using a needle point holder or metal comb (see Fig. 5) to complete the electric umbrella (see Fig.6). Be gentle, as excessive force can rip the strings.



Fig.5. Needle Point Holder

Experiment:

The electric umbrella is used by placing it on top of the collecting bulb as shown in Fig. 7. Run the belt at low speeds when using this accessory as otherwise the umbrella may jump up and slip off the bulb. You may fasten it using Scotch tape or PVC tape to prevent it from slipping down.



Fig.6 Completed Electric Umbrella



Fig.7 Electric Umbrella Sitting on the Collecting Bulb

3. Electrostatic Rocket

Assembly

Cut out both the rocket patterns from the electrostatic rocket paper pattern provided. Make a notch along the 30-mm black line on each rocket pattern using a cutting instrument. Match the notched lines of the two rocket patterns by sliding one over the other, and then bond the contact areas using woodworking adhesive or Scotch tape to complete the paper rocket as shown in Fig. 8.

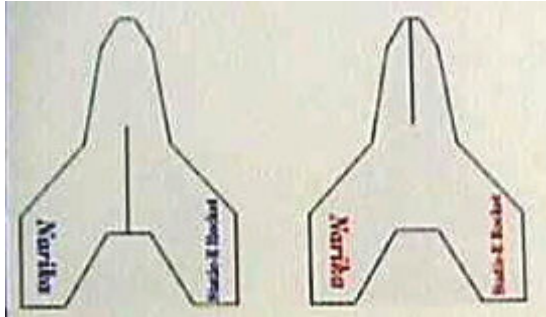


Diagram of Cut-Outs

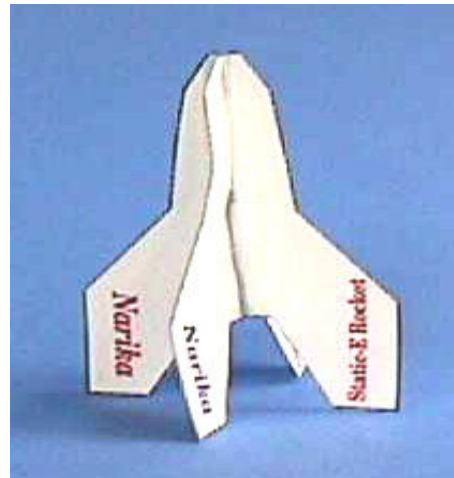


Fig.8 Electrostatic Rocket

Experiment:

First, turn **OFF** the speed controller's Power switch and turn the speed adjusting VR fully clockwise (set to maximum speed). Then place the rocket on top of the collecting bulb as shown in Fig. 9. Turn ON the Power switch. The rocket will jump up.

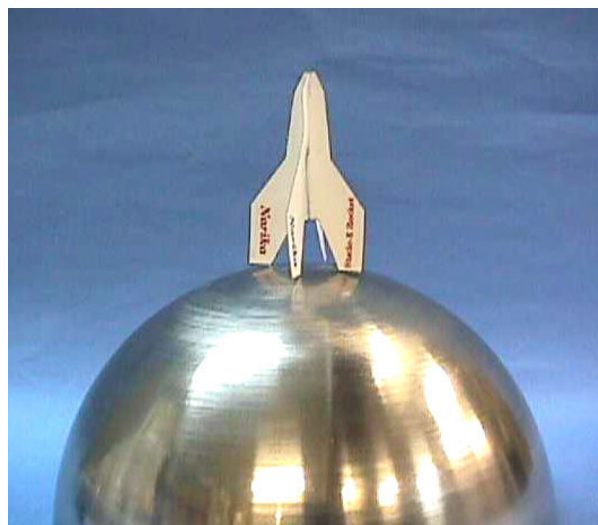
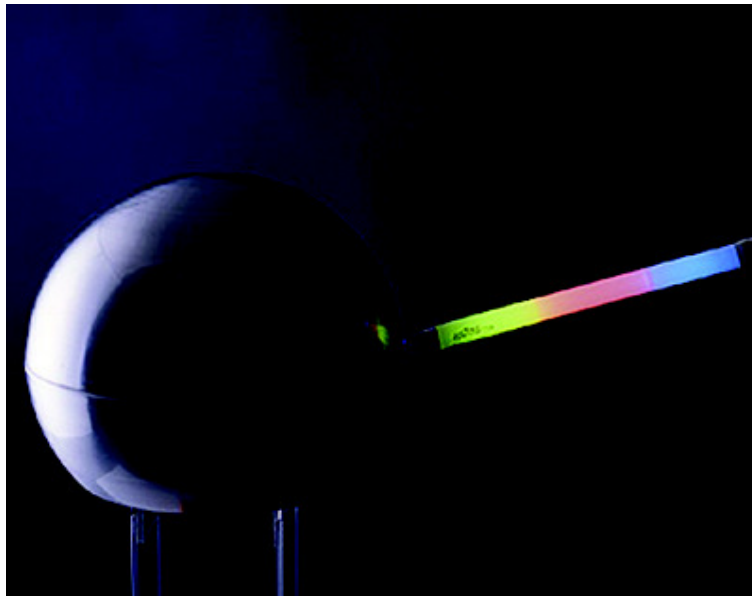


Fig.9 Electrostatic Rocket Placed on the Collecting Bulb

4. Three-colored Fluorescent Tube

Experiment:

The light is an 8 Watt fluorescent tube to which three fluorescent strips of green, red, and blue have been painted in the longitudinal direction. With the belt moving at the maximum speed, hold one end of the fluorescent lamp and bring the other end to the collecting bulb slowly. This causes the lamp to light up. Always hold the lamp with your stronger hand.



Caution:

- A person who has a weak heart , heart pacemaker implanted, or who is in poor physical condition must not conduct these experiments. Never force unwilling participants to conduct this experiment.
- Hair-raising experiments require an insulating tool (such as a stool or rubber soles). Your hair will not be raised in the condition if static electricity flows to the floor through your legs.
- For the fluorescent lamp lighting experiment, adjustment of the controller or turning the switch ON/OFF must be performed by someone other than the person holding the fluorescent lamp. Otherwise, an electric shock may be caused due to static electricity accumulating in the person conducting the experiment.