

Materials

- GENECON with output cord
- Test leads with alligator clips
- Capacitor
 - o DC motor (constructed in Activity #19)

Procedure

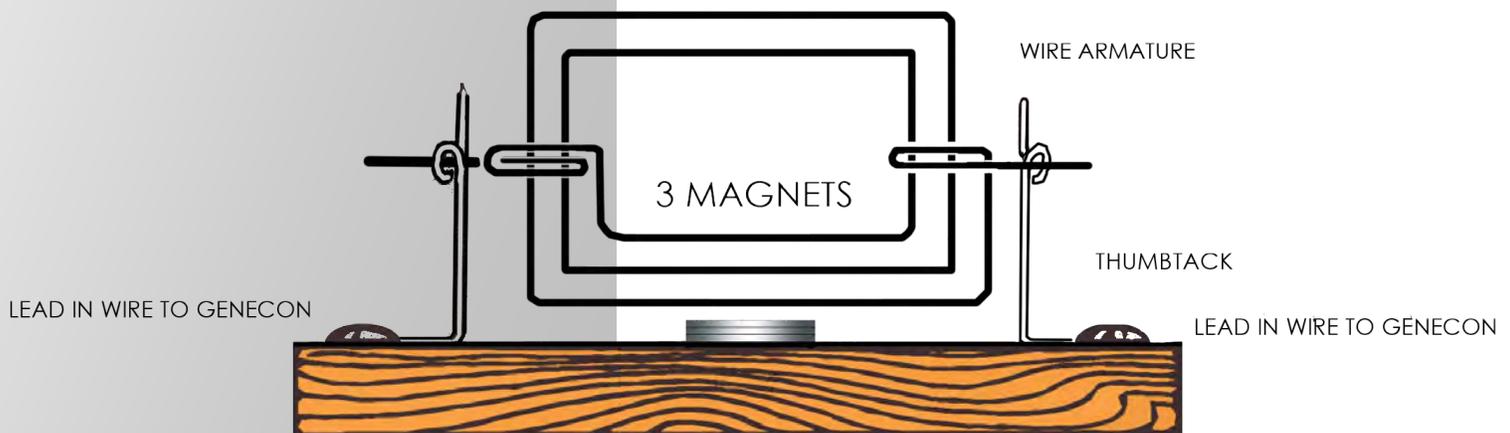
1. Connect the leads of the GENECON to the lead-in wires of the motor you are about to make on the next page. Rotate the handle of the GENECON at a moderate rate. If the armature does not spin, give it a gentle push with your finger. When the motor is operating smoothly, notice the direction the armature is spinning.
2. Try rotating the handle of the GENECON in the opposite direction. Result? Reverse the leads of the GENECON. Result?
3. What happens when the stack of 3 magnets is turned upside down?
4. Connect two or more motors together in **series** with the GENECON. Compare and contrast the results with Activity #7. (Bulbs in Series).
5. Connect two or more motors together in **parallel** with the GENECON. Compare and contrast the results with Activity #8 (Bulbs in Parallel).

Key Concepts

1. A current passing through a wire produces a magnetic field. (see Activity #17.)
2. A magnetic field exerts a force on a movable wire carrying an electric current (the motor effect). See Activity #18.
3. When a wire carrying a current is formed into a coil (in this case, an armature), the strength of the motor effect is greatly increased.
4. Changing the polarity of either the magnet or the electric current moving through the armatures results in changing the direction of rotation of the armature.
5. An electric motor converts electrical energy into mechanical energy.

Teaching tips

1. Allow students to try out most of the suggested activities at **their** initiative. They will surely think up some very good ideas on their own.
2. Make the capacitor available to be used in conjunction with the above explorations.
3. Encourage some students to build another armature which has "6 turns" of wire and compare its operation to the "3 turn" armature.
4. Remind the students that the GENECON they are using also functions as a motor when an electric current is fed into it. Would the little DC motor function as a generator if the armature were given a spin? If you have a **galvanometer** (a sensitive current detector), connect the leads on the DC motor to it and give it a try.



SIDE VIEW