



Curiosity Guide #804

Electric Motors

Accompanies Curious Crew, Season 8, Episode 4 (#804)

Reed Switch Motor

Investigation #8

Description

Up for another challenge? Try putting together a reed switch motor!

Materials

- All-in-one Simple Electric Motor
- 4 AA batteries
- Paper clips
- Tachometer
- Reflective tape

Procedure

- 1) Hold one of the small magnets near the side of the reed switch.
- 2) What do you notice?
- 3) Coil the provided wire around the iron core and connect the end wires temporarily to one of the batteries.
- 4) Hold the electromagnet near some paper clips to feel the attraction and repulsion. Repeat with one of the disc magnets.
- 5) Assemble the Reed Switch Motor according to the kit directions.
- 6) Predict the path of electricity and consider how the reed switch, magnets, and electromagnet will work together to provide continuous rotation.
- 7) Turn the motor on. What do you notice?
- 8) Place a piece of reflective tape on the surface of the rotor and measure the rotation speed with the tachometer.

My Results

Explanation

The electromagnet is connected to the battery pack, and the circuit includes the reed switch. When a reed switch comes near a magnetic field, the two metal strips inside the switch become magnetized and close the circuit. The stationary magnet that is near the switch initially closes the reed switch. However, once the electromagnet is turned on, the magnetic end repels one of the magnets on the rotor and causes the magnet to rotate away a quarter turn. As the magnet shifts, the reed switch opens, which turns off the electromagnet. However, the rotor continues to spin because of inertia. Now the magnet on the opposite side of the rotor is in line with the reed switch and turns the electromagnet on once again, repeating the rotation process. The rotor will continue to rotate and turn the electromagnet on and off until the batteries are drained or disconnected. The Reed Switch Motor is a powerful and fast motor that does not require brushes to operate.

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