

Make a Shaker-Generator

1. Place two transparency sheets one on top of the other, and roll them into a long tube. Close each end of the tube with an empty film canister (with lid on, top facing out). Tighten the tube so it fits snugly against the canisters at both ends. Tape the tube at the ends and the middle, maintaining the diameter of the canisters. Also tape along the sideways seam for added strength. You should be able to easily remove and reinsert the canisters.
2. Double up two rubber bands and place them around the middle about 2.5 cm apart. You will wrap the coils of wire between these rubber bands.
3. Wrap the magnet wire around the tube between the two rubber bands. Leave about 30 cm of wire free at the starting end, and begin wrapping as close as you can to the inside of one of the rubber bands. Proceed toward the other rubber band. Wrap tightly without squashing the tube. When you reach the second rubber band, proceed back toward the original rubber band. KEEP WRAPPING IN THE SAME DIRECTION (CLOCKWISE OR COUNTER-CLOCKWISE). Reversing directions will cancel the effect. Keep wrapping until you have 400 to 500 wraps. Be careful not to scrape the insulation off the wire as you wrap it.
4. Leave at least 30 cm of wire free at the finishing end. Tape the base of each free wire end to the tube near the coil. Have the ends lie against the tube facing in the same direction. Cut both of these wires so they extend about 8 cm from the coil.
5. Use sandpaper to THOROUGHLY remove about 4 cm of insulation from each of the two ends of wire. Connect each end with an alligator clip by putting the stripped end through the hole in the shank of the alligator clip, and tightly winding the wire around the shank. Make sure you have good contact between each wire and its alligator clip.
6. Clip each alligator clip to one of the LED legs. The alligator clips should be lying next to each other, along the side of the tube, but not touching each other. Double up the third rubber band, and use it to hold the alligator clips and LED in place.
7. Put the donut magnets together to form a stack. Remove the film canisters, insert the magnets into the tube, and close the end with the film canister. Secure the film canisters in place with masking tape. Shaking the magnets side to side should make the LED bulb light up with each pass.

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