

CONDUCTIVE TAPE

Circuit Basics

1. CIRCUITS BACKGROUND KNOWLEDGE.

Electricity moves in a circle called a circuit. The energy starts and stops with the energy source. In this case, that is the battery pack. It flows through the wires and any other parts of the circuit.

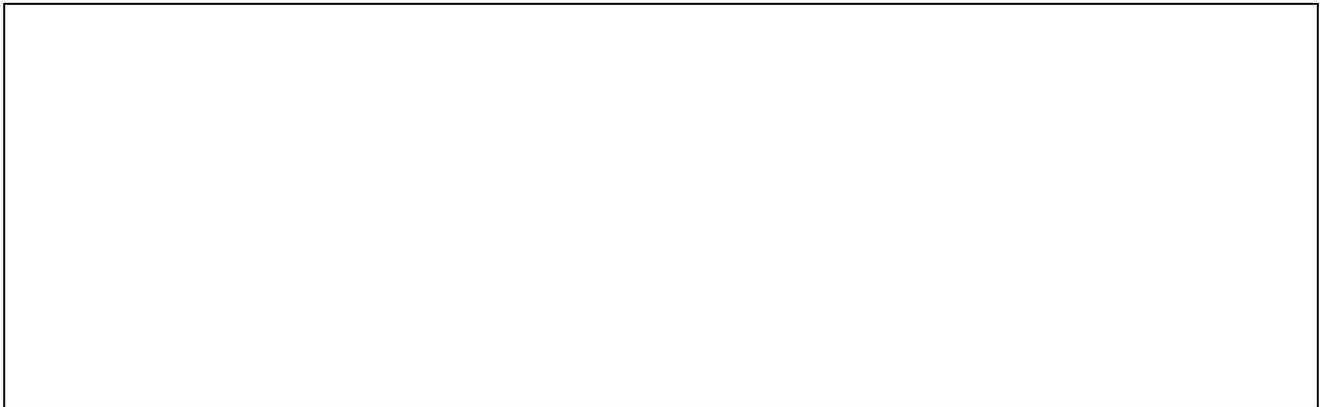
It is harder for the electricity to move through the LED, so it wants to move through the tape if it can. If two sides of the tape are touching then the electricity will by-pass the LED and create a short circuit. Your bulb would then not function. You want to force the electricity to travel through the LED bulb.

An LED bulb stands for Light Emitting Diode. It needs electricity in order to create light. The tape serves as a resistor, a part of the circuit that controls the flow of electricity. Always connect the battery and the LEDs through a piece of the tape. The LED “leg” with the longer stem will connect towards the red, or positive wires of the battery pack. An “alligator clip” is the wire with the metal clips at the ends.

2. SERIES CIRCUIT

a. A series is one pathway for the electricity to travel.

b. Sketch out your own series circuit in the following order: battery pack → red wire → alligator clip → conductive tape → alligator clip → black wire → battery pack. The LED should connect from one conductive tape to the next.



c. Create your circuit with your materials.

d. Now go ahead and add another section of conductive tape to the circuit. Do the bulbs function as well as before? _____

e. Now add another section of conductive tape to the circuit. Does it change anything about the first or second bulbs? _____

3. PARALLEL CIRCUIT

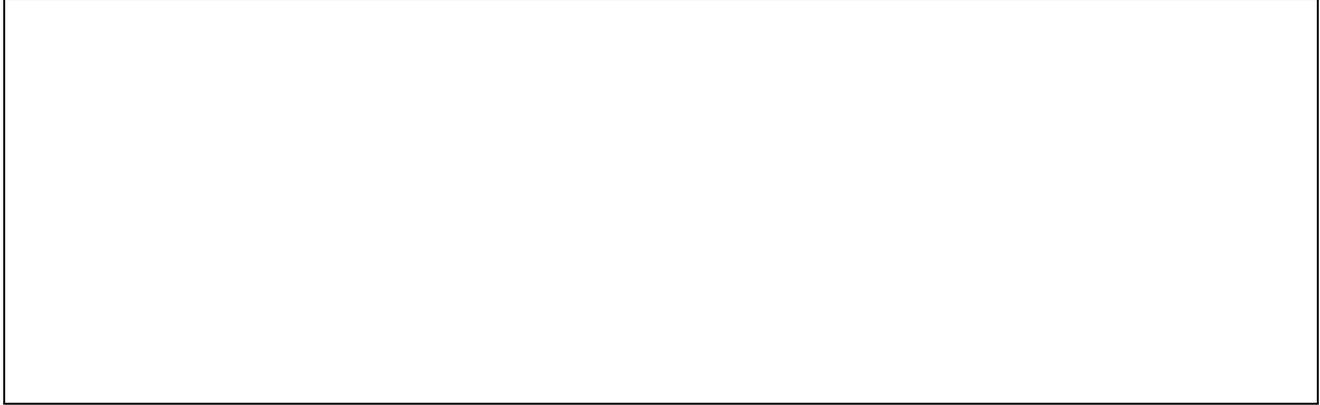
- a. With a parallel circuit, the electricity has different ways that it can move through the circuit. Since all of the LEDs are receiving flows of electricity separately, they should continue to work if you connect an additional bulb, take one out, or it burns out.
- b. Sketch out your own parallel circuit in the following order: battery pack → red wire → alligator clip → conductive tape → alligator clip → black wire → battery pack. The LED should connect one side of the conductive tape to the next.



- c. Create your parallel circuit with your materials.
- d. Now go ahead and add a second LED along side the first. Does it change anything about the first bulb? _____
- _____
- d. Now add another. Does it change anything about the first or second bulbs? _____
- _____

4. ROTATING MOTOR

- a. The motor also has two separate wires. You can hook up the red, positive end from the battery pack through the tape to either of the motor's wires. Note that changing which of the motor's wires you use also changes that direction that it spins.
- b. Sketch out your own series circuit with a motor included in the following order: battery pack → red wire → alligator clip → conductive tape → motor wire → motor → motor wire → conductive tape → alligator clip → black wire → battery pack



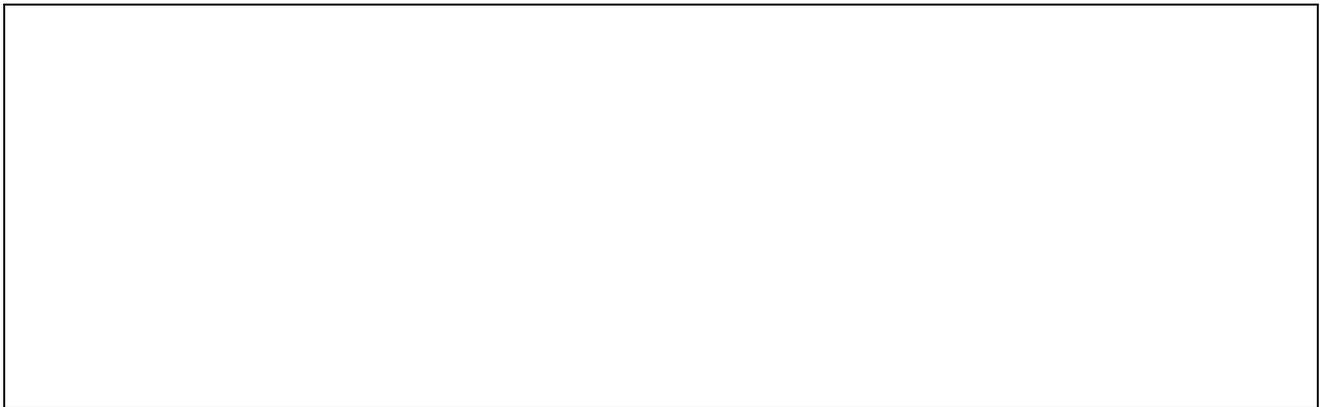
c. Create your parallel circuit with your materials.

d. Now try to change the direction of the motor by switching the red and black motor wires.

5. VIBRATING MOTOR

a. Similar to the instructions for the rotating motor in a series circuit..

b. Sketch out your own series circuit with a motor included in the following order:
battery pack → red wire → alligator clip → conductive tape → motor wire → motor →
motor wire → conductive tape → alligator clip → black wire → battery pack



c. Create your parallel circuit with your materials.