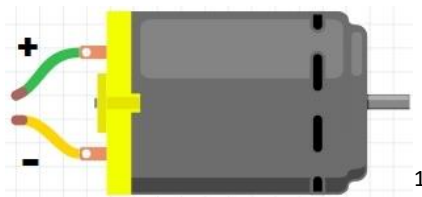


HIMALAYAN MAKERS GUILD

Foundation Activity 8

DC MOTORS

DC motors often look like this:

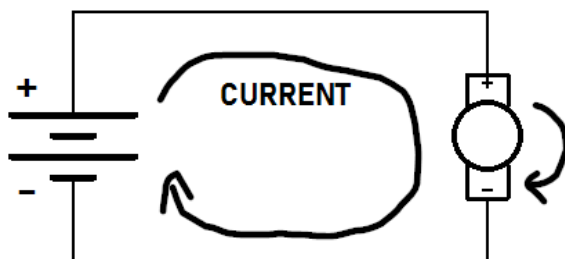


In a circuit diagram we draw them like this:

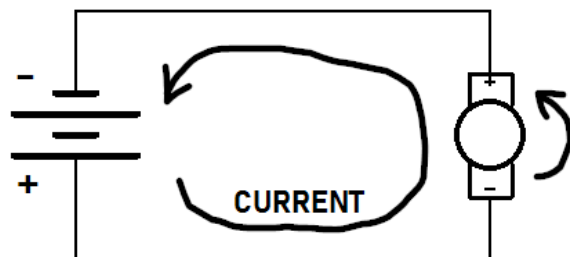


CONTROLLING ROTATION DIRECTION

By applying a voltage to the motor wires, it will spin:



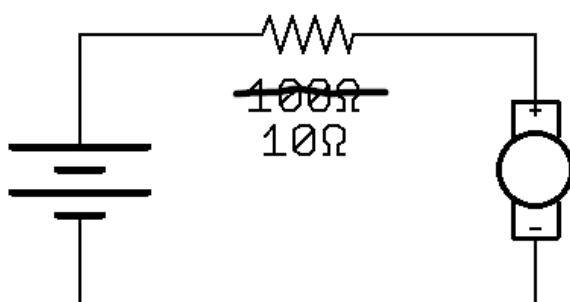
If we flip the applied voltage, the rotation direction will change:



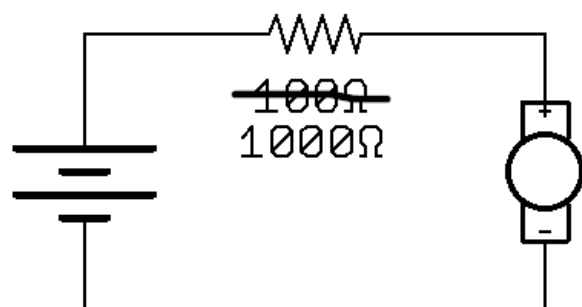
CONTROLLING ROTATION SPEED

The amount of current flowing through the motor determines how fast the motor will rotate. More current results in a higher speed. We can control the current using a resistor.

Faster

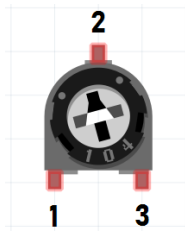


Slower

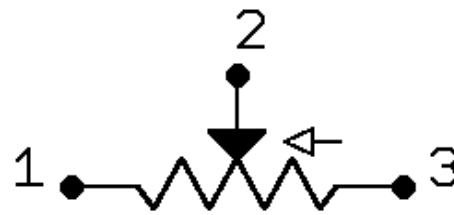


POTENTIOMETER – A VARIABLE RESISTOR

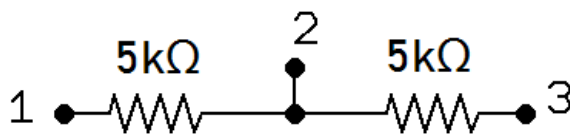
Potentiometers often look like this:



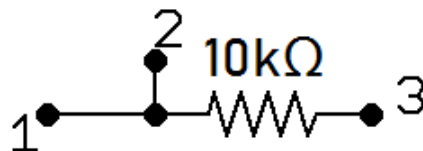
In a circuit diagram we draw them like this:



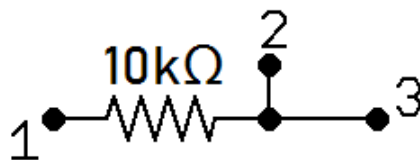
There are two resistors inside, wired in series. The total resistance of the potentiometer is split between the two resistors. By turning the knob of the potentiometer, we can change how the resistance is divided between the two resistors. For example, if we use a 10k Ω potentiometer:



Knob centered.
Each resistor gets $\frac{1}{2}$ of the total resistance



Knob turned clockwise



Knob turned counter-clockwise

By connecting to pin 1 and 2, or pin 2 and 3, we get a single resistor that changes in value between approximately 0 Ω and 10k Ω .

CONTROLLING DC MOTOR SPEED WITH A POTENTIOMETER

By adding an LED to the motor, we can see voltage created by the rotating motor in the brightness of the LED:

