

Motor Unit Building Instructions

1. Cut a 1 1/4 inch by 3/8 inch notch from a 3" square of balsa wood, as shown in the pattern below

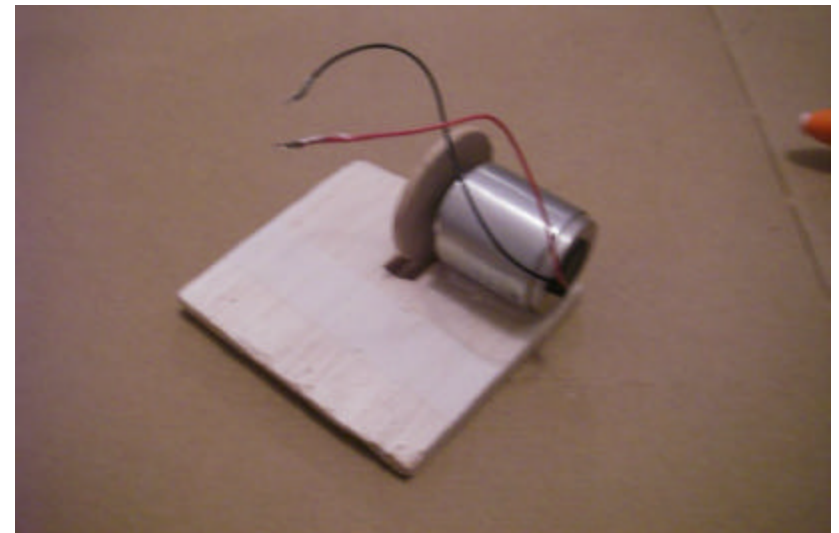


2. Drill a 1/16 inch diameter holes in the center of a wooden craft circle, to form a wheels.
- Slide a wooden craft circles onto the axle of a 12 V motor.

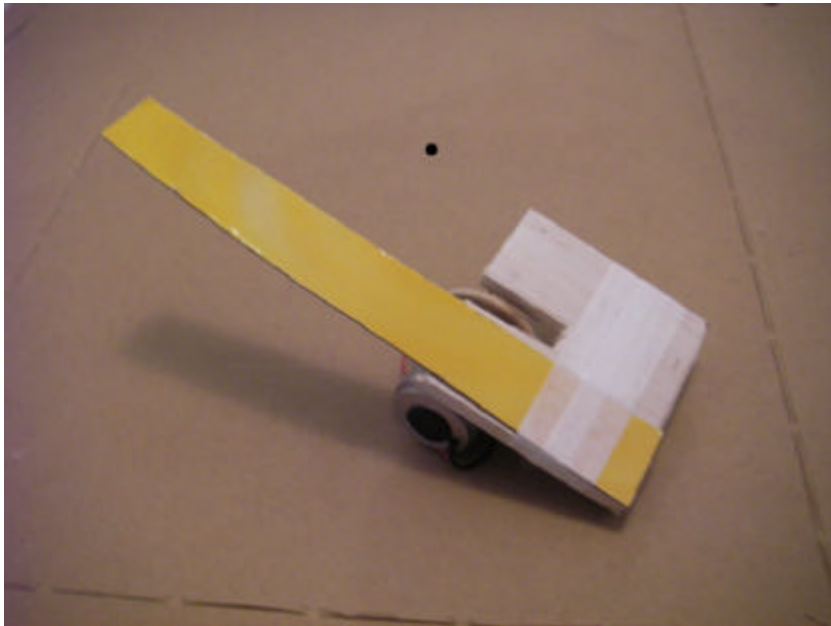
4. Apply glue on one side of the notch, as shown.



5. Set the motor and wood wheel onto the glue, with the wheel in the slot. Allow the glue to dry.



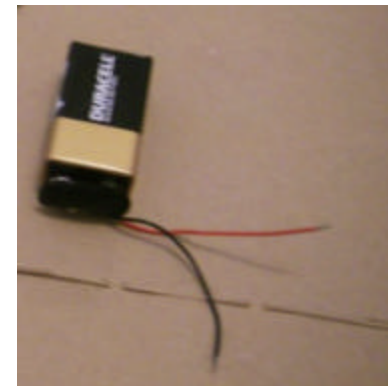
6. Cut a strip of cardboard 7 inches long and 1 inch wide.
7. Tape the cardboard strip to the balsa wood opposite the motor, as shown.



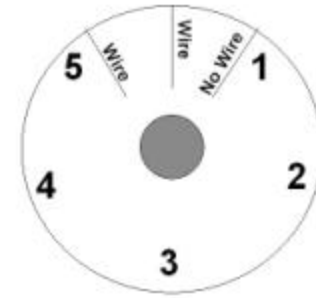
8. Wrap the cardboard strip as tightly as possible around the motor, and tape to the balsa wood on the opposite side of the motor, as shown.



9. Attach a 9 Volt battery clip to a 9 Volt battery

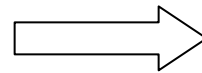
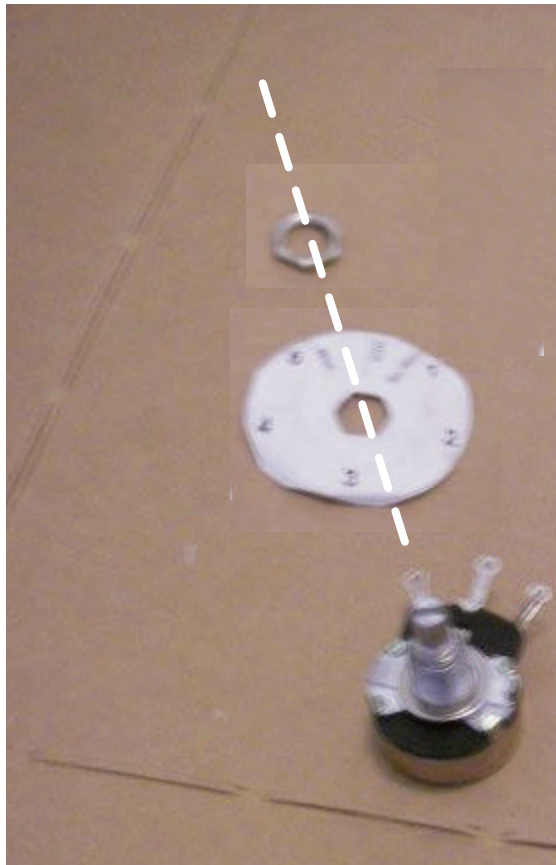


10. Cut out a potentiometer label from the pattern below or a pattern supplied by the teacher. Cut a hole in the center of the label, marked with gray.

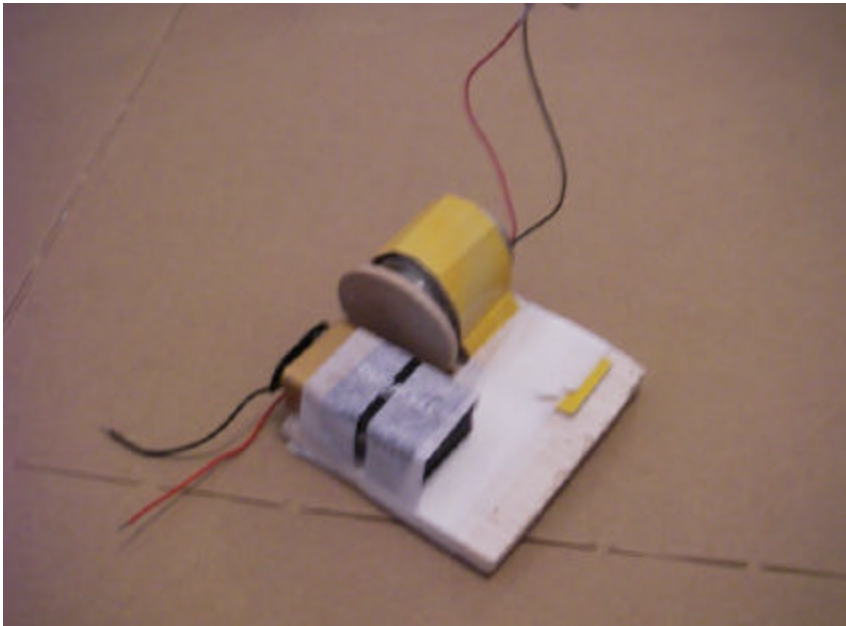


Potentiometer Label

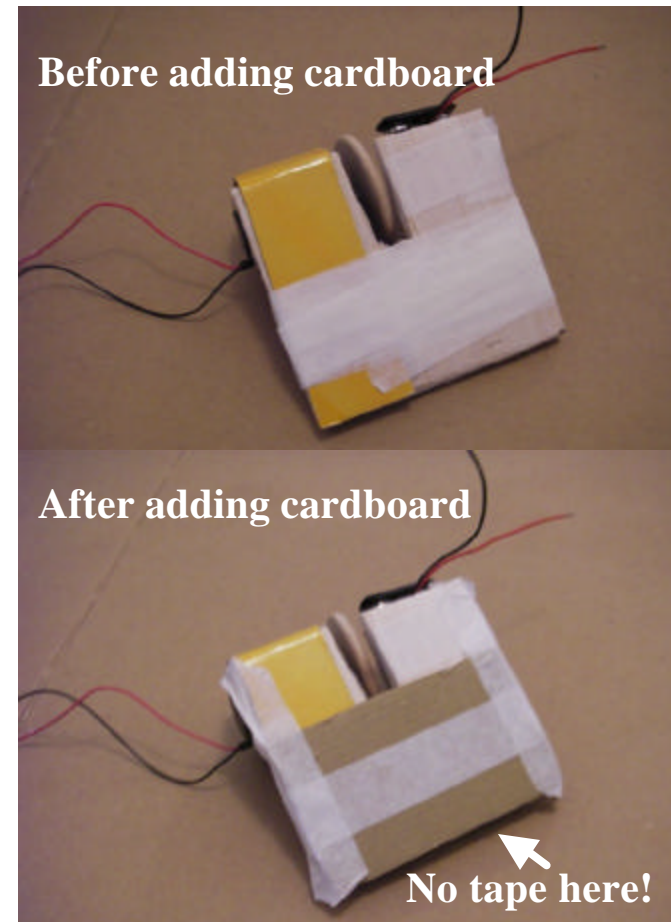
11. Attach the potentiometer label to a potentiometer using the nut that comes with the potentiometer (usually it is already on the knob when you open the package).



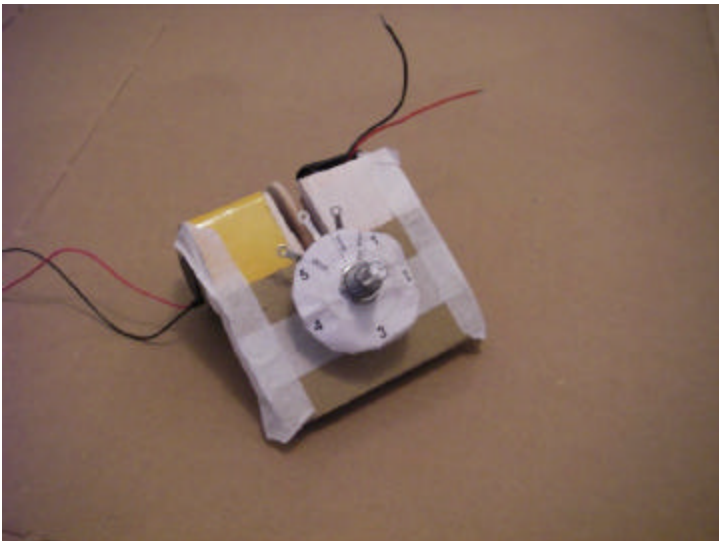
12. Tape the 9 V battery to the balsa wood on the opposite side of the slot from the motor.



13. Cut a 3 inch by 1 ½ inch rectangle out of cardboard.
14. Tape the cardboard to the empty side of the balsa wood as shown below. Tape the cardboard only on the sides parallel to the wheel.



15. Tape or glue the labeled potentiometer on top of the cardboard rectangle



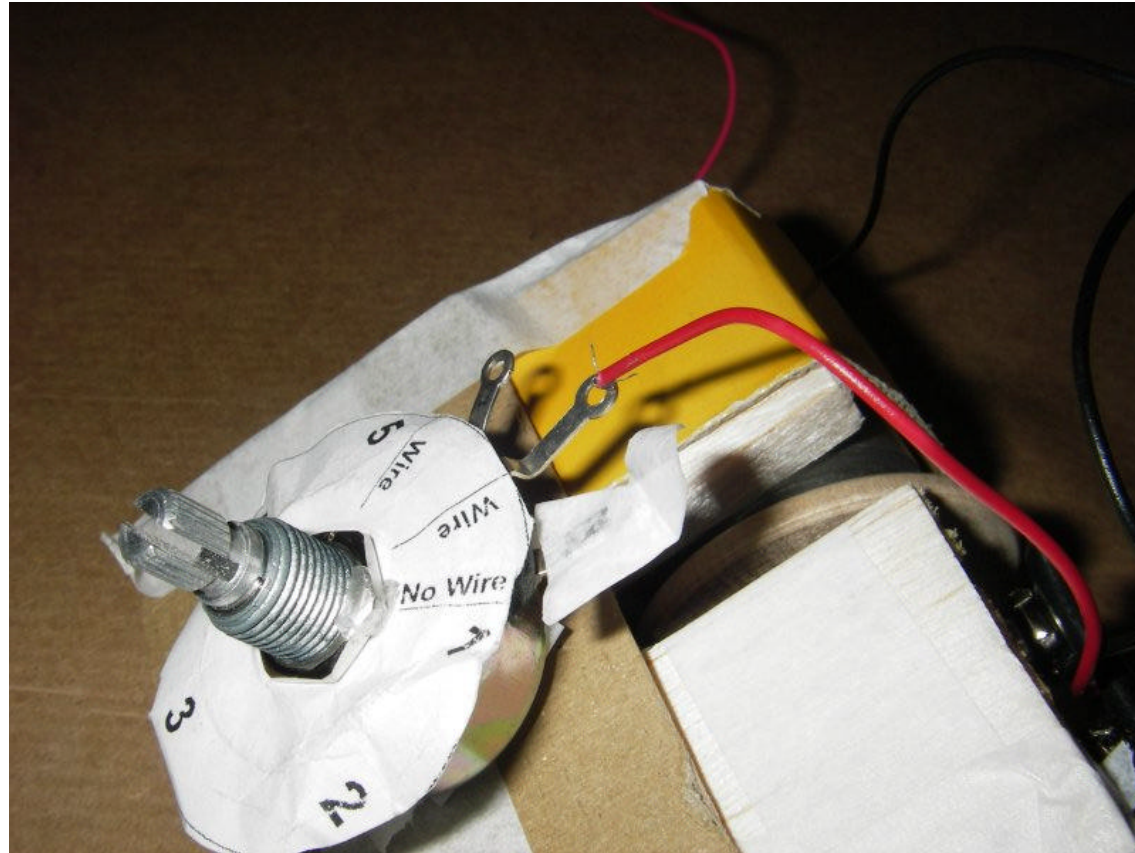
16. Twist the metal parts of the black wires together. Make sure the metal parts of each wire are touching!



17. Use tape to hold the black wires together. Even better, use solder and a soldering iron, if available



18. Cover the potentiometer leg marked “No Wire” with tape
19. Twist the metal part of one red wire around the middle leg of the potentiometer. Use tape or solder to hold the red wire in place.



20. To start the motor, touch the second red wire to the remaining potentiometer leg. Twist the wire around the leg to keep the motor running when you let go.