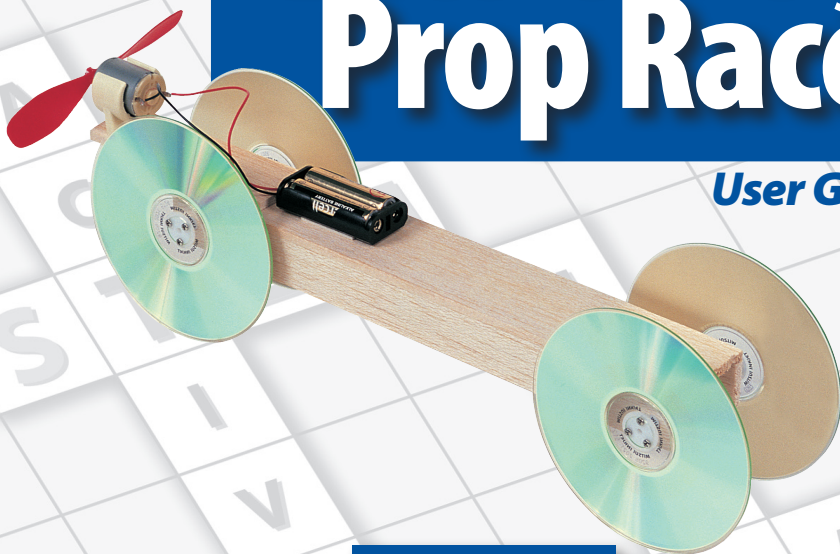


Electric Energy Prop Racer

User Guide



PITSCO
EDUCATION

Cautionary and Warning Statement

- This kit is designed and intended for educational purposes only.
- Use only under the direct supervision of an adult who has read and understood the instructions provided in this user guide.
- Read warnings on packaging and in manual carefully.
- Safety glasses required when soldering.
- Always exercise caution when using soldering iron.
- Do not mix old and new batteries.
- Do not mix alkaline, standard (carbon-zinc), or rechargeable (nickel-cadmium) batteries.

Soldering Iron Safety Tips

- Always get permission from an adult before using a soldering iron.
- Be sure to read and follow all of the manufacturer's instructions provided with your soldering iron.
- Never touch the element or tip of the soldering iron.
- Always return the soldering iron to its stand when not in use.
- Turn unit off or unplug it when not in use.

Electric Vehicles

How can you get 20 to 30 more miles out of each gallon of gas and help prevent pollution in the atmosphere? Drive an electric car! Since 1997, car buyers in America have been able to purchase hybrid vehicles, which combine the use of fuel and batteries to make the car run.

Although electric vehicles look like regular cars, they operate much differently. To see for yourself, gather this kit's materials and get ready to make your own Electric Energy Prop Racer!

Materials Included

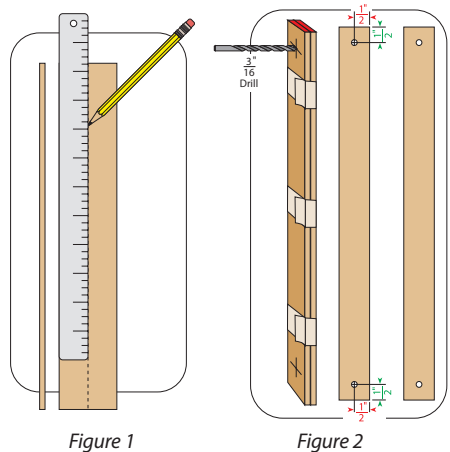
- 3 balsa wood strips (3/16" x 2" x 12")
- 4 clear CDs
- 2 axles (1/8")
- CD hub set
- Motor
- Plastic propeller (5")
- Battery holder
- 2 alligator clips
- Motor mount
- Screw
- Washer
- Wing nut

Items Required (not included)

- Utility knife
- Metal straightedge
- Soldering iron
- Drill and drill bits (3/16" and 1/8")
- Glue
- Wire strippers
- Pliers
- Double-sided tape
- Small Phillips screwdriver
- 2 AA batteries
- Transparent tape
- Pencil
- Ruler

Building the Racer

1. Locate the three balsa wood pieces. Use a metal straightedge and pencil to draw a straight line down the middle of one piece (Figure 1). Use a utility knife to cut it in half. These will be the side rails of the vehicle.
2. Using the transparent tape, put the two halves together back-to-back lengthwise (Figure 2). Make a mark 1/2" from each end, centered in the middle. Drill a 3/16" hole at each point. Remove the tape and separate the pieces.



3. Glue the rails on each side of a second piece of balsa wood at a 90-degree angle (Figure 3). The holes should be on both ends of the body.
4. Take the third piece of wood and cut a 5" piece off one end (Figure 4). Then, use the knife and straightedge to cut 1/2" off the side of the 5" piece so its dimensions are 1-1/2" x 5" (Figure 5).

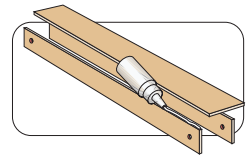


Figure 3

5. Make a mark 1/2" from one end of the piece and drill a 1/8" hole in that spot. The hole should be centered in the middle of the piece (Figure 6 corner).

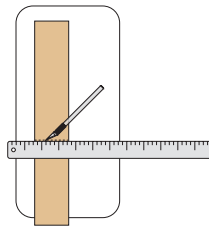


Figure 4

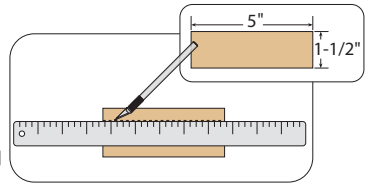


Figure 5

6. Place the 1-1/2" x 5" piece of wood in the center of the racer body with the side rails pointed down (Figure 6). Be sure the end with the hole hangs over one end at least 2" before gluing it into place.

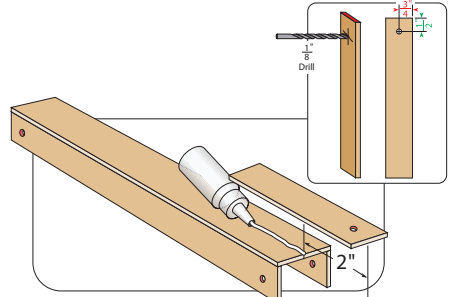


Figure 6

7. While the glue dries, find the four CDs and CD hubs. Using the small screws with the hub set, screw the hubs into the center holes of the CDs (Figure 7 corner). Place four bushings from the hub set into the holes of the side rails. Locate the 1/8" axles and push them through the bushings (Figure 7). Push the CDs onto the ends of the axles to make the wheels.

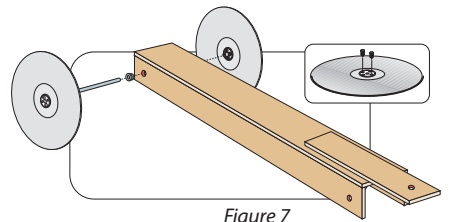
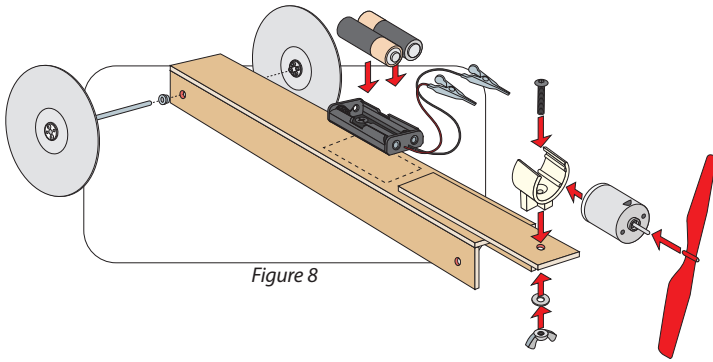


Figure 7

8. Connect the alligator clips to the battery holder assembly by inserting one of the two leads through the small hole in an alligator clip.
9. Using a pair of pliers, bend the tabs on the alligator clip over the lead.
10. Solder the lead to the alligator clip. Be sure to heat the metal around the lead thoroughly so solder flows freely and attaches to the clip.
11. Repeat Steps 8-10 for the second lead of the battery holder.

- Using the screw, washer, and wing nut, attach the plastic motor mount using the hole on the 1-1/2" x 5" piece (Figure 8). The screw should be inserted into the center of the mount from the top, and the washer should be placed between the bottom of the balsa wood and the wing nut to prevent the wing nut from grinding into the wood.



- Place double-sided tape on the base of the battery holder and secure it to the racer body about 1/2" behind the balsa strip holding the motor mount (Figure 8). Push the propeller onto the front shaft of the motor and slide the motor into the mount. The two motor terminals should be pointed toward the battery holder.
- Insert two AA batteries in the battery holder. To activate the racer, attach the alligator clips to the terminals of the motor.

Caution: When the batteries are inside the holder, keep the alligator clips from touching. Designate a specific area to attach one of the alligator clips (on the front wheel or the side rail) so they do not touch one another. Allowing them to touch will result in a heat transfer that could cause burning.

Your Electric Energy Prop Racer is ready to roll! To change the direction of the racer, switch the alligator clips onto the opposite motor terminals.

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E D U C A T I O N

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