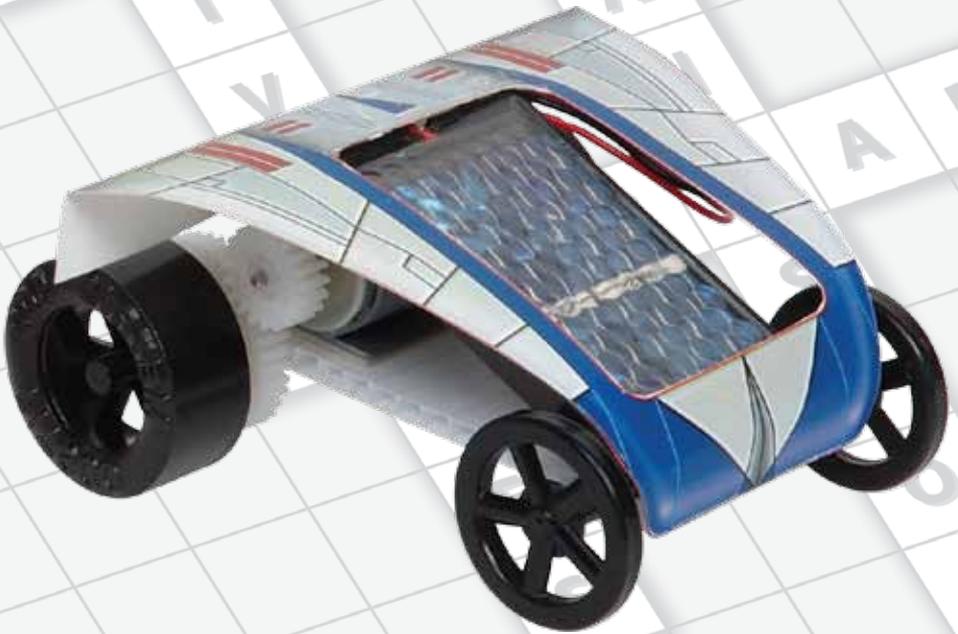


SunEzoon Car Kit

User Guide



PITSCO
EDUCATION

59021 V0513

Cautionary and Warning Statements

- 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.
- Always exercise caution when using sharp tools.

About the SunEzoon Car

Exploring the Sun's energy is easy with this SunEzoon Car Kit. No soldering is necessary – only simple assembly and cutting skills are required.

How Solar Panels Work

Solar panels use the light energy that the Sun makes and turns it into electrical energy. This is called photovoltaics.

So how does this happen? If we look at a normal solar panel, we see a flat piece of a blue material with wires sticking out of one side. There are no moving parts – no gears turning, no dials to turn – but when you shine light on it (especially sunlight), you get electricity flowing through the wires! It could seem like magic, but it's not.

Most solar panels are made from silicon, the same element that is in sand. Silicon atoms bond with other silicon atoms to make a very stable condition. Silicon can be made into thin sheets like those we see in a solar panel. But silicon is not a good conductor, which is a material that lets an electric current flow well.

So other elements are added to a solar panel to help the current flow better. These include cadmium, gallium, selenide, and copper. With these added, the energy from the light can move more easily. Then, this energy moves through the solar panel and out of its wires.

Materials Included

- 2 large rear wheels
- 2 small front wheels
- 2 axles
- 4 nylon axle bushings
- Solar panel with alligator clips
- Gear font
- Motor mount
- Chassis plate
- Car body cutout
- Motor
- Adhesive tabs, double-sided

Required Tools (not included)

- Hobby knife
- Sandpaper
- Scissors

Assembly

1. Deburr the axles by brushing the ends against sandpaper. This will make it easier to push the axles into the wheels.
2. Find the four axle bushings. Pick up the chassis plate and look at its side. Notice it is corrugated and there are holes along both long sides. Count two holes back from one end. Place one of the axle bushings in that hole. Do the same on the other side of the plate (Figure 1). The two axle bushings should be parallel. This is where the front axle will go.

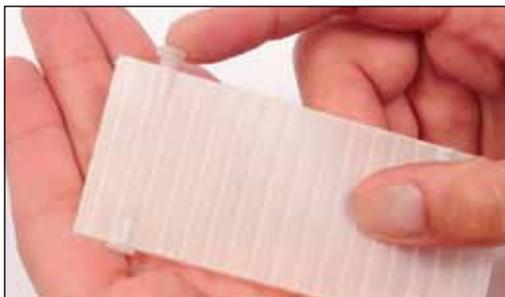


Figure 1

3. From the other end, place an axle bushing in the third or fourth hole – you want the large rear tires to be close to even with the back of the chassis. Do the same on the other side (Figure 2). This is where the back axle will go.



Figure 2

4. From the gear font, detach Gear I (40-tooth, 1/8" bore). This is the drive gear. There may be some flashing, or burrs, on the gear, which will keep the gear from running smoothly. Using the hobby knife or sandpaper, carefully cut or sand off any flashing (Figure 3). Now detach Gear G or N (20-tooth, 2-millimeter bore) from the gear font. This is the pinion gear. Cut off any flashing.



Figure 3

5. Press an axle into the drive gear. Push it through so approximately 1/4" of the axle is extended on the other side of the gear (Figure 4). Press one of the rear wheels on that 1/4" end (Figure 5).



Figure 4



Figure 5

6. Insert the axle into one of the back axle bushings. Push it until the end comes out the axle bushing on the other side. Push the other rear wheel on the axle end (Figure 6). Make sure the parts are not too tight or the wheels and gear will not turn properly.



Figure 6

7. Push the other axle into one of the front wheels (Figure 7). Slide this axle through the front axle bushings. Push the other front wheel onto the free end of the axle (Figure 8). Again, make sure the parts are not too tight.



Figure 7



Figure 8

8. Push the pinion gear onto the motor shaft (Figure 9). Snap the motor into the motor mount (Figure 10).



Figure 9



Figure 10

9. Turn the motor so the pinion gear is on top of the drive gear and the motor is between the two rear wheels. Let the gears mesh together and the pinion gear roll forward until the motor mount rests on top of the chassis (Figure 11). The gears should be meshed but not too tightly. If they are too tight, the gears will not work properly. Mark where the front of the motor mount will attach to the chassis (Figure 12). Peel off the paper backing from the motor mount adhesive and position the motor and gear.

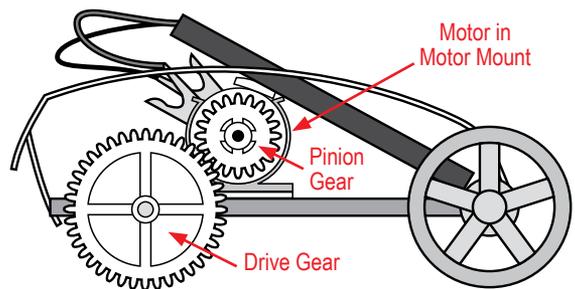


Figure 11



Figure 12

10. Clip the black and red wires from the solar panel to the motor connection terminals (Figure 13). You might need to turn the motor in the mount so the connection clips do not stick up and interfere with the solar panel placement.

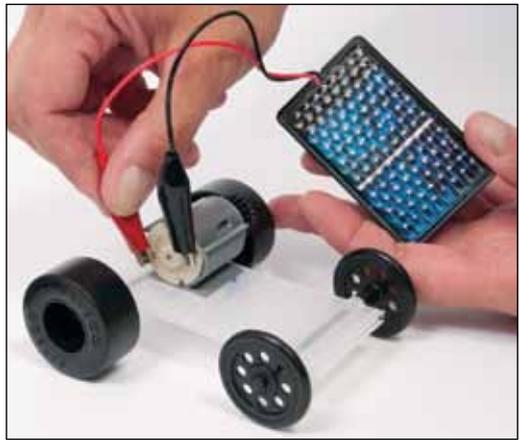


Figure 13

11. Place an adhesive tab on the back of the solar panel near the wire end (Figure 14). Peel the paper backing off the tab and carefully place the solar panel on the car so it angles down from the motor to the chassis. The tab should rest on the motor and the other end of the panel will be near the front of the car.



Figure 14

12. Following the directions on the car body cutout, cut and fold the car body (Figure 15).

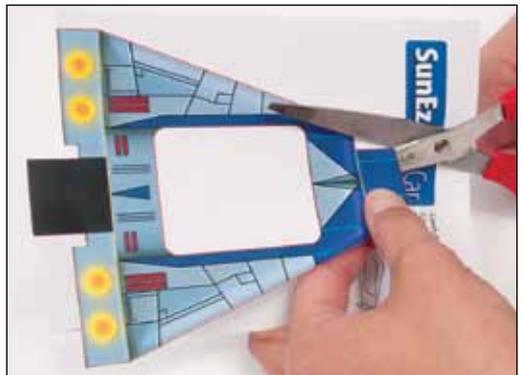


Figure 15

13. With the blank underside of the cutout facing up, place an adhesive tab on the two tabs that extend from the cutout. Practice folding the cutout over the car so the tab on the wide end is aligned with the car's back (Figure 16). The cutout should fit over the car so the solar panel shows

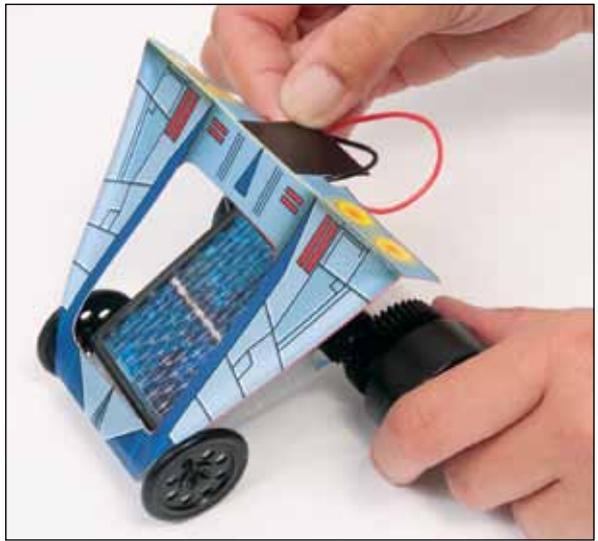


Figure 16

through the hole in the cutout. Depending on where your solar panel is placed, you may need to trim the cutout near the front wheels. You might also need to secure the back tab to the motor mount instead of the chassis.

14. When you are comfortable with the positioning of the cutout, remove the backing on the tabs and adhere the cutout to the chassis. **Note:** You may need to reposition the clips if they are pushing on the cutout so it rubs against the gear or wheels.
15. Take the completed SunEzoon Car outside on a clear, bright day and place it on a smooth, level surface. If properly connected, it will take off. If it runs backward, switch the red and black wires on the motor connection terminals.

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