

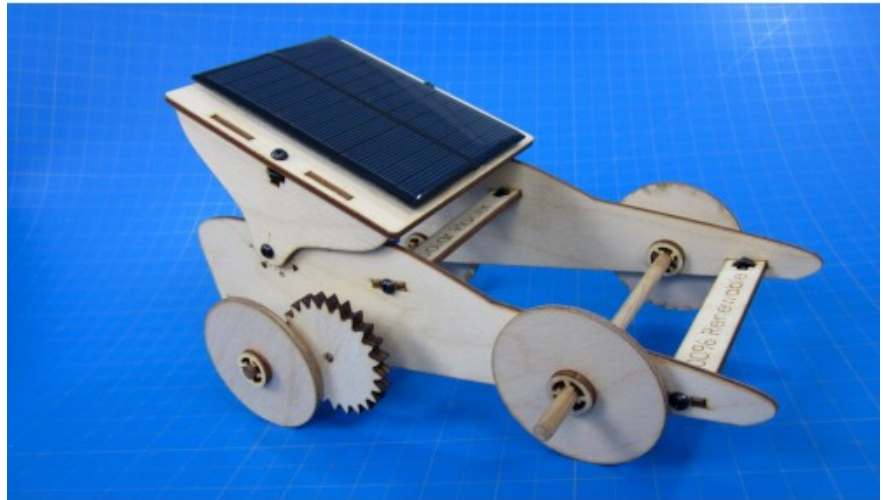
# Solar Racer Instructions

**Product Code: 1221505**  
**Brand: Brown Dog Gadgets**

## Step 1: Parts and Tool List

Listed below are all the parts found in the Solar Racer Kit:

- Solar Cell
- Geared Motor
- Terminal Block
- Chassis and Fin
- Nuts and Bolts (x11)
- Center Braces (x3)
- Output Gears (S, M, L)
- Drive Gears (S, M, L)
- Axels (x2)
- Axel Spacers
- Wheels (x4)
- Velcro



## Step 2: Paint

You can paint your Racer at any time, but we've found it easiest to do before assembly. Our kit is made from baltic birch plywood and will take paint or stain well. Make sure you leave several hours for your paint to dry.

## Step 3: Wiring

Use your terminal block to wire the positive lead from the solar panel to the negative lead from the motor. Then wire the negative lead from the panel to the positive lead from the motor. Hooking up the positive side of the panel to the negative side of the motor will cause it to spin in reverse.

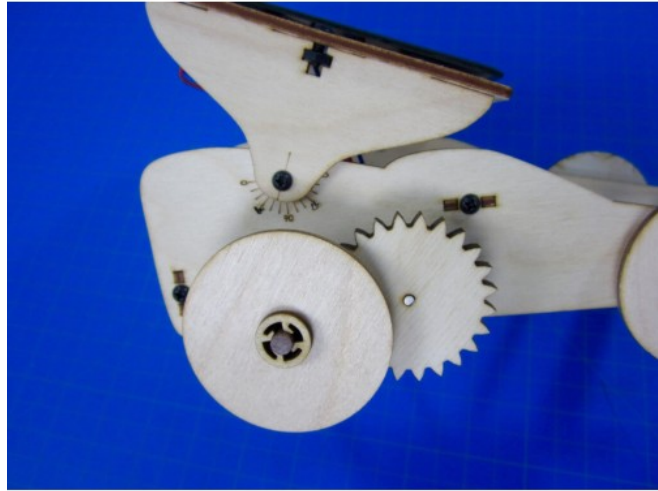
Why do we want the motor to spin in reverse? The Solar Racer uses two gears to power the rear wheels, one attached to the motor, and one attached to the axle. When two gears mesh, one will spin clockwise (forwards) and one will spin counterclockwise (backwards). We want the motor to spin backwards so that our wheels spin forward.

Drop the motor through the hole in the solar panel mount, then push it through the mounting hole in the side panel. Use a nut and screw to secure the motor. Do not over-tighten this screw, doing so may damage the motor.

## Step 4: Build

Now it is time to put the body of the car together.

- 1) Attach the three middle braces to the sides for support.
- 2) Attach a gear to the motor.
- 3) Construct back fin and attach to chassis.
- 4) Attach axles, spacers, wheels, and final gear.



## Troubleshooting

### 1) Racer drives in reverse.

- Your motor is attached to the solar panel backwards (positive to positive). Switch the motor wires around (positive to negative).

### 2) Racer won't move, or isn't very fast

- It isn't getting enough power. If you are outside, it may be too cloudy or shaded. Most indoor lighting is insufficient to power the Solar Racer. Special coatings on window glass can also prevent your Racer from working indoors in a patch of sunlight.
- Your cables may be catching in the axle, check to make sure they are out of the way, and use tape, a zip tie, or a twist tie to organize them.
- Your spacers may be on too tightly. Make sure there is enough room to move your axle back and forth a little.
- Extra paint can cause the axles to bind up. Try using a file or sandpaper to clear out the holes.

