

# Solar solved

## MATCHING A MOTOR WITH SOLAR PANEL

### Will any electric motor work with any solar panel?

No – the voltage and amperage generated by the solar panel must be enough to power the motor. It also depends on what you plan to do with the motor – is it just to demonstrate that solar power works, or will it drive a model car?

- if you want to drive a car or boat, we can advise which motor / panel combinations work well together (and which kit we use them in).
- with the smaller panels we haven't developed any specific projects for using them



**Faulhaber motor 2232 is an efficient motor used for Model solar competitions.**

## RADIO CONTROLLED SOLAR BOAT OR CAR

### I want to make a Radio Controlled Solar powered boat or car. Will that work?

There are 2 parts to this question, but the general answer is no.

- a. You may be able to use a solar panel to power the boat or car – depending on the selected motor and panel, as the panel must produce sufficient current for the motor.

- b. BUT the solar panel will NOT power a radio control unit – none of our solar panels provide sufficient or consistent power for the Radio control unit to operate (the Radio Control unit requires 9 volts to run).



### Why?

The size of the current that a Solar panel produces is directly dependent on the intensity of light and the area of the panel. A Radio Controlled Vehicle (RCV) when operating will consume around 2 Amp, If a Solar panel capable of producing 9V at 2 Amps in full sunlight on a bright cloudless summer day was used, in theory the RCV would work.

However, if the level of light drops, e.g. when a cloud passes in front of the sun, the current will drop. The panel is no longer able to supply the current to operate the motors. This in turn will cause the Solar panel voltage to drop and the Receiver PCB will no longer operate.

## IMPROVING SPEED

### How could I make a basic solar car run to its fastest capacity?

A solar panel will provide the maximum power at 100% sun.



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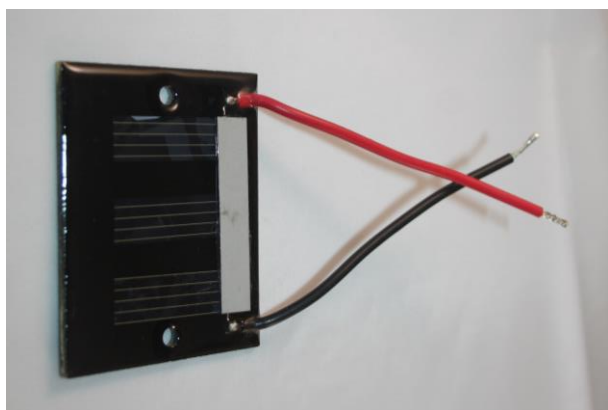
Solar panels generate power (volts and amps) when exposed to the sun. The voltage produced from a certain panel will always be the same as that is determined by the design of the panel, but the amount of Amps generated will vary according to the level of sunlight available – the maximum possible is related to the size of each section.

- on a cloudy day, the sunlight level could easily be as low as e.g. 20% sun
- in full sunlight (100% sun) the panel will be generating its maximum amperage.

However, if you feel that the car is not running as fast as it could, check that the motor has been mounted to allow the gears and wheels to turn freely – if they are too close together it will generate extra friction, and slow down the car.



**The Basic Solar Car is a simple vehicle powered by a single solar panel.**



**It is possible to measure the sunlight intensity, by using our SOLAR10 calibrated panel and a multimeter.**

## **SUBSTITUTING A BATTERY HOLDER**

**Can a battery holder be used instead of a solar panel when there is not enough sun?**

Yes, a battery holder will run the solar car or boat to test that the device has been properly put together. Choose a battery holder that provides enough voltage to power the motor.

Note: if doing so, the suggestion is that the car / boat is wired up to run from one power source or the other at any time. The easiest way is to connect a switched battery holder to the motor.



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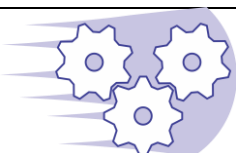
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### **REFERENCES:**

Picture credits:

<https://www.faulhaber.com/en/products/series/2232sr/>

<https://openclipart.org/detail/285244/receiving-car>



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