

Date:	22/8/2022	Version:	1.0	By:	Matt Little
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Bring some kinetic art into your home!
This is a simple kit to build a solar powered ornament for your sunny windowsill or desk.

The four 'arms' are powered by a small motor and spin when the solar panels catch the sun. Each arm has a mirror to reflect any sun and produce patterns on your walls and ceilings.

We include two solar panels, so the unit will spin slowly even in lower light levels.

This kit only requires a crosshead screwdriver and some patience. It should take around 1 hour to build.

This kit is NOT suitable for ages less than 8 years old due to the small parts.

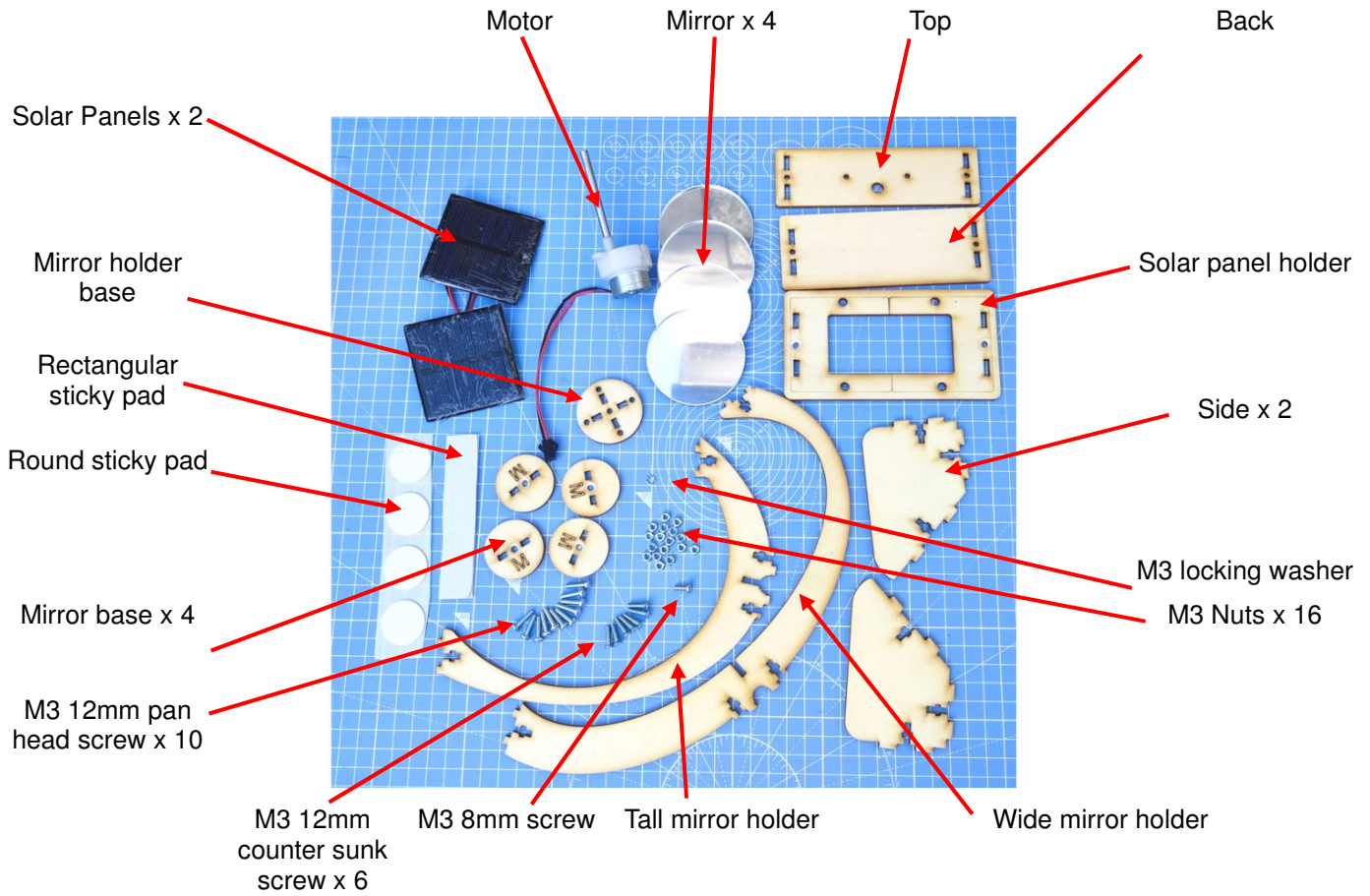
Please note: This unit is directly solar powered & will not spin in low light levels, so try pointing more directly at the sunlight or waiting for a sunnier time.



The github repository for the design files and instructions is available here:

<https://github.com/curiouselectric/solarart>

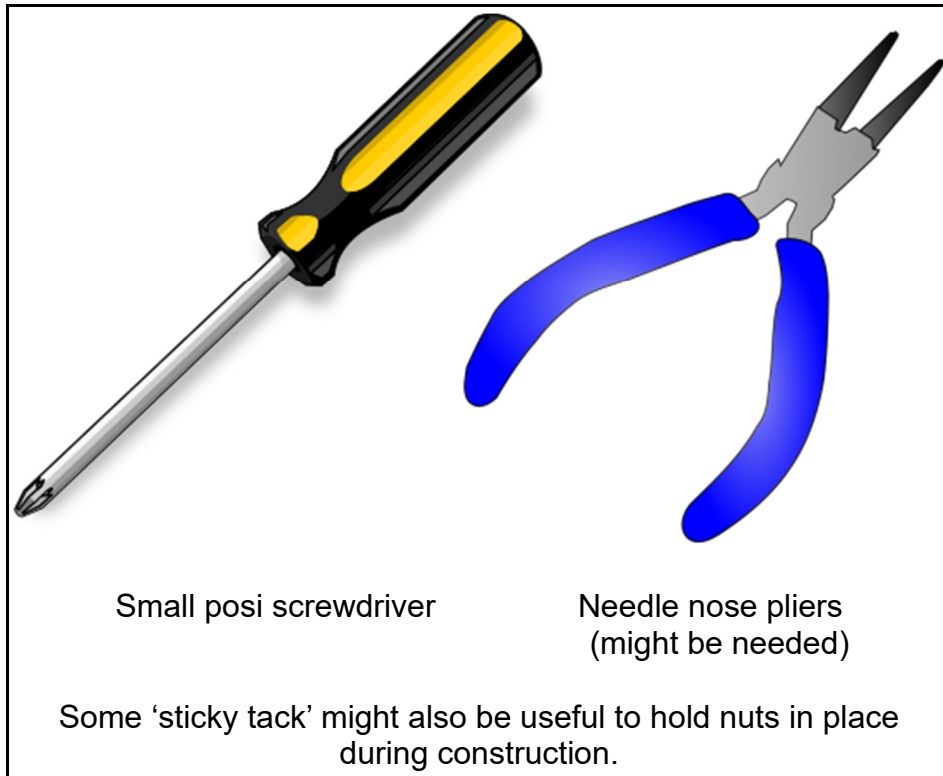
Parts included:



Parts list:

Item	Quant	Item	Quant
Solar Panel Holder (3mm ply)	1	Wide mirror holder (3mm ply)	1
Top (3mm ply)	1	Tall mirror holder (3mm ply)	1
Back (3mm ply)	1	Mirror holder base (3mm ply)	1
Side (3mm ply)	2	Mirror base (3mm ply)	4
Motor with connector	1	Round mirror 40mm (acrylic)	4
Solar Panel 60mm x 60mm x 2 with connector	1	M3 8mm pan head screw	1
M3 12mm pan head screw	10	M3 locking washer	1
M3 12mm countersunk head screw	6	Sticky pad rectangular	8
M3 Nut	16	Sticky pad circular	4

Tools required:

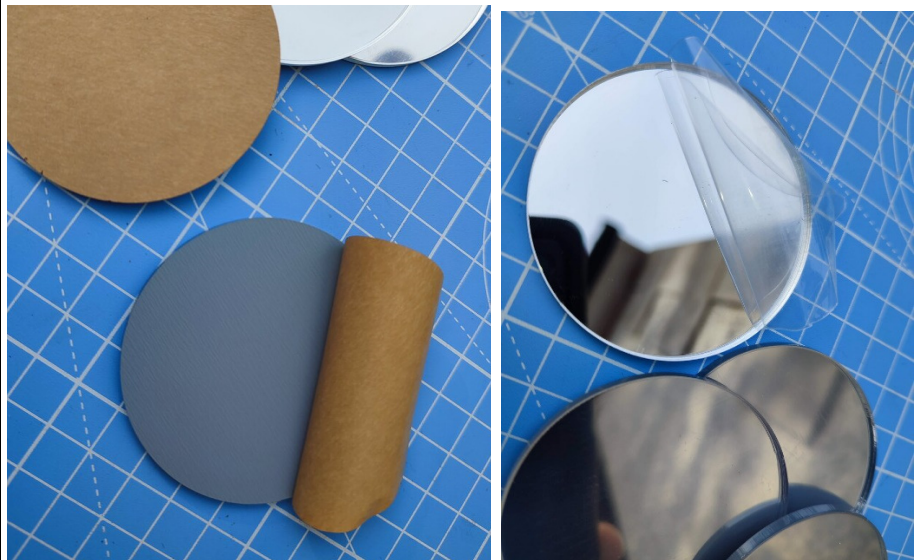


Build Instructions:

Step: 1 Remove protective film from mirrors

There is a thin plastic protective film on the front and back of the mirrors.

This can be carefully removed.
Some good fingernails help here!



Step: 2 Clean up wooden parts



Ignore this step if the wooden items look OK for you!

You can give the laser cut wooden pieces a sand with fine grit sandpaper to remove any light burn marks from the laser cutting process.

We have tried to ensure laser cut marks kept to a minimum. This step is only required for the most discerning customers!

Step: 3 Add motor to top section

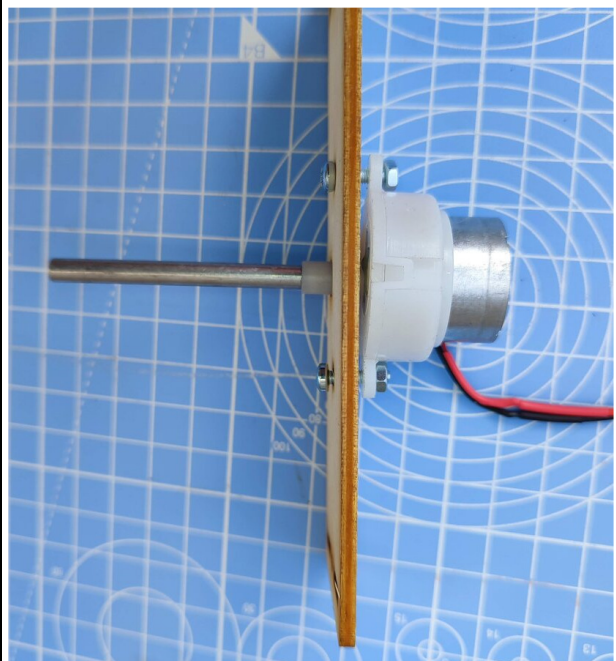
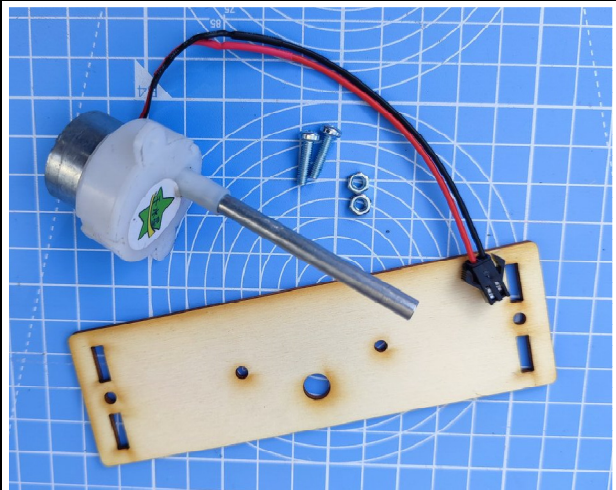
Using the top plywood piece with round holes in the middle, the motor is attached using 2 x 12mm pan head screws and 2 x M3 nuts.

Choose the 'best' looking side of the plywood top. The motor is fixed to the other side.

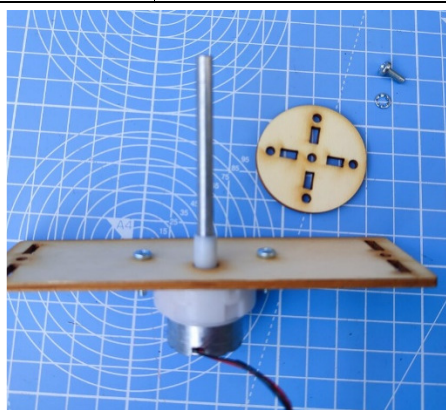
The motor stem goes through the large hole and the two plastic 'wings' align with the smaller holes.

Put through the two screws with the nuts on the motor side.

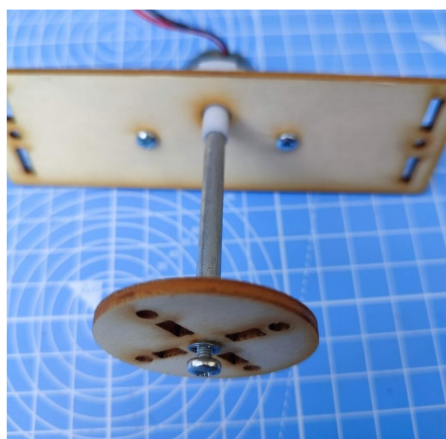
Tighten up the screws/nuts to hold in place.



Step: 4 Add mirror holder base to the motor shaft.



Use the mirror holder base (plywood disk with four rectangular holes in it), the 8mm M3 screw and the M3 locking washer.



Attach the wooden mirror holder base to the motors shaft with the 8mm M3 screw and the locking washer.

Tighten this quite well so it should not slip around.

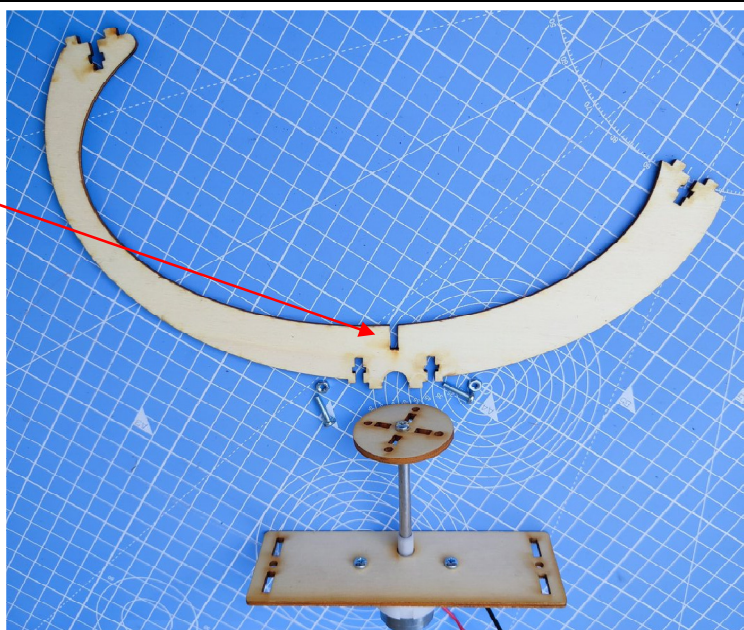
Step: 5 Add the wide mirror holder wooden section.

Take the wider wooden mirror holder section (as shown).

This has a slot in the top of the piece.

The unit is all held in with 'T' shaped nut holders. The M3 nut fits into the small slot.

Fit the wide wooden mirror holder into the base already attached to the motor. The rectangular slots should line up.



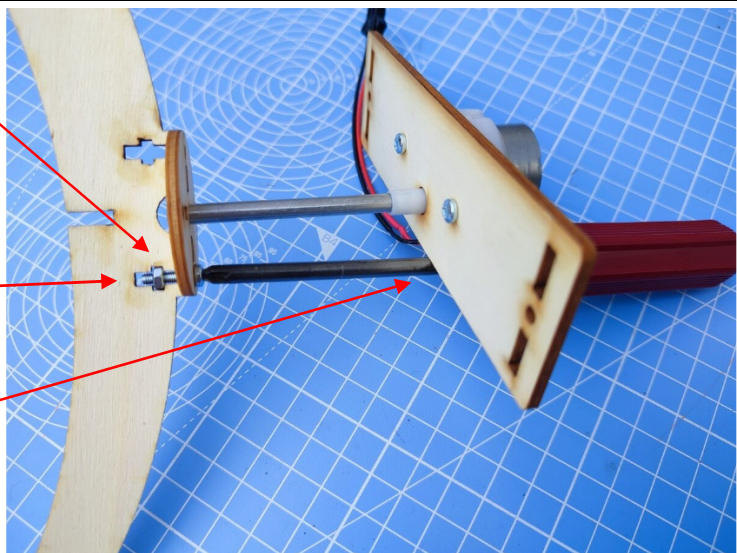
You will have to place the nut with the sides parallel to slide through the slot. If you place it at an angle it will not fit in!

Then fit the screw through the hole into the slot and tighten up.

Slowly turn the motor base so the narrow section attached to the motor allows a screwdriver to fit through.

If the nut keeps dropping out then a good trick is to use some 'sticky tack' to hold the nut in place until you have threaded through the screw.

Do this for both slots.

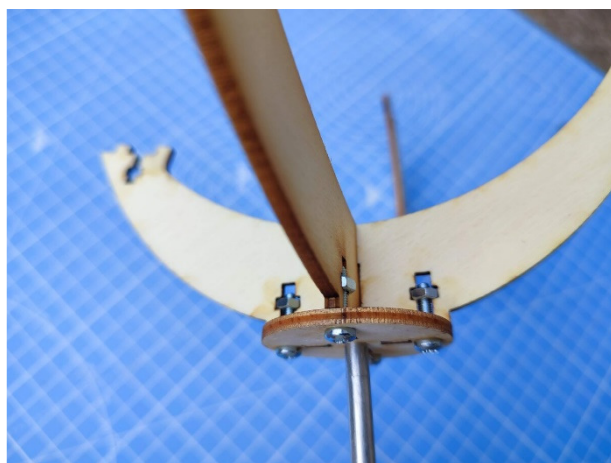


Step: 6 Add the tall mirror holder wooden section.



Now we add the other tall mirror holder section.

This has a slot in the base which aligns with the slot in the top from Step 5.



As before, slowly turn the motor base so the narrow section attached to the motor allows a screwdriver to fit through.

Then fit the nuts and hold in place with the screws, as before.

Again, 'sticky tack' might be useful to temporarily hold the nuts in place while the screws are attached.

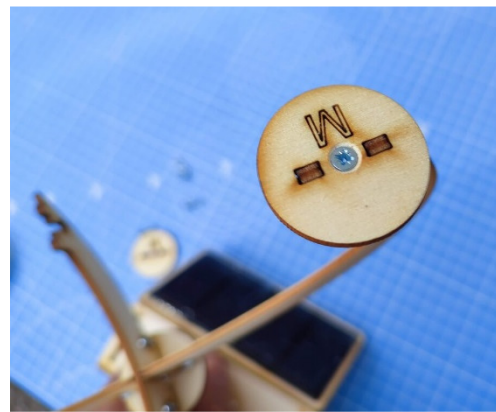
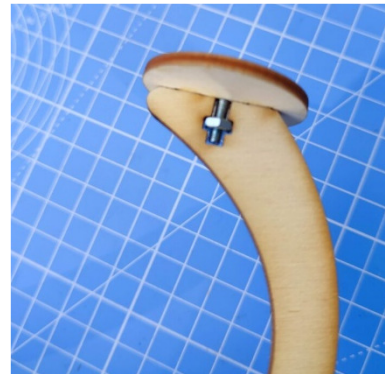
Step: 7 Add the four mirror bases

On each prong of the mirror holder a mirror base is attached.

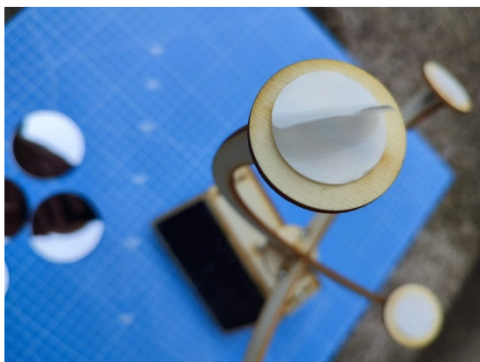
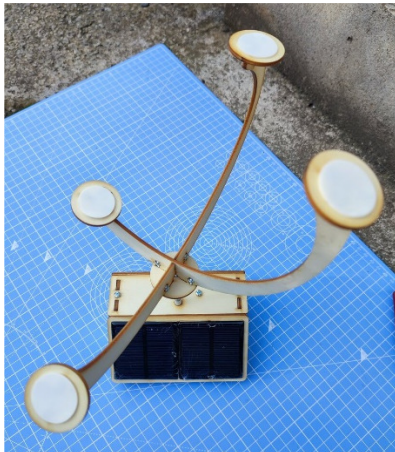
The countersunk screws are used this time to fit into the counter sunk drilled mirror bases. This gives a flat surface to stick the mirror to.

A T-nut holder is used again, so put the nut in then place the screw through and tighten.

This is done for all four mirror bases, one for each prong.

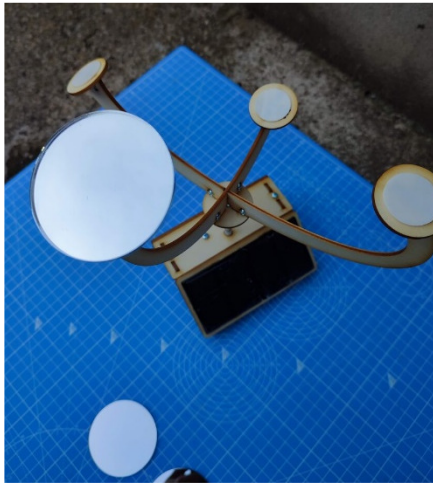


Step: 8 Add round sticky pad to each mirror base and add mirrors.



Stick a round sticky pad to the centre of each of the mirror bases.

Remove the sticky pad cover. This might need some good finger nails!



Then carefully stick a mirror onto each mirror base, trying to ensure you have them aligned centrally.

Do this for all four mirrors.

You have now completed the mirror holder. Let's add some solar and make it move!

Step: 9 Build the base section

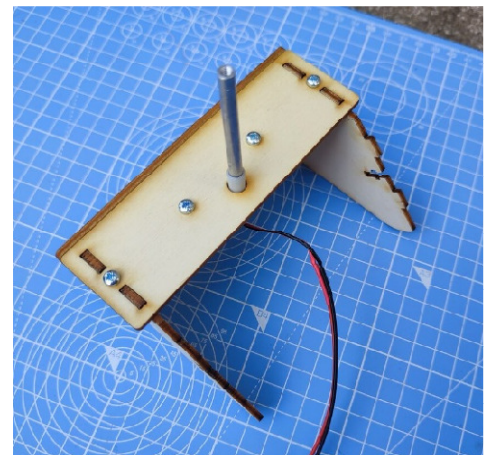
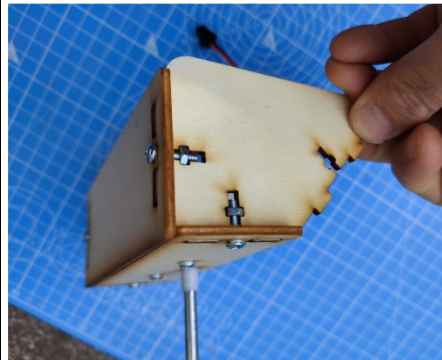
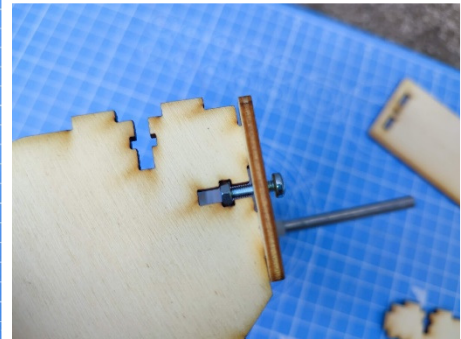
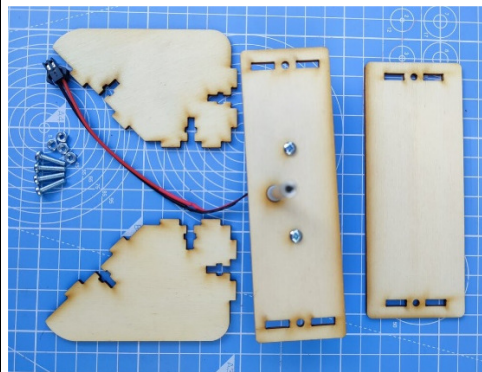
Note: For clarity these photos show the build without the mirror holder. Your unit should already have the mirror holder attached to the motor.

The sides, top and back are all held using T-nut slots, as before.

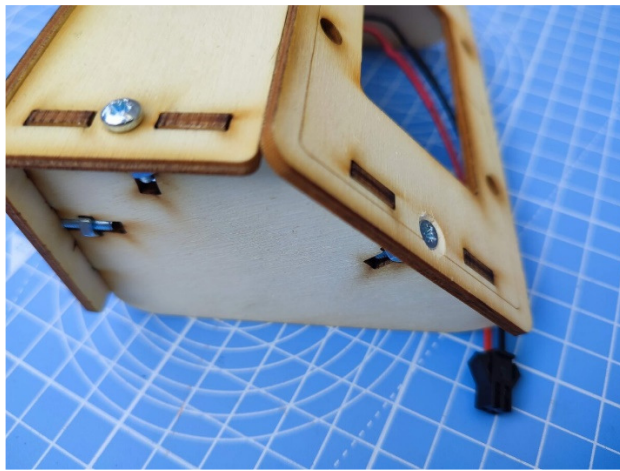
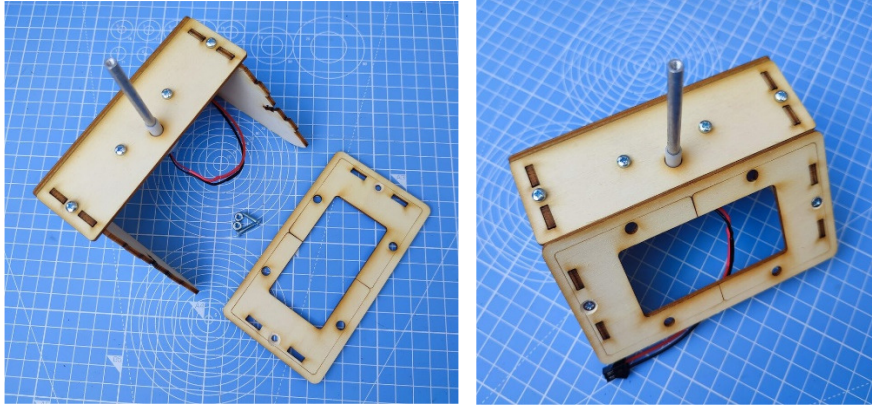
Start by fitting the motor section onto one of the sides.

The two rectangular holes should align and then a pan-head 12mm M3 screw and nut can be used to hold it in place.

Do this for the two sides and the back section.



Step: 10 Add the solar panel holder.



The last section to attach is the solar panel holder section.

Ensure the lines on the solar panel holder face outwards. These are to align the solar panels when they are stuck down.

This section attaches with T-nut holders again, but the counter sunk screw head must be used here. This gives a flat surface for the solar panels to stick to.

Step: 11 Add solar panels

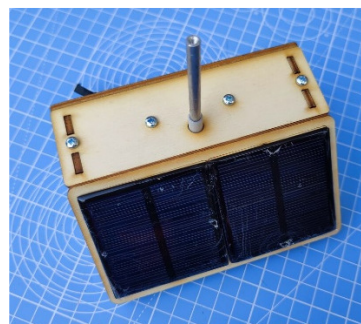
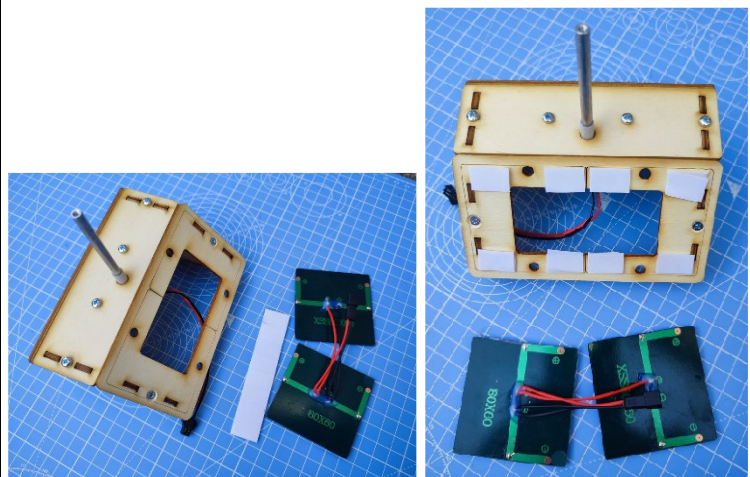
The rectangular sticky pads are used to stick down the solar panels.

Add one sticky pad to each corner of the solar panel holder, where solar panel alignment marks are. Keep the sticky pad within the alignment marks, so it doesn't show.

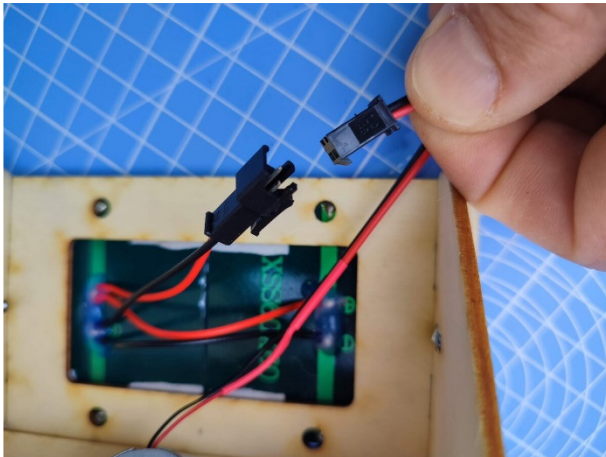
Take the cover off the double side of all the sticky pads.

Carefully stick one of the solar panels to align with the thin lines. You only have one chance, so check its straight!

Then stick the other solar panel directly next to the first, again align with the lines. You may have to slightly bend the connecting wires.



Step: 12 Connect and test in the sun!



Connect the cable from the motor to the cable from the solar panels. This is a push-fit connector with an alignment section. Push until it clicks in place.

Fold the wires up into the body of the unit, so they are hidden.

Turn your solar art over and point the solar panels at the sun. The top mirror section should start to spin!

There needs to be relatively bright sun for the unit to spin. It will spin at different speeds depending on how much sunlight is available.

Place in a sunny location – a windowsill or a desk – and watch it spin and reflect!

Contact Details:

We would like you to be happy with this kit. If you are not happy for any reason, then please contact us and we will help to sort it out.

Please email hello@curiouselectric.co.uk with any questions or comments.

Please tweet us at [@curiouselectric](https://twitter.com/curiouselectric)

If any parts are missing from your kit then please email hello@curiouselectric.co.uk with details and, if possible, where the kit was purchased.

More technical information can be found via www.curiouselectric.co.uk

This kit has been designed and produced by:

The Curious Electric Company

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