

# Mini Wind Turbine Build Guide



Start by building the example turbine, then turn it into **your own** unique design.



- Build Guide
- Lab Activity (optional)
- Design & Engineering Challenge

↑ You Are Here

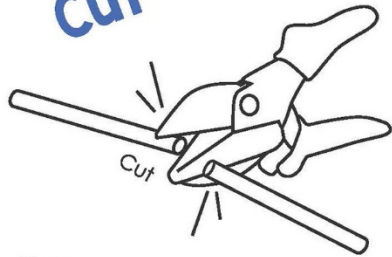


For use with TeacherGeek [Mini Wind Turbine Activity](#) or [Maker Cart](#). Find documents & activity materials at [teachergeek.com](http://teachergeek.com).

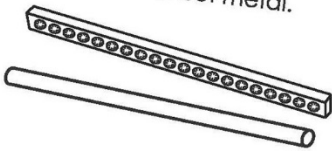


# Mini Wind Turbine Build Guide

## Cut



**Multi-Cutters** cut wood & plastic (like **dowels** and **connector strips**). They do not cut metal.

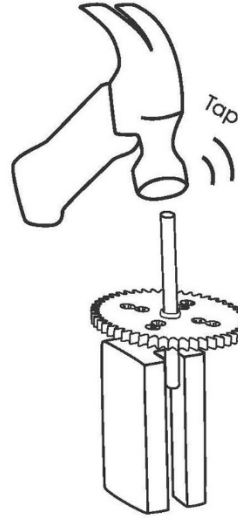


## Push, Wiggle,

Push, wiggle or tap **dowels** into holes.



## Tap



Use a **hammer** and **slider block** to tap **dowels** farther through holes.

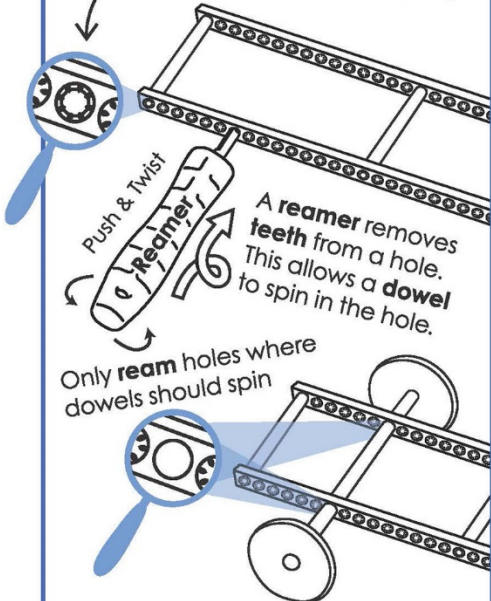
## Quick Tip!



Use a **crayon**, or **soap** on the end of a **dowel** to make building easier.

## Ream

Most parts have holes with **teeth**. The **teeth** hold **dowels** (keep dowels from falling out).



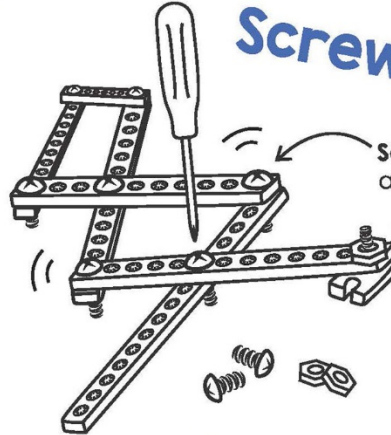
A **reamer** removes **teeth** from a hole. This allows a **dowel** to spin in the hole.

Only **ream** holes where **dowels** should spin

Never **ream** **pulleys**, **gears**, **wheels**, or any hole a **dowel** stays stuck into.

## Screws & Nuts

Do not **ream** holes you will put **screws** into.



**Screws (without nuts)** can connect parts, and allow them to rotate.

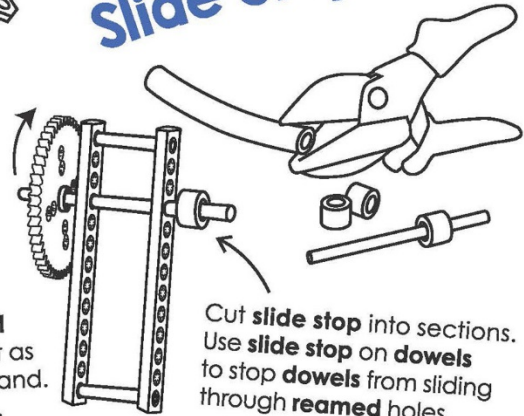
**Screws (with a nut)** can connect parts, and keep them from rotating.

## Stop Clip



Press a **stop clip** onto a **dowel** to keep it from sliding or use it as a hook for a string / rubber band. It takes little force to get it on.

## Slide Stop



Cut **slide stop** into sections. Use **slide stop** on **dowels** to stop **dowels** from sliding through **reamed** holes.



# Mini Wind Turbine Build Guide



## TeacherGeek Components

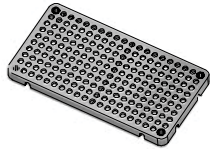
For One Wind Turbine



2 - Blocks



2 - Dowels  
300mm (12")



1 - Hole Plate



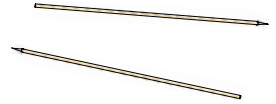
1 - Screw  
#10 38mm (1")



1 - Mini Hub Screw



1 - Nut  
#10



10 - Bamboo Project Sticks



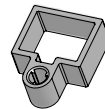
1 - Mini Hub Cover



1 - Mini Hub Base



1 - Small Motor  
1.5-3V

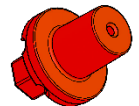


1 - Small Motor Mount

**Double Check Your Supplies!**  
This activity needs **red** motor mounting hubs.



Dowel Mounting Hub



Motor Mounting Hub

## TeacherGeek Tools You'll Need

Easy to Share in Groups

This isn't a kit. You're going to really build your turbine.

Here are the tools you'll need to get started. Available at [teachergeek.com](http://teachergeek.com)



Multi-Cutter

[SKU 1823-81](#)



Screwdriver

[SKU 1823-90](#)



Pliers

[SKU 1823-86](#)

## Materials You Supply



Tape



Recycling Materials  
(for blades)



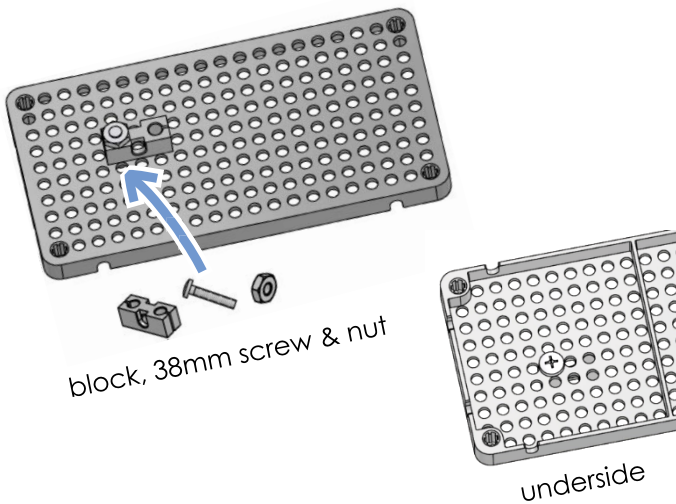
Safety Goggles



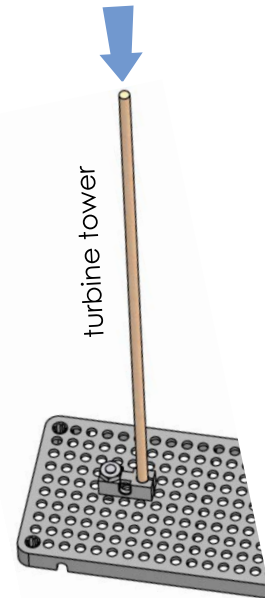
# Mini Wind Turbine Build Guide

## Let's Get Started

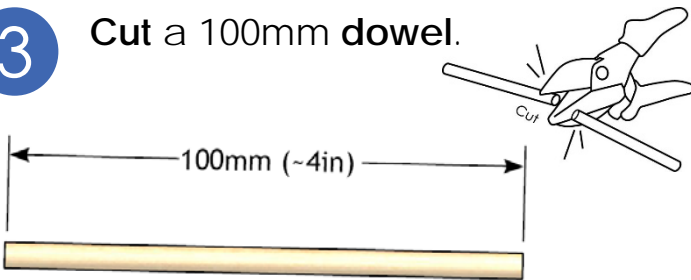
- 1** Attach a **block** to the **hole plate** using a **38mm screw** and **nut**.



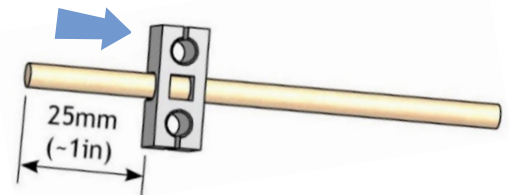
- 2** Push a **dowel** into the **block** to create the **turbine tower**.



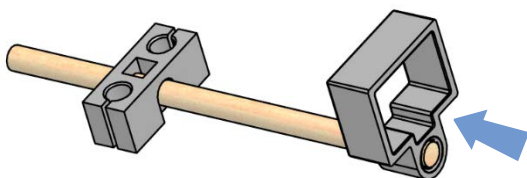
- 3** Cut a **100mm dowel**.



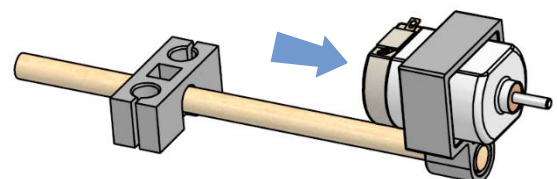
- 4** Push or tap a **block** onto the **dowel** as shown.



- 5** Push the **motor mount** onto the **dowel**.



- 6** Then **slide** the **motor** into the **mini motor mount**.





# Mini Wind Turbine Build Guide

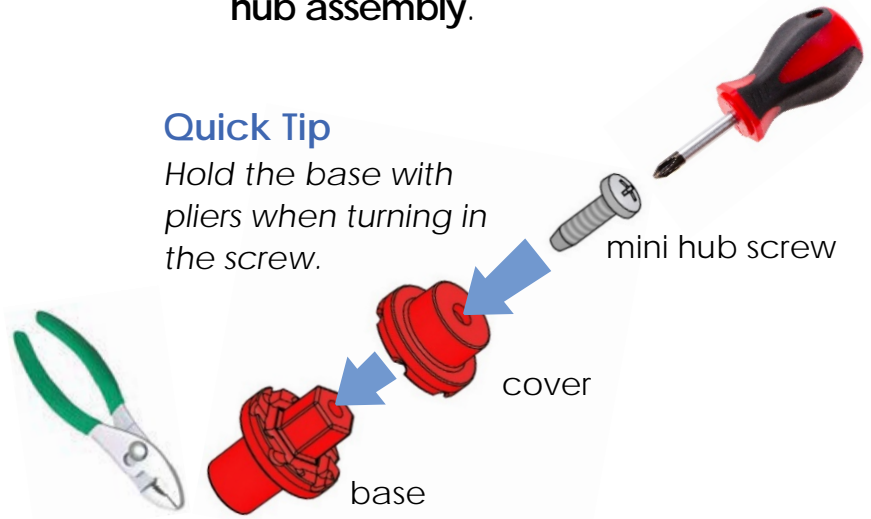
**7** Slide the **block** onto the turbine tower.



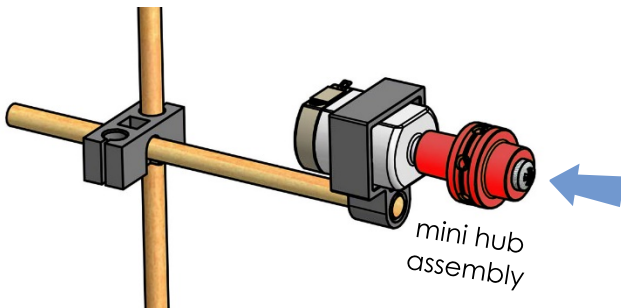
**8** Screw the **cover** to the **base** using a **mini hub screw** to make the **mini hub assembly**.

### Quick Tip

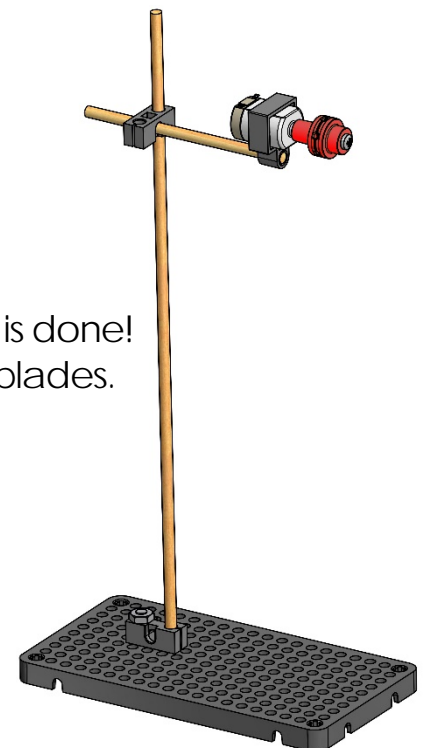
Hold the base with pliers when turning in the screw.



**9** Press the **mini hub assembly** onto the **motor shaft**.



**Yes!**  
Your turbine stand is done!  
Time to make the blades.



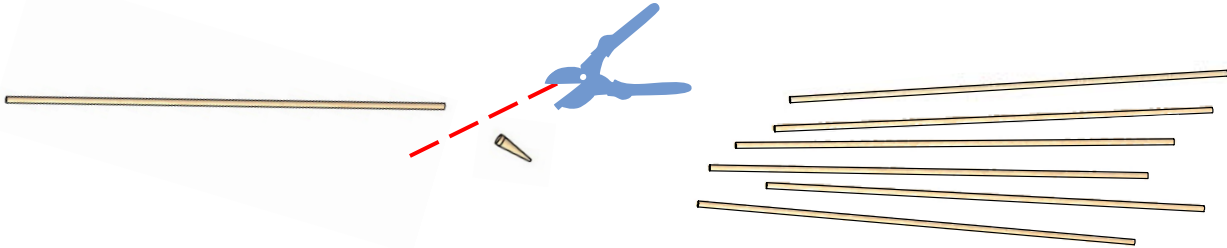


# Mini Wind Turbine Build Guide

## Blade Designs

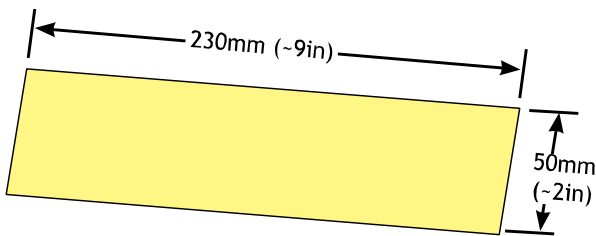
Now it's time to make your blades. Make the example blades shown below. Then, in the Engineering Challenges, make them into your own unique design.

- 10 Cut points off large bamboo project sticks.

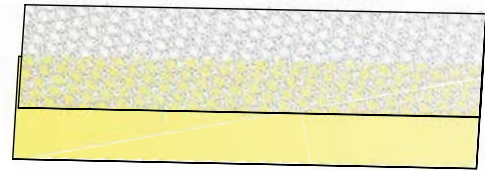


- 11 Tape your recycling materials (cardboard, card stock, cereal boxes, etc.) to the skewers as shown below.

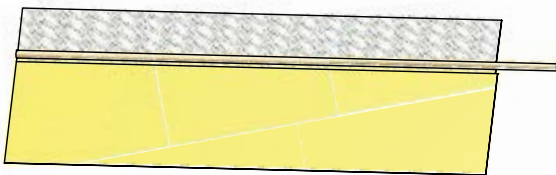
- a. Cut a section of recycling material. This will be one of your blades.



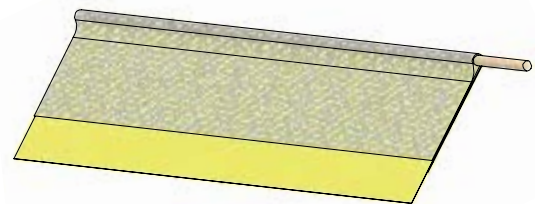
- b. Place tape half over the edge of the blade.



- c. Place a stick at the edge of the blade, overhanging to one side.



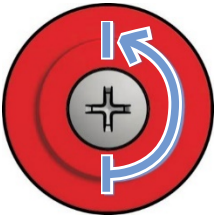
- d. Fold the tape over the stick. Press to secure tape.



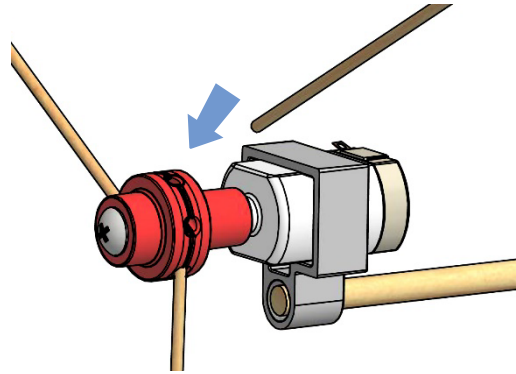


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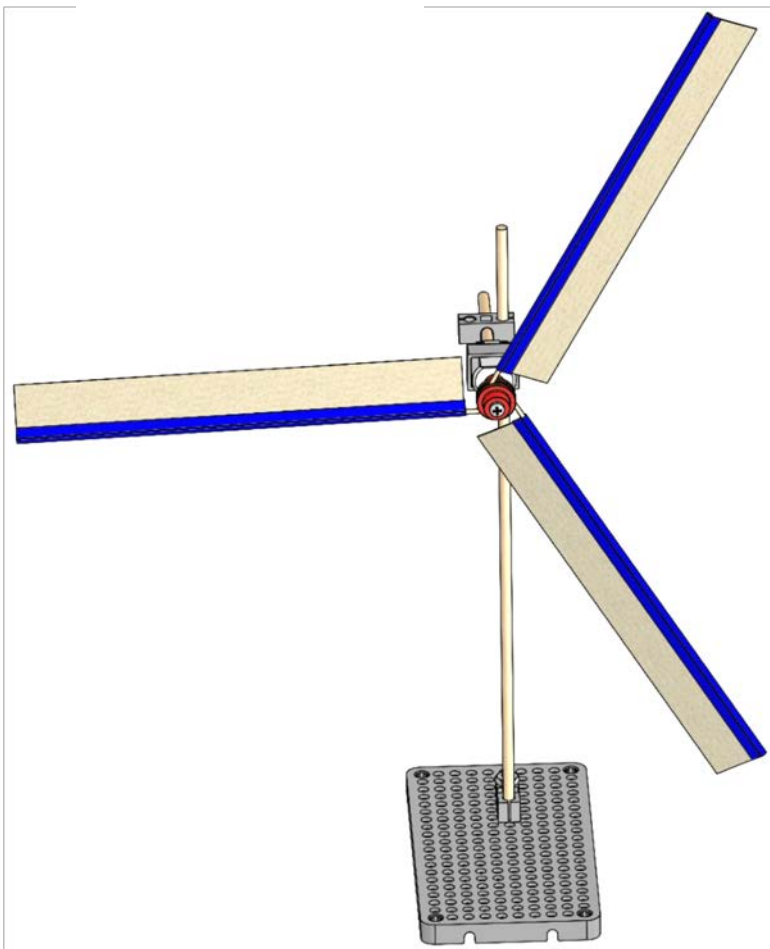
**12** Loosen the mini hub screw about a  $\frac{1}{2}$  turn to allow the sticks to slide in.



**A** First, **loosen** the mini hub screw by  $\frac{1}{2}$  turns.



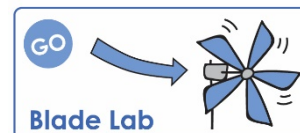
**B** Then, carefully **slide** the sticks into the mini hub's holes. **Angle** your blades and **re-tighten**.



**Yes!**

Your Mini Wind Turbine is done!

Experiment and play with blade placement.



If you are going to do the optional *Blade Lab Activity*, now's the time!

Documents at [teachergeek.com/learn](https://teachergeek.com/learn)