Elastic Launch Glider

Presenter

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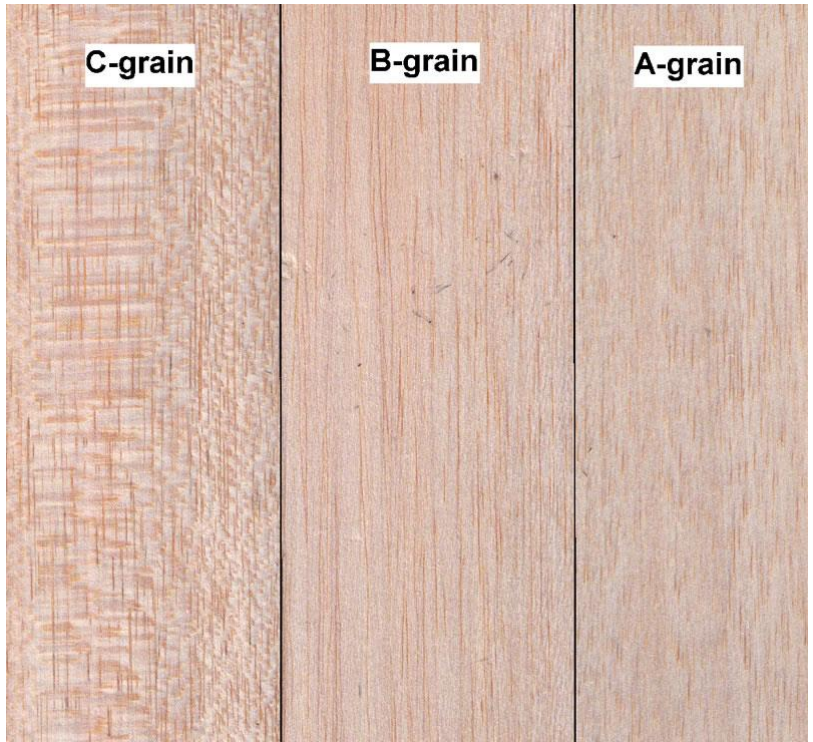
Glider Basics:

- DO NOT TRY TO RE-IVENT WHAT WORKS. Star Wars Designs will FAIL!
- Always Add at least 10 % of the total Wingspan to be the Fuselage Length. Fuselages are longer than wingspans!!
- Fuselage needs to be HIGH STRENGTH but not Basswood (too heavy)
- Wings and Tail Assemblies need an Airfoil.
- Flying surfaces should taper to translucency.
- Always Flight Trim Glider to Stall for first launched flights.
- Build as close to the bare minimum mass for easier trim and longer flights.

Picking Wood

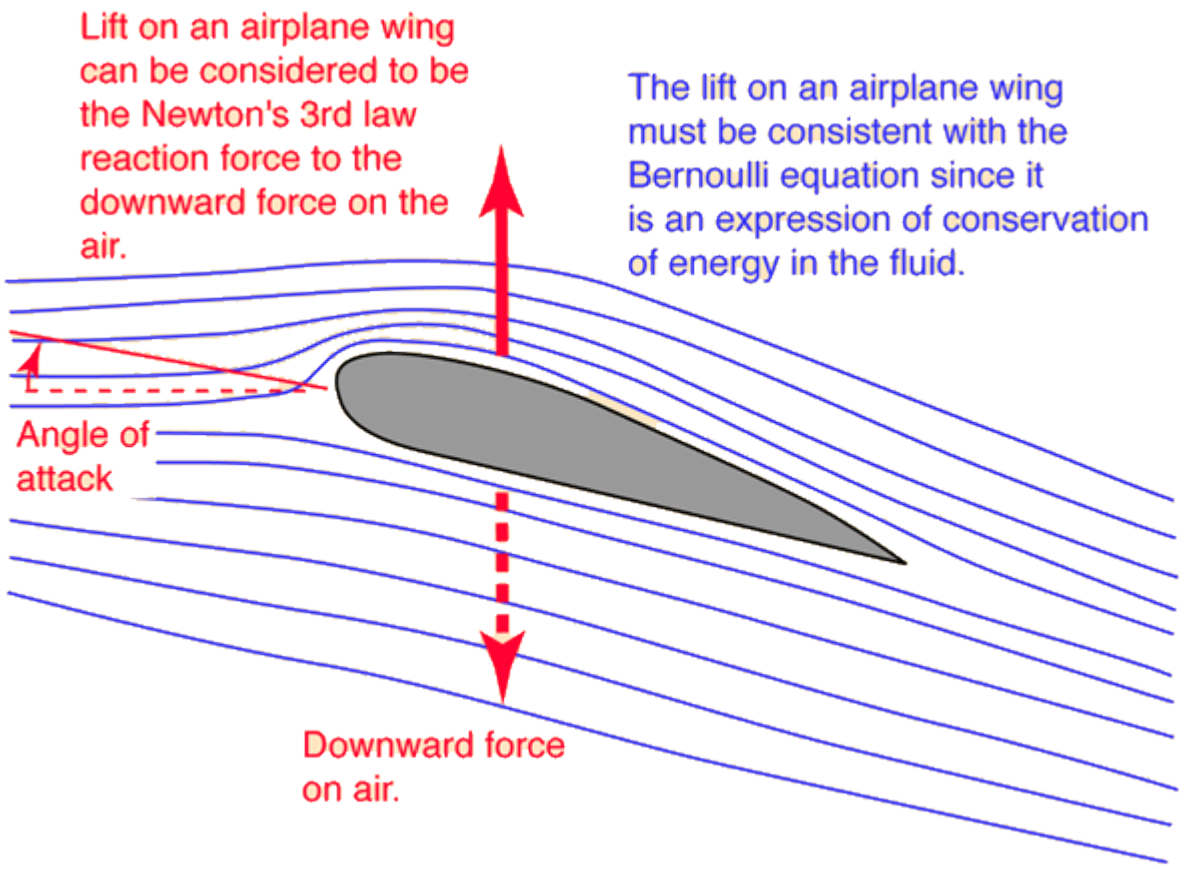
- Roughly 50% of the Glider's Mass will be the fuselage.
- Always pick wood for the fuselage that has straight grain (A, B-Grain)
- For Flying Surfaces, A and B but C Grain can be used if oriented.



Stiff but Flexible--- WHAAAAT?

- The Nose of the Glider usually impacts first. The nose needs to be stiff.
- But, The aft Fuselage needs to flex a little on impacts.
- To achieve both attributes, wider wood in the nose and taper aft the wing trailing edge.
- The wider nose then complies with the Lip Balm Cap rule

Cambered Airfoil and Angle Of Attack



Sand In That Camber

- Here are the best tools for precisely sanding in camber

1) Friction Board
2) Sanding Blocks
3) Palm Sander (w/ dust mask)
4) Dihedral Gauges

Block Sander

- Always sand away from your body

Palm Sander

- Using a Palm Sander actually allows some precision.
- Never push down on the sander. Let the mass of the sander do the work.

Thickness’ Rule of Thumb

- There needs to be a high point (.062”)
- Taper to the Leading edge (.050”)
- Taper To the trailing edge (.020”)

No Micrometer? Use Translucency

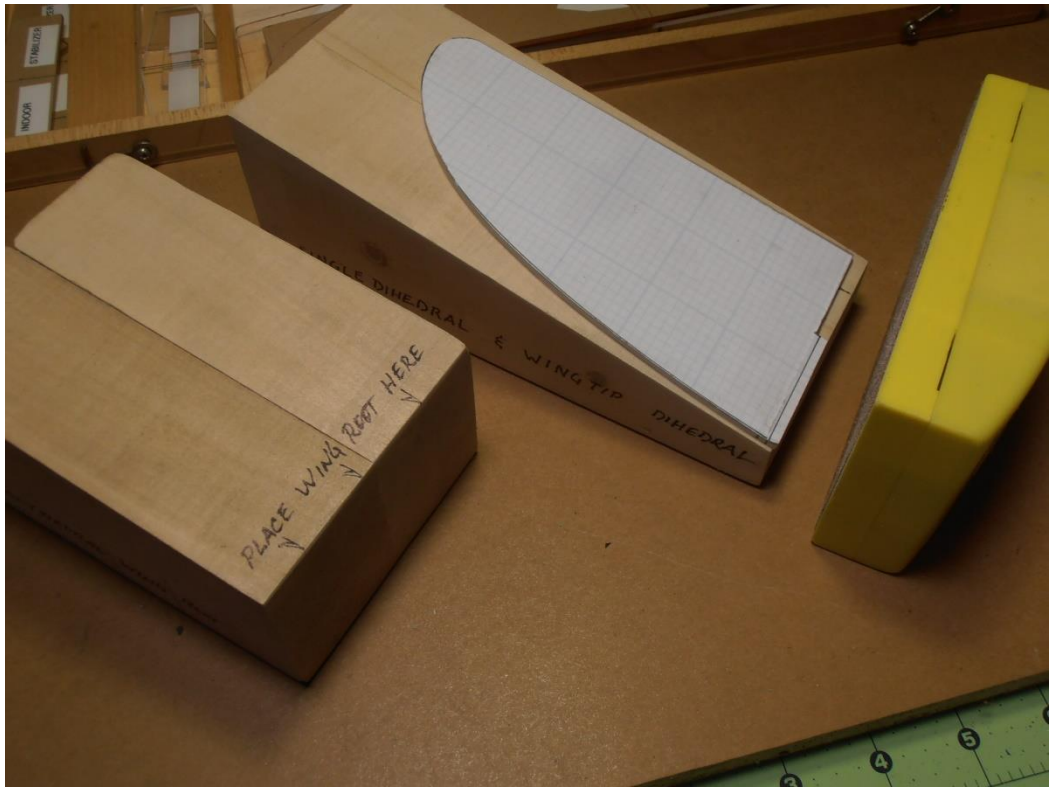
- If you have no precision Measuring Devices such as a Micrometer…
- Use Light hand Translucency to gauge thickness.
- The more light, the thinner the wood is-

All Wings Need ***Dihedral***

- Dihedral is the aeronautic equivalent to a keel on a sailboat.

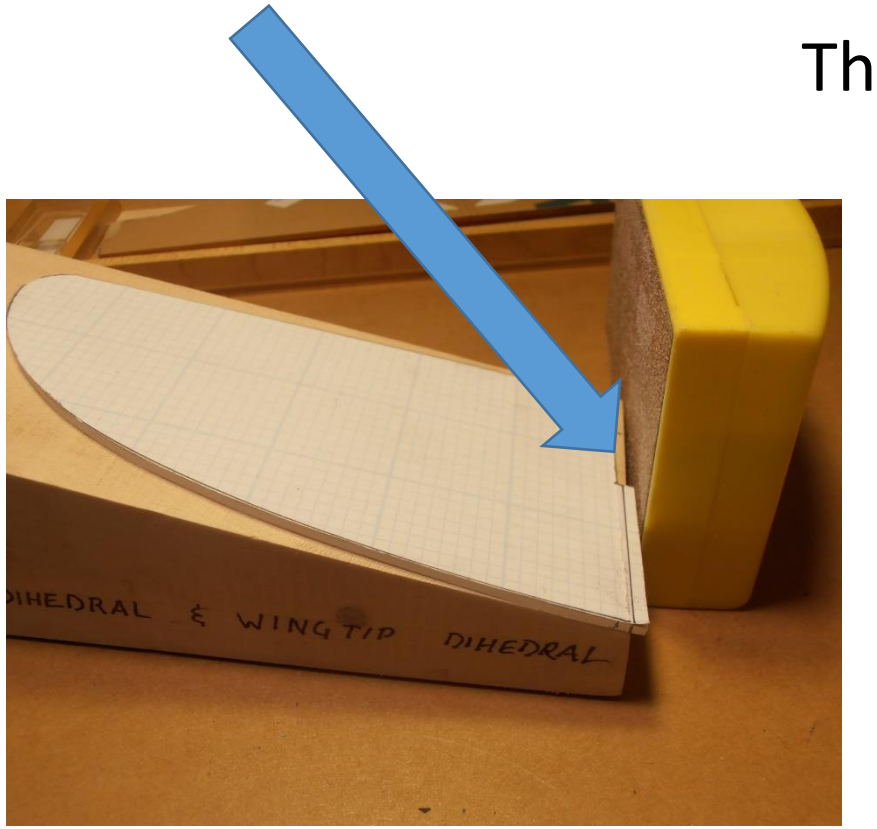
Make Precise Dihedral Joints- *NO GAPS*

- To make tight joints, use a pair of Basswood CO2 car bodies.
- https://www.pitsco.com/Shop/Dragsters/Basswood-Body-Blanks

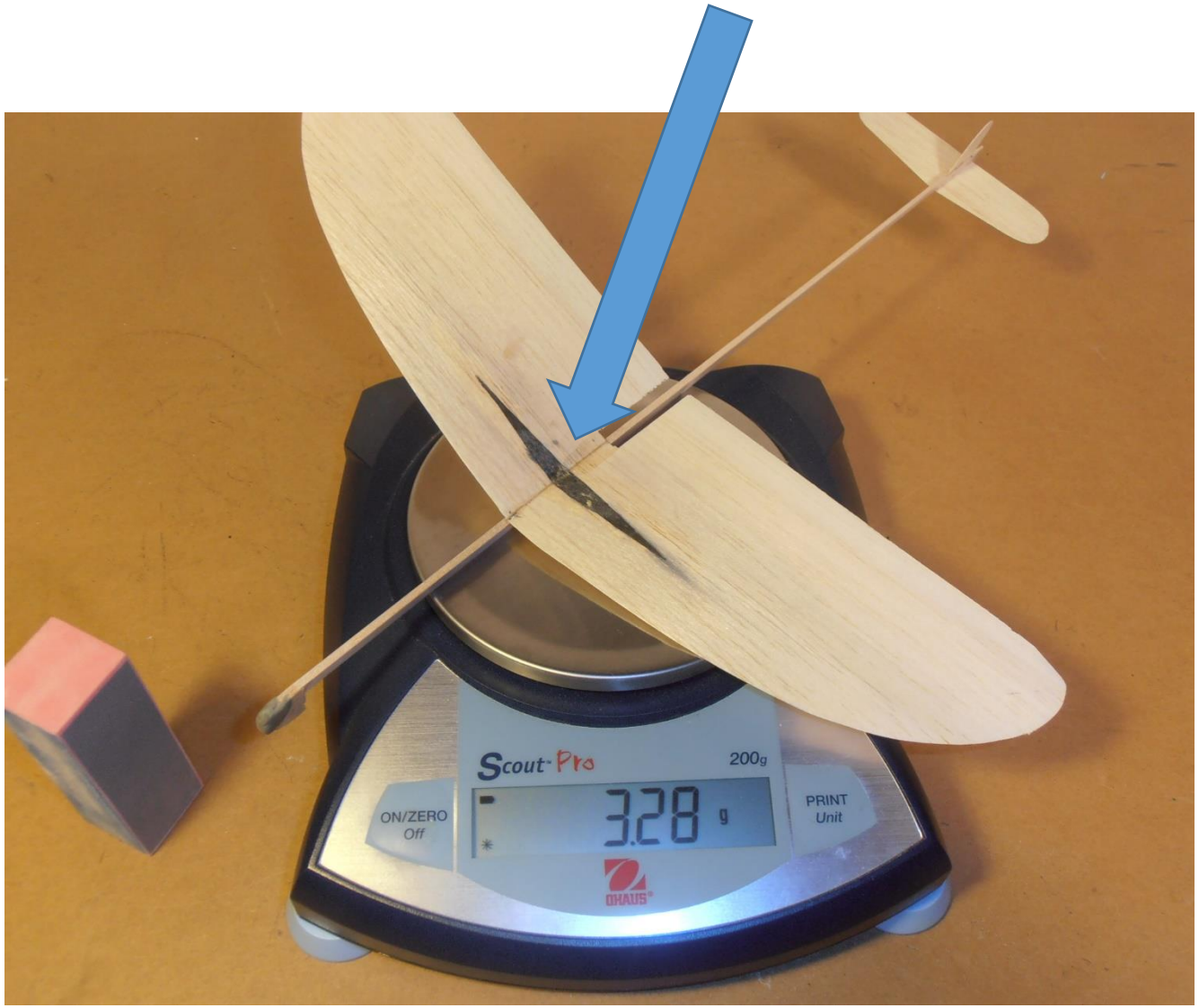


More Dihedral Sanding Shots

- Here are some more angles to show the blocks in action-
- Just move the joint edge just over the block edge to sand.
- Then sand until the sanding block is flush

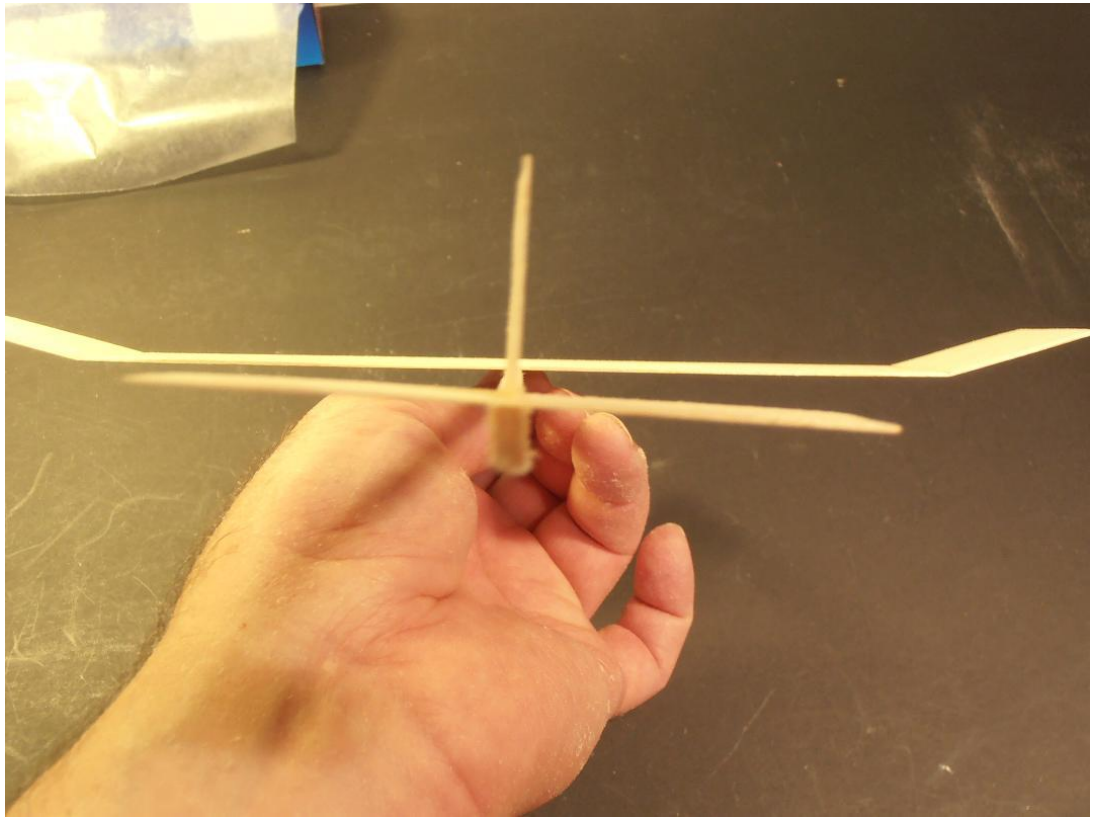


When glued that Dihedral Joint will be Strong!



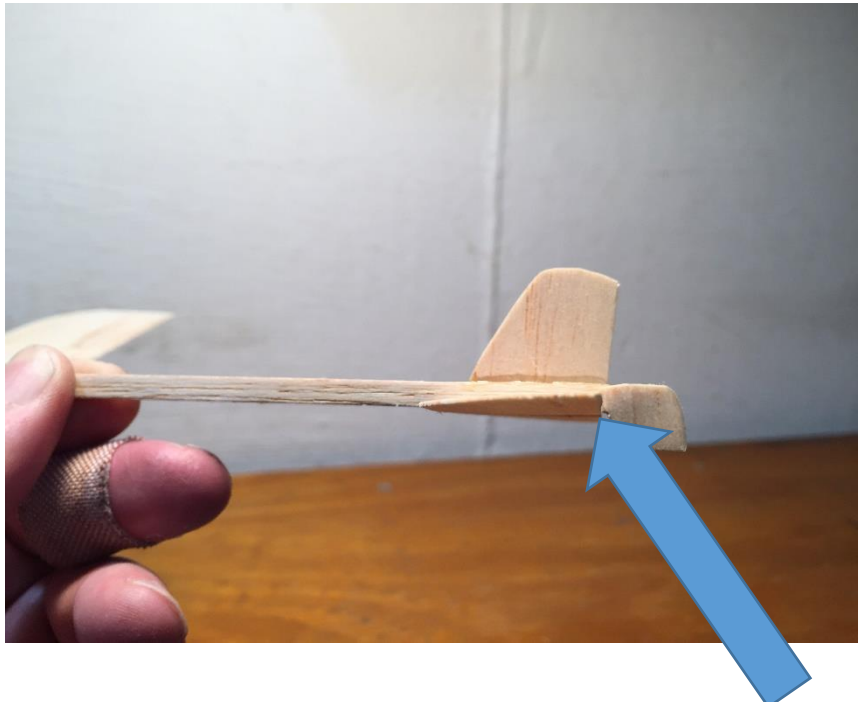
Add some Stab Tilt

- Stab tilt induces a natural turn. It is best to turn left so… the driver's side is a couple of degrees higher than the passenger side



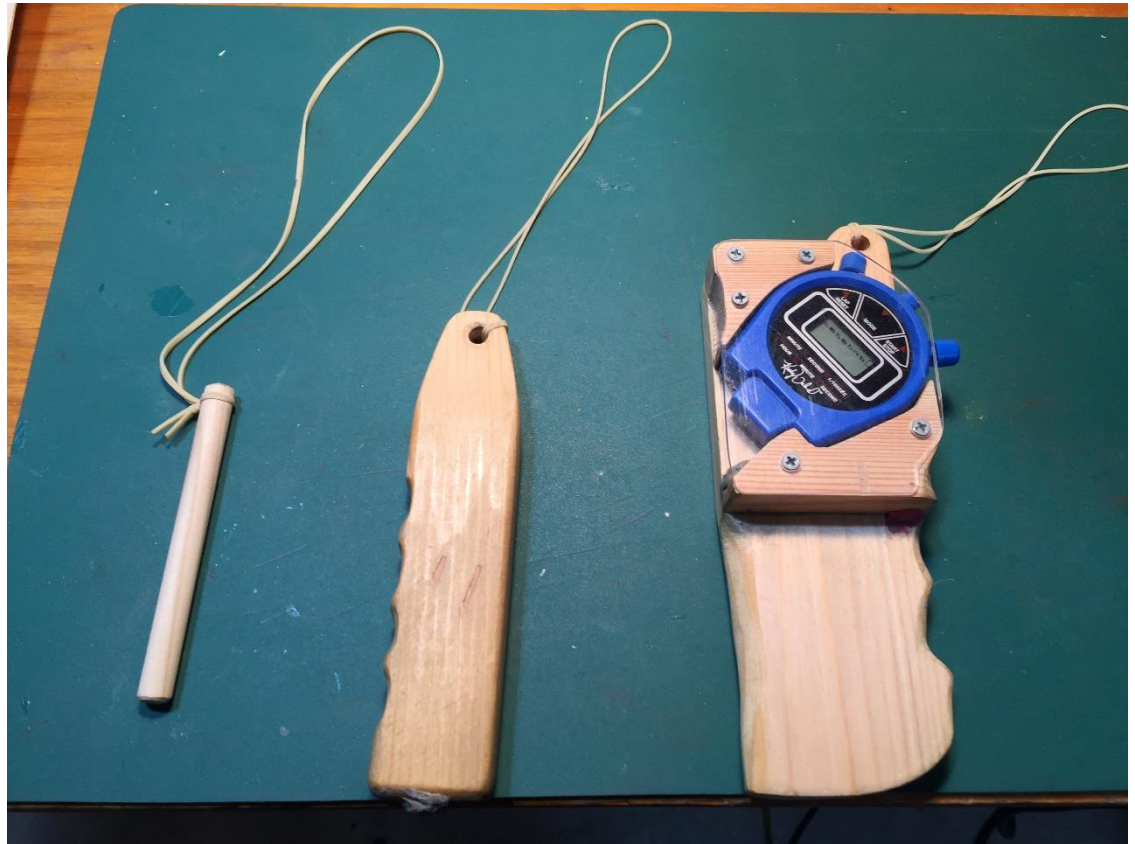
Magic Secret, SHHHH! Add some UP Elevator!

- Its is important to bend the trailing edge of the stabilizer up a couple of degrees to increase the glider's survivability!!
- This features will aerodynamically bring the nose up-



Types of Launch Handles

- Use only a hardwood stick NO BALSA!
- Use only 1/16” cross-section Rubber about a 7” Loop.



First Test Glide by Hand Launching

- Only launch with a slight nose down attitude!
- Aim at the junction line of the wall and floor.
- Add clay if the glider stalls.
- Remove clay if the glider dives.
- Look for a stable slight left banking flight.

Once Rubber Launches Begin:

- ALWAYS bank the glider with the left wingtip lower than right.
- Gradually increase the stretch
- Gradually increase the Angle of Attack (Angle of Launch)
- Document each change
- Refer to Flight Trim Document for Stable Trim Flight

Kits? *Yes*, do not make your Rookie carve their own Bat!!

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