Sioux Wing

Wee Series

LESS THAN 250 GRAMS! NO FAA REGISTRATION REQUIRED!

BETA KIT

WARRANTY

Willy Nillies guarantees this kit to be free from any defects in both material and workmanship at the time of purchase. This warranty does not cover ANY components or parts damaged by use or modification. In no case shall Willy Nillies' liability exceed the original cost of the purchased kit. Willy Nillies reserves the right to modify or change this warranty without notice.

LIABILITY RELEASE

In that Willy Nillies has no control over the final assembly or material used for final assembly, no liability shall be assumed or accepted for any damage resulting from the use by the user of the final user assembled product. By the act of using the user assembled product, the user accepts all resulting liability. If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return the kit immediately in new and unused condition.

PRODUCT SUPPORT

This product has been designed to function properly and perform as advertised with the SUGGESTED power system, speed control, and servos, as described in advertisements and in this manual. For the proper electronics to complete this model, replacement parts, and product assembly questions, please contact us online at www.WillyNillies.com

Our aircraft are built from self-jigging interlocking laser cut. balsa and plywood parts. It's like a 3D jigsaw puzzle with instructions. Full size plans are NOT INCLUDED or needed to assemble our kits. If the instructions are read beforehand and followed during the build, our kits can be built up and ready to fly in only 2 to 4 evenings. We think you'll like the super simple construction and flying qualities of our kits and look forward to any feedback you might have.

Sincerely,

Douglas Hart
Willy Nillies
1588 E Bryan Rd
Marietta, IL 61459
www.WillyNillies.com
Phone: 309.648.0449

PLEASE VISIT OUR WEBSITE and Builders Group FOR CURRENT BUILD INSTRUCTIONS, VIDEOS AND UPDATES

Introducing the Wee Series Sioux Wing Planform

This wing is designed around the .010 size Nitro and Brushless Electric Motors for single Wing Models and .020 size Nitro and Brushless Electric Motors for Multi Wing Models. It is a versatile planform, and the airfoil basis has been used on many popular designs throughout Aviation.

This wing was designed for our Wee Series of Aircraft and has been made available for our Customers to design their own aircraft around as this slightly smaller size to come in well under the 250 gram weight rule for the proposed FAA RID rules. This means NO FAA rules or regulations for designs with this wing in the 250-gram Class! Fly it at your local park or school yard (with permission of course) or your own large yard!

As with all of our designs, we have designed it to have interlocking parts. Building the wing is a snap and takes less than 1 hour for experienced builders to frame up and have ready for covering! Beginners should allow a couple of hours and maybe a visit to our builders group to get any questions they have answered quickly.

Sioux Wing specs:
Wingspan: 25"
Wing Chord: 4"
Wing Area: 100 in/sq
Dihedral: 14 degrees

Features:
Clark Y flat bottom airfoil
Laser cut self-jigging construction - The entire Wing can be built and ready to cover in less than 1 hour!
Full length shear web style main spar.

Includes:
All wood pieces to build the entire Wing
3 Styles of Wing Tips

Recommended Additions:
2 cover packs for a 2-color covering scheme to cover entire Wing, 1 Cover pack would be required for a single color.

General Practice for assembly:

Join all your pieces using thin CA (Cyanoacrylate) glue, unless we tell you otherwise. In general, only a small amount of CA is necessary to glue parts together. Use of a capillary tube is HIGHLY recommended.

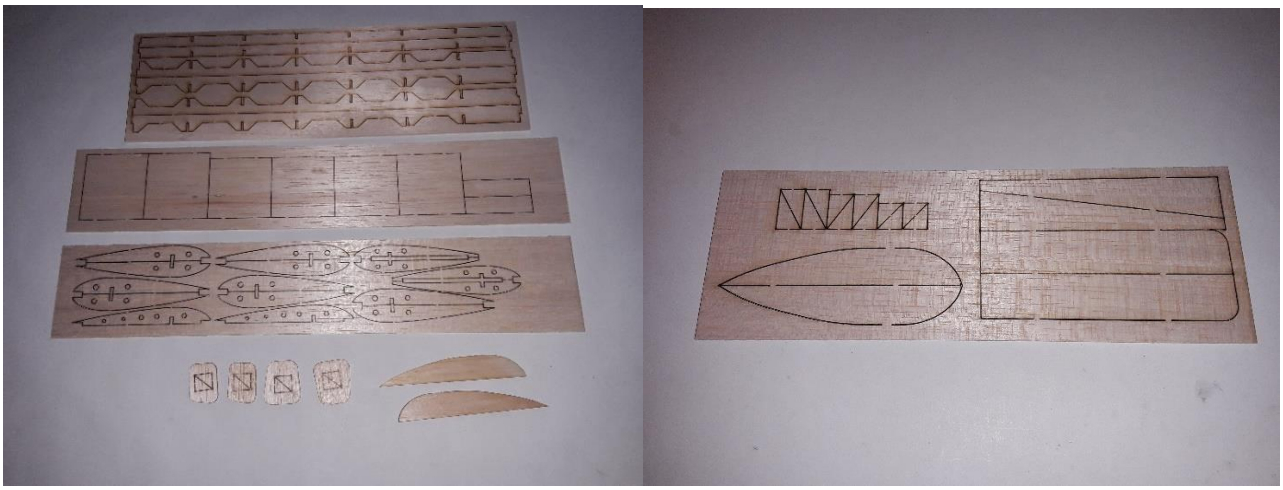
Do not over force your pieces together. If they are not fitting together properly, make sure you have the right pieces and they are oriented correctly. If needed, you can lightly sand the part to fit. On balsa "tabs", you can "pinch" the wood with your fingers to get them to fit in slots. (The tabs might be tighter sometimes, due to tolerances in wood thickness)

Video Instruction: https://www.youtube.com/watch?v=lxLN1osVYDE&list=PLEKzURwmZAbswjAmCEHVlLe-66BIDa6rx&index=2

Wing Assembly Guide:

This guide is a list of steps accompanied with photos on how to assemble the Willy Nillies Wee Series Sioux Wing and follows the information provided by Willy Nillies with input from the FaceBook Builders Forum. All our kits share nearly the same construction techniques with only very minor differences. As with any Beta Kit there may be recommended modifications and updates available. **Always** check the documentation that comes in your kit.

Like all the Willy Nillies kits, the wings have been designed to be self-jigging and can be assembled on a flat surface without pins or weights.

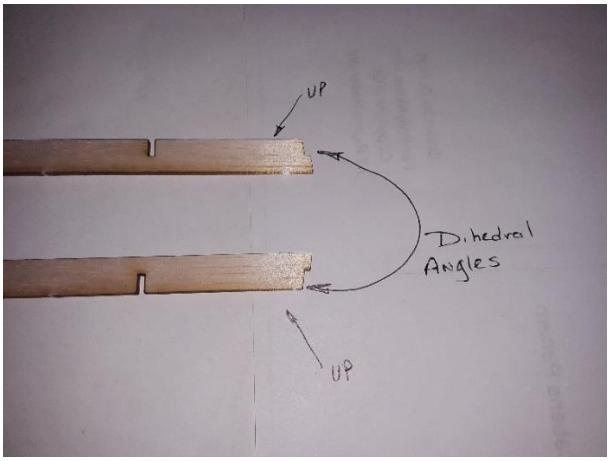


Top Row; **Sheet 1**, Spars, Leading and Trailing Edges. **Second row**; Wing center section sheeting.

Third row; Wing Ribs. **Fourth row**; Second Picture takes the place or parts in this row with 3 Wing Tip types and Triangle Gussets.

Carefully punch out the parts. A light sanding will remove any nubs from the laser process so that parts will lay flat in position.

The Leading and trailing edges are designed to be identical so there is no need to identify one from another, however, you will need to ensure that when you assemble the wing panels that the ends without the reliefs cut in are at the Root (Center) of the wing.



This picture shows the ends of the Spars with the 7-degree Dihedral Angles cut in each of them. These ends set the Root Rib angle so that the Dihedral is built into the final assembly. Total Dihedral will be 14 degrees.

The first picture shows the wing center section sheeting. The pieces on the left are for the bottom of the wing and the pieces on the right are for the top of the wing.

The second picture shows the layout of the wing panels as a Left and Right, with the smaller ribs for the center section sheeting placed at the ends without the reliefs on the Leading and Trailing Edges. Note that the Root Rib and Tip Rib is left off for this step.

The third picture shows the Root section of both Wing Panels that we've marked to indicate the root ends of the Spars, Leading and Trailing edges with Black dots to ensure the correct placements.

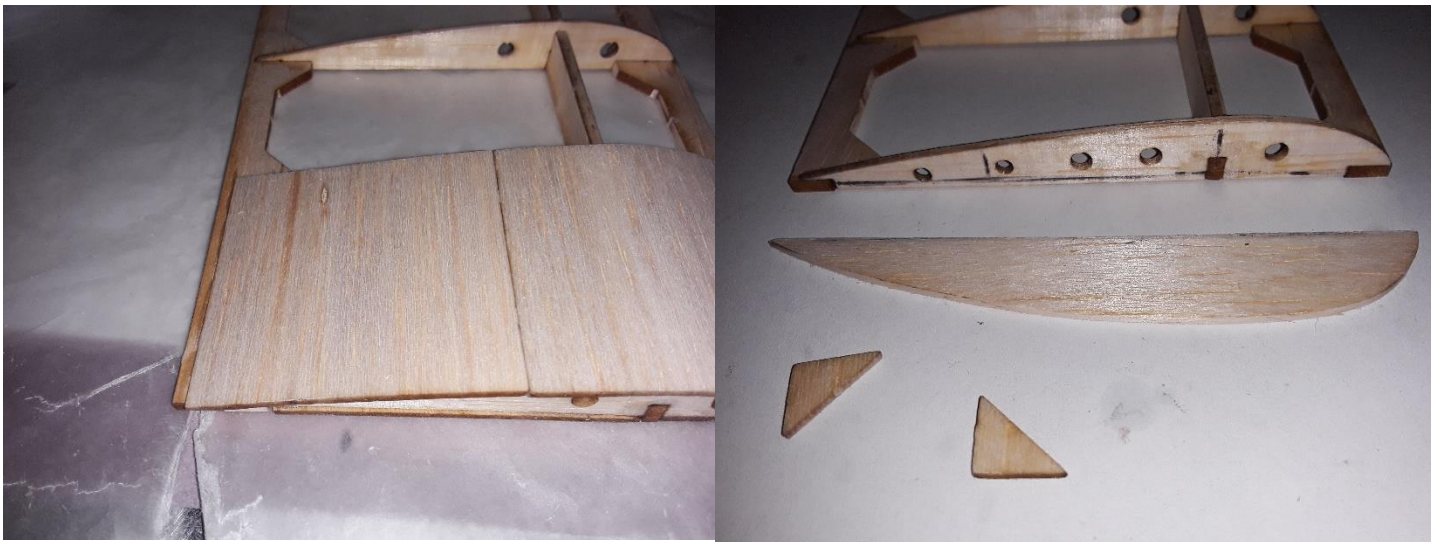
A good building habit is to ensure the squareness of the wing before gluing. Once you are satisfied with the fit and squareness, glue up the assembly using Thin CA. (File Photo for Reference only)

Once you have the assembly glued up you can install the Root and Tip Ribs and glue them in place. Ensure that the Root Rib is the smaller undercut center section Rib and that it is aligned with the Spar Dihedral angle.

With the Ribs in place, the bottom Sheeting can be fit and glued setting the edge flush with the edge of the Root Rib.

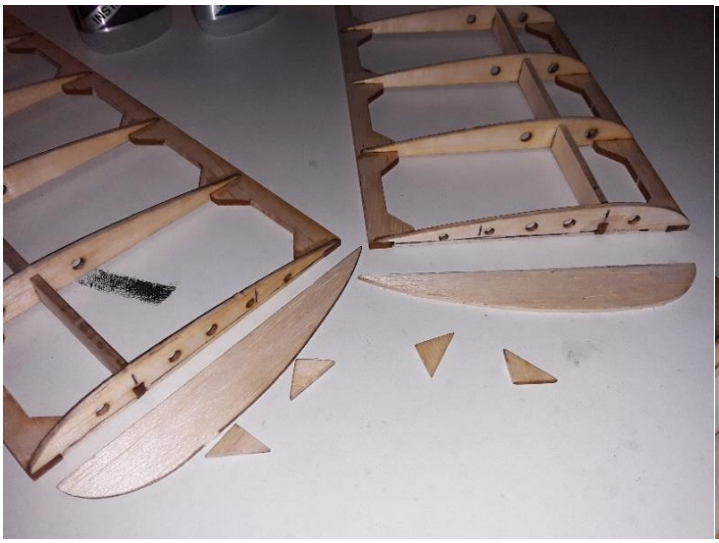
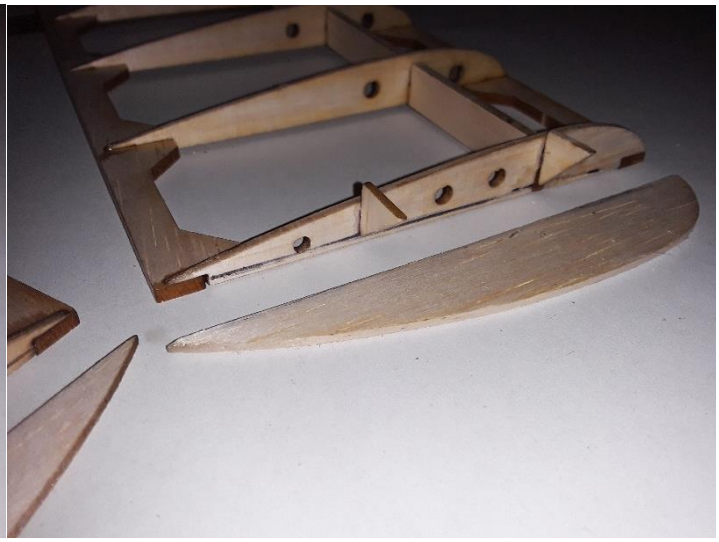
These pictures show the sanded angle in the top sheeting where it meets the Leading and Trailing Edges. Medium CA was applied to the sanded edge and installed. You can see how the angle fits the junction of the Leading Edge and the Rib. Apply Medium CA to the top of the Spar and roll the sheeting down. Use Thin CA along the Rib/Sheeting edge to finish the bond.

The Rear Sheet is sanded and installed in the same manner to finish the Top Sheeting.



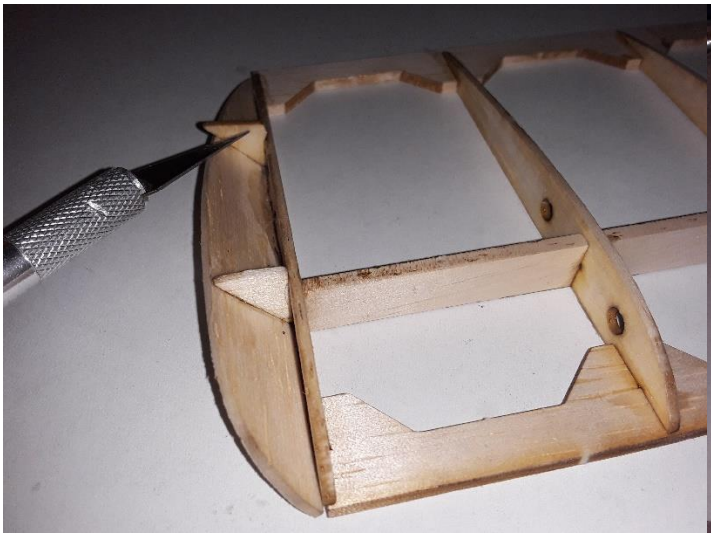
The completed sheeting will overhang slightly because of the Dihedral angle of the Rib. Block sanding the sheeting flush to the Rib will clean up the overhang and prepare the Wing Panel for joining.

Sand the Wing Panel flush at the Tip Rib and using the Wing Tip Plate, mark a horizontal line on the Tip Rib. The two vertical lines mark the placement for the Wing Tip Gussets.

The two Wing Panels are marked and parts ready to be installed. Note there is a right and left Panel.

Glue the two Gussets in place where you have the vertical marks with the wood grain orientated 90-degrees to the Rib and the corner at the edge of the line you marked.

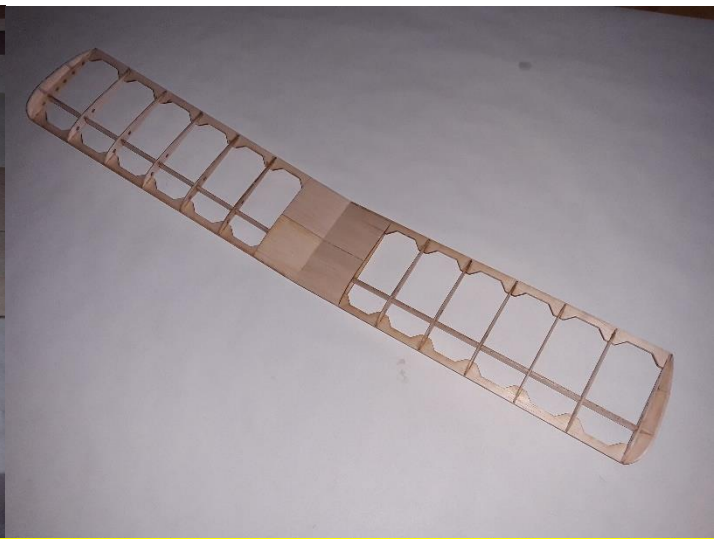



The Wing Tip Plate can be aligned and glued in place and the Gussets can be trimmed flush. A little sanding of the edges will clean up the Wing Tip Plate and Gussets making them faired to the Tip Rib.

The Two Wing panels are shown with the completed Wing Tips.

Once these steps are completed, block sand the Roots of the Wing Panels flush and square if you didn't earlier. Test Fit them together to check that the mating is flat to each other with your dihedral of 14 degrees.

The 14 degrees can be checked by placing one wing panel flat to your building surface and raising the mating Wing Panel up 3" (76 mm) total under the wing tip. Bond the 2 halves together using Thin CA, Med CA or a thin coat of Epoxy applied to each half and putting them together.



Once the adhesive has cured finish sand your assembly to fair in the joints and seams. Using your sanding block or T-sander sand the length of the Leading and Trailing Edges to round them and fair in the ribs. Use care so as not the catch and break a rib.

Congratulations! Your wing is now completed.