



Gentle Lady-250

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

Introducing the Gentle Lady 250 classic sailplane - or electric powered!

The Gentle Lady has always a great choice for a first airplane. Classic and graceful in looks and extremely gentle flight characteristics make this the perfect Sunday relaxed flyer or trainer! Enjoy it off a mini high start or use a 1306 brushless motor!

We have recreated this wonderful little sailplane at a 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 the Gentle Lady 250! Fly it at your local park or school yard (with permission of course) or your own large yard!

We have also updated the design to have interlocking parts. Building the fuselage and wings are a snap and takes less than 1 or 2 hours for experienced builders to frame up and have ready for covering! Beginners should allow a couple of hours and a visit or two to our builders group to get any questions they have answered quickly.

Gentle Lady - 250 specs:

Wingspan: 48.5"

Wing Chord root 5"

Wing Chord tip 3.75"

Wing Area: 229 sq in

Fuselage length from front of fuselage to tip of rudder: 21.25"

Flying Weight Brushless or Glow: 4.5 to 6 ounces.

Wing loading 2.82 to 3.76 oz/sq.ft.

Wing Cube loading : 2.2 to 3

Features:

Build as 2 channels or 3 with Brushless motor.

Easy access battery hatch

Built in servo tray in fuselage

Clark Y flat bottom airfoil

Laser cut self-jigging construction - The entire airframe can be built and ready to cover in less than 2 hours!

Full length shear web re-enforced main spar.

Includes:

All wood pieces to build the entire airframe

.032 K&S music wire pushrods

6 each number 32 rubber bands for attaching wing

Recommended equipment:

2 each (or 3 for throttle) Emax 9251i, 2.5g or equivalent micro servos - (Emax 9051 - 5 gram servos can be uses with minor resizing of servo tray). Rudder and Elevator or Rudder, Elevator and Throttle.

Non powered flight: Minimum 3 amp UBEC and 350 mAh Lipo battery, or equivalent Rx Battery.

For powered flight: 1306 - 3100kv Brushless Motor

For Brushless - 350 mAh 2s Lipo battery, minimum 6 amp ESC, Gemfan 5030 propeller or equivalent

**** 3 cover packs are required to cover entire airframe***

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)

Control Throws:

1. Control throws are CRITICAL to the characteristics of our aircraft designs. The recommended throws have been determined through flight testing during development and It is imperative that you DO NOT EXCEED our recommended control throws on your first flight!!!!

Elevator: .5" up and down, measured at the trailing edge immediately aft of the control horn.

Rudder: .75" right and left, measured at the trailing edge immediately aft of the control horn.

EXPO - if you have a computer radio, we recommend setting rudder and elevator on 25% expo to help soften the effectiveness of the controls near center.

Center of Gravity:

1. Beginner C of G is at 2.0 inches aft of the leading edge measured from the leading edge. Advanced fliers will prefer a C of G at about 2.25" of the leading edge. Adjust your battery and receiver forward or aft to achieve this placement for your first flights. Add weight if necessary.

First Flights:

1. This model is an incredibly fun and slow type aircraft with a wide speed range. That said, don't be afraid of it! If you have followed our Center of Gravity instructions and have set control throws accordingly, you will be rewarded with a very fun relaxing all around aircraft.

Words of Caution:

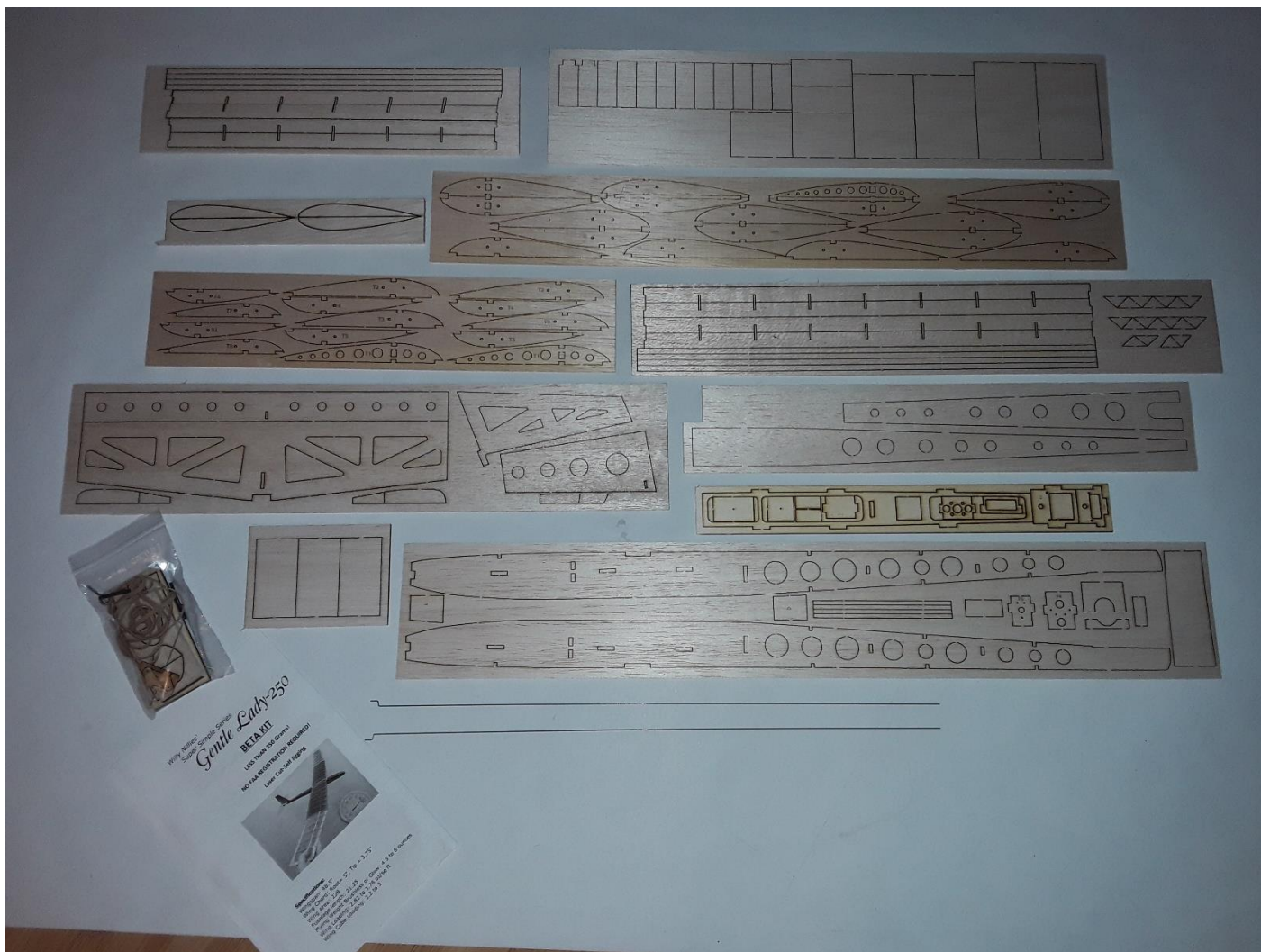
1. This is a SMALL plane. KEEP IT CLOSE.
2. DO NOT LAUNCH AT FULL THROTTLE! The torque from the electric motor can roll the aircraft quickly!
- 3 Half throttle and a firm forward throw is all you need to get going.
4. It is highly recommended that you use highly contrasting colors in your finish. Visibility and keeping orientation are especially important.
5. That all said, if you manage your throttle at 50 or slightly less, it is a tame and gentle performer and a blast to fly at high power settings also!

Gentle Lady-250 Assembly Guide, Rev: Rel, 11/23/2020

This guide is a list of steps accompanied with photos on how to assemble the Willy Nillies Gentle Lady-250 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.

All Willy Nillies planes have been Flight tested and built from random production selections to ensure you are getting a great product. With that in mind, you may feel free to be creative and make your own modifications, however, realize that any changes made by the Builder become the responsibility of the Builder and any change to the flight characteristics are the responsibility of the Builder to correct.

Contents of the Gentle Lady-250 Beta Kit:



Top Row; Sheet 1, Tip Panel Spars, Leading and Trailing Edges. **Sheet 2**, Wing center section sheeting, Shear Webs.

Second row; Sheet 1, Wing Tips. **Sheet 2**, Main Panel Wing Ribs.

Third Row; Sheet 1, Tip Panel Wing Ribs. **Sheet 2**, Main Panel Spars, Leading, Trailing Edges and Triangle Gussets.

Fourth Row; Sheet 1, Horizontal Tail, Elevator, and Tips. Vertical Tail, Rudder and Tips. Sheet 2, Fuselage Top and Bottom rear sheeting.

Plywood Sheet; Detailed separately.

A long, narrow wooden strip, likely a laser-cut component, featuring nine distinct sections labeled A through I. The sections are arranged linearly from left to right. Section A is a simple rectangular block. Section B is a rectangular block with a small circular hole on its left side. Section C consists of two rectangular blocks, one above the other, with a small circular hole on the left side of the top block. Section D is a rectangular block with a small circular hole on its right side. Section E is a small rectangular block. Section F is a rectangular block with a small circular hole on its left side. Section G is a rectangular block with a small circular hole on its right side. Section H is a rectangular block with a small circular hole on its left side. Section I is a rectangular block with a small circular hole on its right side. The strip is shown against a light-colored background, with a wooden surface visible above and below it.

Foreward Top Sheet

Use this as F6

Make new Hatch Tongue

Hatch section 1

Hatch Section 2

The Bag of Small Parts contains; 1/4 Sheet with Nose Blocks, Plywood Sheet with Dihedral Braces, (6) #32 Rubber Bands, (2) Sections of heat shrink tube, (2) "Z" bent Pushrod ends, (2) Dowel Rods, and a sheet of (2) plywood Control Horns.



Some of the tools you need are a knife for trimming and some sandpaper for dressing edges and smoothing out joined areas. The minimum of tools needed is a benefit of the Laser cutting process and the design of the kits. These sanding blocks are made from a 1 x 2 Poplar with nice square edges and are 6" long. The paper is wrapped around tight and stapled to make it easily replaceable. These are easy to make up with different grits from 120 to 600 depending on the task. Sanding sticks to match are easily made by gluing strips of sanding paper to Craft sticks or Tongue depressors. For round areas, a strip of Sandpaper taped around the handle of your knife is handy and gives a nice grip as well.

Preparing to Build:

Once you have inventoried all your parts you may punch them all out and sand the edges lightly to remove the nubs and any charring left by the Laser process. Some builders prefer to punch the parts out as they go. This allows them to reference the sheet layouts for the items they are building. Keep your scraps, during the build some of it may be needed.

Occasionally there is a hole that needs a slight cut to remove the slug. Use caution so that excess Balsa is not removed. The fits of the Tabs and Slots are self-jigging to align the assembly to build a straight and true airplane.



Install a capillary tube to the Thin Cyanoacrylate glue for precision placement of the glue. A wrap of tape around the joint of the tube and bottle can keep small leaks from happening.

Fuselage assembly:

If you haven't already done so, start by punching out the Fuselage sides and formers. Test fit your parts in all the slots before starting to assemble. Note that the F3 and F4 Formers have small holes Laser cut in them for the Pushrod guides. Makes sure they are open by sticking the end of a Pushrod through them BEFORE you assemble the Fuselage.



Here are the parts required to assemble the main Gentle Lady Fuselage with parts positioned and laid out to be installed. Note the Hi-Start Plate and Doublers are mocked up as they will be installed. If you are planning on using the 1306 Brushless Motor, the Firewall with the mounting and air holes would be used in place of the blank Firewall.

If you need to adjust fits, a light swipe with fine sandpaper is all it takes. Avoid going overboard as the snug fit of parts is a crucial part of the self-jigging. Occasionally, the balsa tolerance falls thicker, so pinching the tabs may be needed to put them in. Don't force them.

Once satisfied with the fits, square up and glue the Tray and Formers F2 and F3 to establish the initial main framing.



These are detail pictures showing the installation of the Hi-Start Plate and it's doublers installed in the Fuselage from the bottom and top views.

Don't be stingy with the gluing as it will be taking the stress during launch. If you are not planning on using the Hi-Start or Winch system for launch, the doublers can be left out. Save them in case you change your mind later. Fit and install the Firewall to complete this main structure.



Formers F4 and F5 are test fit and the Fuselage set on a flat surface to check for square. Glue them in place using Thin CA. Place F6 at the front of the Stabilizer cutout and square it vertically before applying the Thin CA to set it in place. The end of the Fuselage will end up with about an 1/8" to 3/16" gap for the Elevator Pushrod and Control Horn clearance.

Trim the top of Former F6 and lightly sand flush with the top of the Fuselage. Check the fit with the Stabilizer. The third picture shows how the notch fits the Fuselage.



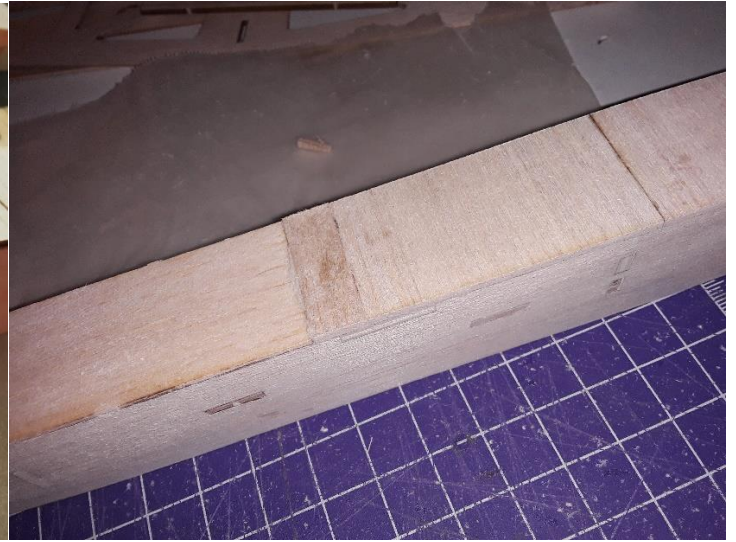
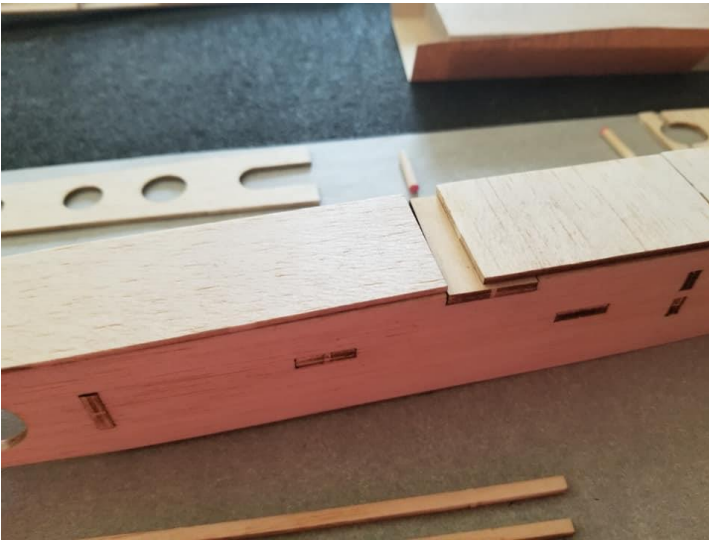
With the main structure and formers installed, the cross bracing can be installed in the notches of the top and bottom Fuselage sides. The simple installation is just to lay them in, glue and trim. Once they are all installed a few swipes with the sanding block will dress them down.

The top sheet is laid on the Fuselage and should align flush with Formers F3 at the front and F6 in the rear. A slight trim may be required. Once satisfied, gently hold in place and glue using Thin CA.

For the bottom, start with the first of the three 3/32" sheets flush to the Firewall edge. And add each one by edge gluing the joints. The last sheet should cover half the Hi-Start Plate as shown.

Depending of the version of the Gentle Lady kit you received, in the next steps you may need to make a judgement call and add a section of sheeting from the scrap Balsa you saved when you punched out the parts from the 3/32 Balsa. Doing this will allow the sheeting to be flush at the sides of the Fuselage.

Take your time setting and test fitting before you glue the pieces in place.



Lay the rear bottom sheet in place and test the fit. As mentioned previously, depending on the version of the kit the bottom sheet may require shifting to the rear to get the edges flush with the Fuselage sides.

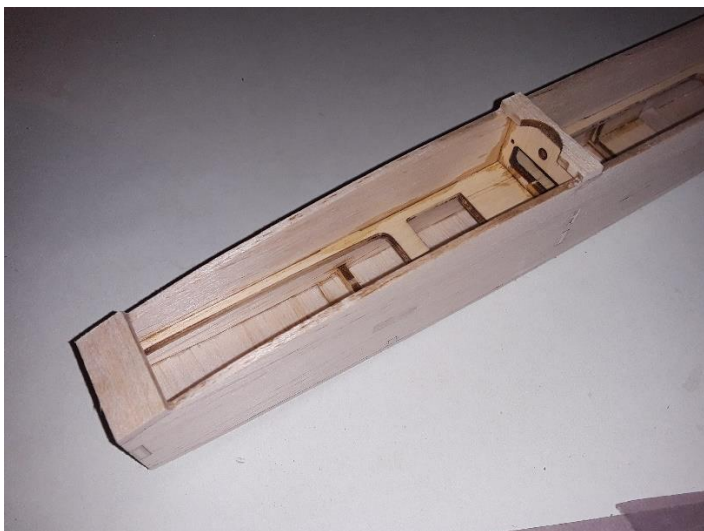
The first picture shows where the sheet ended up making the fit correct and required a $\frac{1}{2}$ " wide section of sheeting to be installed. The second picture shows a section added about $\frac{5}{8}$ " wide. The overhang of the sheeting at the rear of the Fuselage was trimmed where the vertical radius starts.



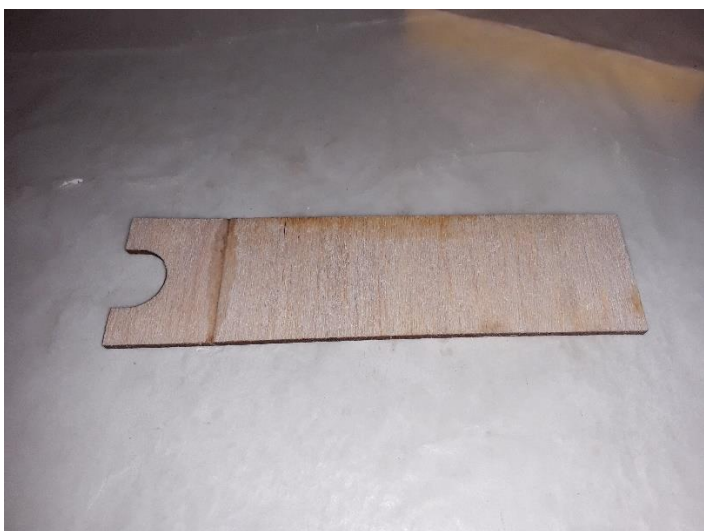
These pictures show the completed Bottom sheeting trimmed at the Radius and sanded to match. Again, take your time, don't Panic! It's an easy fix and builds confidence in your abilities.

If your kit fit perfect out of the package, Great! But if you have problems, be sure to send an E-mail to us, we want you to be happy and correct the problems builders may find.

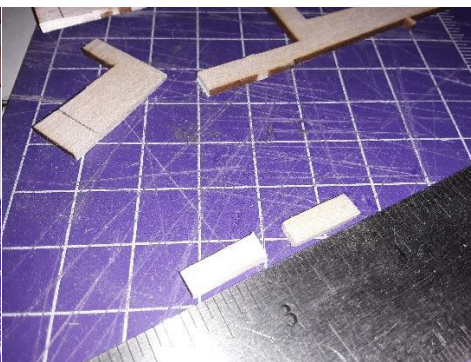
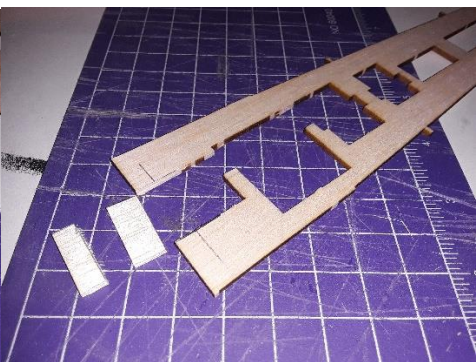
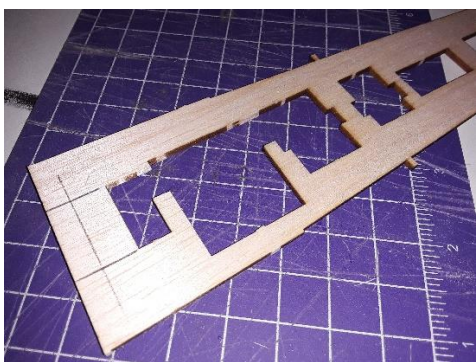
Next, we will cover the Front battery Hatch.



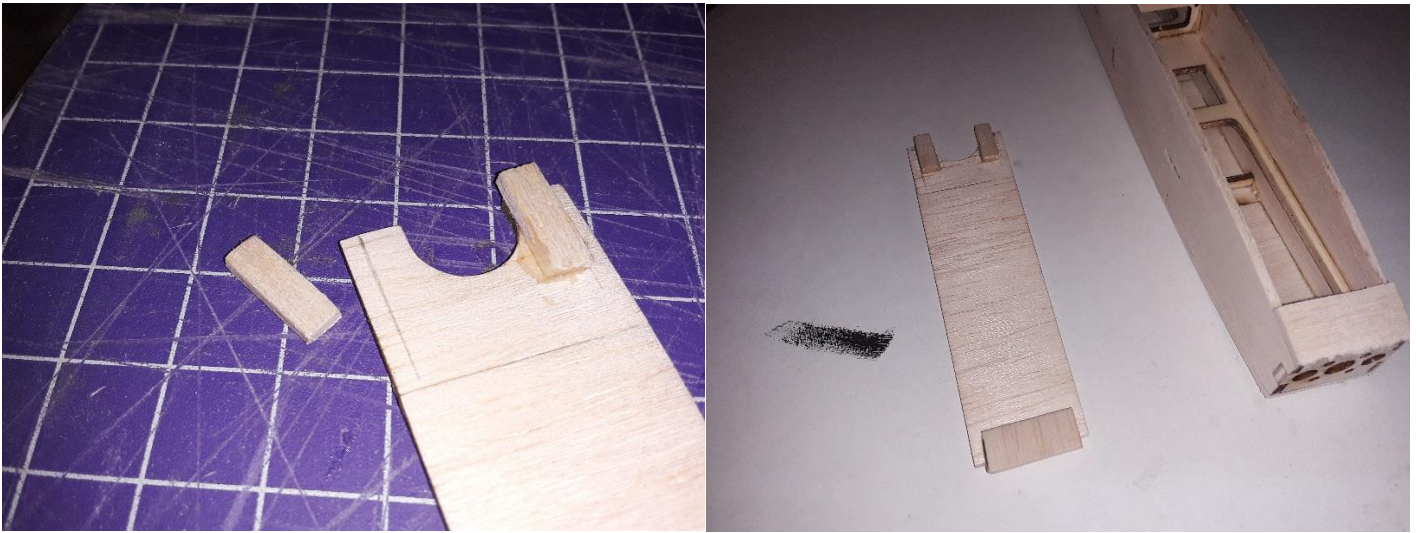
Putting together the Battery Hatch is pretty straight forward. The Forward Sheet is attached flush with the Firewall and the Hatch Tie Down Plate is attached flush with Former F2. This sets up the size of the opening for the Hatch.



Align the edges of the two Hatch Cover sections 1 & 2 and butt glue together. We like to sand the top and bottom of the Hatch before continuing to dress the joint. The sheet of sandpaper laying under the Hatch Cover keeps it from moving around while you sand. Do the bottom first and then the top. Don't get carried away and sand it too thin.



As mentioned earlier, a new Hatch Tongue is made from the scrap 3/32' Balsa shown in pictures 1 and 2. Two more small tabs are made as "Hooks", 5/8" long and 1/4" wide. Note grain directions.



Measure the Fuselage opening at the Hatch Tie Down Plate and mark that measurement centered on the Hatch Cover. Align and glue the two “Hooks” made allowing a $\frac{3}{32}$ ” overhang as shown.

With the Hooks in place, test fit the Hatch and check the length for fit. You want to Leave a small gap for covering on the ends of the Hatch and the mating parts. A swipe or two with the sanding block can square it up and set the length.

Do the Hatch Tongue in the same manner that you set up the hooks by measuring the opening and centering the measurement on the Hatch. Check the tongue width and the Fuselage and adjust the fit if needed. Once happy with the fit, center it between your marks and glue in place allowing an overhang of $\frac{3}{16}$ ” to $\frac{1}{4}$ ”.



Once you have glued the Hooks and Tongue, a quick swipe with sandpaper can even things up. Setting the sanding block on the Hooks and Tongue take a light swipe to reduce the thickness slightly for clearance of the covering.

Installing the Hatch cover is as easy as inserting the Tongue and flexing the Hatch, putting the Hooks in place. The Hatch assembly should now look like the picture showing it installed. Dress down the edges to make them flush with the Fuselage sides. Ta Da! Nice Hatch! Light weight and simple!

Tips for the Hatch Assembly:



This particular sanding block is made from a 1 x 2 Poplar with nice square edges and is 6" long. The paper is wrapped around tight and stapled to make it easily replaceable. 220 grit paper was used and works well for blending the joints. Use caution as this is aggressive enough to over sand or gouge into the soft Balsa.

When adjusting the fit of the Hatch, you can adjust side to side by taking a quick swipe on the Tongue to set it centered. The Sanding Block can be used in the same manner to give a quick swipe to remove a small amount of material for Covering clearance and at a slight angle can make insertion easier.