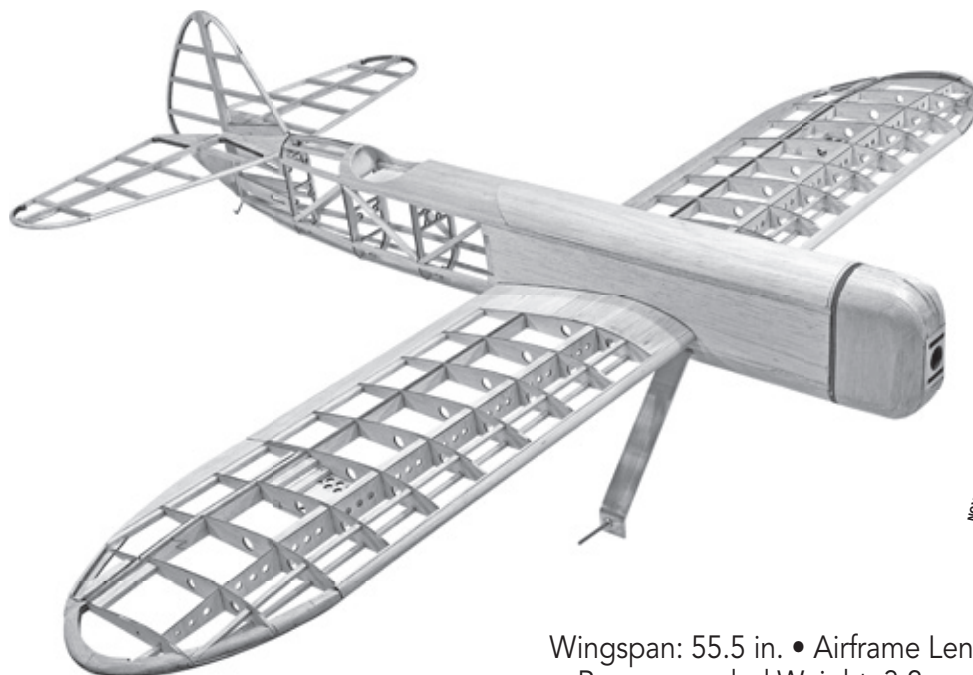
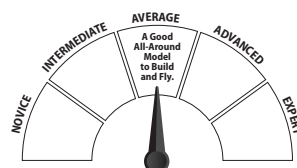




Skill Level



See our web site for more info.

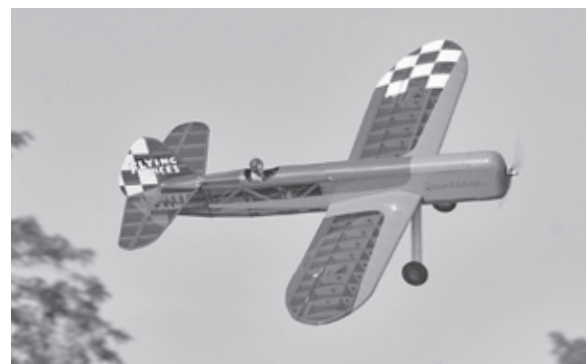
Wingspan: 55.5 in. • Airframe Length: 44.5 in.
Recommended Weight: 3.2 pounds (RTF)
4 ch. radio • Power: 300+ watt, 3s 2200mAh (.20-.25 glow)

Using the Manual

Be sure to read each step thoroughly before you start the step. Test-fit the parts together to make sure they fit properly. If necessary trim to fit.

Beside each step you will notice a check box (or two). These are so you can keep track of your progress while building your kit. For steps that have two boxes, as in the construction of the left and right wing halves, these steps must be performed at two different times.

- Your **Old School Model Works** aircraft should not be considered a toy, but rather a sophisticated, working model that functions very much like a full-size airplane. Because of its performance capabilities, this model, if not assembled and operated correctly, could possibly cause injury to yourself or spectators, and damage to property.
- You must assemble this model according to the instructions. Do not alter or modify this model, as doing so may result in an unsafe or un-flyable model. In a few cases the instructions may differ slightly from the photos. In those instances the written instructions should be considered as correct.
- You must take time to build straight, true and strong.
- You must use a R/C radio system that is in first-class condition, a correctly sized power system and components (electronics, batteries, wheels, etc.) throughout the building process.
- You must correctly install all R/C and other components so that the model operates correctly on the ground and in the air. (Installation shown in the manual is a suggestion. You may have to adjust the mounting steps to accommodate the size of your radio equipment.)
- You must check the operation of the model before every flight to insure that all equipment is operating and that the model has remained structurally sound. Be sure to check clevises or other connectors often and replace them if they show any signs of wear or fatigue.



- If you are not an experienced pilot or have not flown this type of model before, we recommend that you get the assistance of an experienced pilot in your R/C club for your first flights. If you're not a member of a club, your local hobby shop has information about clubs in your area whose membership includes experienced pilots.
- While this kit has been flight tested to exceed normal use, if this model will be used for extremely high stress flying, such as racing, or if a power system larger than one in the recommended range is used, the modeler is responsible for taking steps to reinforce the high stress points and/or substituting hardware more suitable for the increased stress.

Remember: Take your time and follow the instructions to end up with a well-built model that is straight and true.



www.oldschoolmodels.com

WARNING

**READ THROUGH THIS MANUAL
BEFORE STARTING CONSTRUCTION.
IT CONTAINS IMPORTANT WARNINGS
AND INSTRUCTIONS CONCERNING
THE CONSTRUCTION AND USE OF THIS
MODEL.**

***A radio-controlled aircraft is not a toy!
If misused, it can cause serious bodily harm
and damage to property. Fly only in open
areas, preferably at AMA (Academy of Model
Aeronautics) approved flying sites, following all
instructions included with your radio, powerplant,
electronics, and batteries.***

- Inspect your model before every flight to ensure it is airworthy.
- Be aware of any other radio frequency user who may present an interference problem.
- Always be courteous and respectful of other users in your selected flight area.
- Choose an area clear of obstacles and large enough to safely accommodate your flying activity.
- Make sure this area is clear of friends and spectators prior to launching your aircraft.
- Be aware of other activities in the vicinity of your flight path that could cause potential conflict.
- Carefully plan your flight path prior to launch.
- Abide by any and all established AMA National Model Aircraft Safety Codes.

IMPORTANT!!! Two of the most important things you can do to preserve the radio-controlled aircraft hobby are to avoid flying near full-scale aircraft and avoid flying near or over groups of people.



WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

INCLUDED ITEMS

Wood parts included in this kit:

- 1 LP1 - laser cut 1/8" x 4.8" x 24" lite ply
- 1 LP2 - laser cut 1/8" x 4.8" x 24" lite ply
- 1 LP3 - laser cut 1/8" x 4.8" x 24" lite ply
- 1 LP4 - laser cut 1/8" x 4.8" x 24" lite ply
- 1 LP5 - laser cut 1/8" x 4.8" x 24" lite ply
- 1 LP6 - laser cut 1/8" x 4.8" x 24" lite ply
- 2 BP1 - laser cut 1/8" x 4" x 24" balsa
- 2 BP2 - laser cut 1/8" x 4" x 12" balsa
- 1 BP3 - laser cut 1/8" x 4" x 12" balsa
- 1 BP4 - laser cut 1/8" x 4" x 12" balsa
- 2 BP5 - laser cut 3/32" x 4" x 24" balsa
- 1 BP6 - laser cut 3/32" x 4" x 24" balsa
- 1 BP7 - laser cut 3/32" x 4" x 24" balsa
- 1 BP8 - laser cut 3/32" x 4" x 12" balsa
- 1 BP9 - laser cut 1/16" x 4" x 24" balsa
- 2 BP10 - laser cut 1/4" x 4" x 12" balsa
- 1 BP11 - laser cut 1/4" x 4" x 12" balsa

- 1.5 1/16" x 4" x 12" balsa sheets
- 2 3/32" x 4" x 24" balsa sheets

- 2 1/4" x 1/2" x 36" balsa strips
- 13 1/4" square x 36" balsa strips
- 4 3/16" square x 36" balsa strips
- 1.5 5/16" x 1-1/4" x 36" shaped balsa strip
- 2 3/16" square x 36" basswood strips
- 2.5 3/16" x 3/8" x 36" basswood strips
- 1 1/8" x 1/4" x 6" basswood strips

Hardware parts included in this kit:

- 12 magnets
- 15 CA hinges
- 4 control horns

- 8 #2 x 1/2" self tapping screws
- 4 2-56 x 1/2 machine screws
- 4 2-56 x 3/4 machine screws
- 2 5/32 axle shafts w/lock nuts
- 2 5/32" wheel collars
- 2 wheel collars set screws
- 8 4-40 x 1/2" socket head cap screw
- 2 4-40 x 1" socket head cap screws
- 8 4-40 t-nuts
- 1 4" tail skid wire
- 2 pre-bent main gear
- 1 4" length of 1/4" dowel

Other items included in this kit:

- 3 rolled plans (1 fuse, 1 framing, 1 wing)
- 1 construction manual
- 1 sticker sheet

ITEMS NEEDED

Hardware needed (not included in the kit)

For some of these items there is more than one option which will require a bit of decision making ahead of time. There isn't a right or a wrong choice, so choose the items that work best for you.

We strongly recommended supporting your local hobby shop.

- Powerplant: 300+ watt, 3s 2200+ mAh (electric); .20-.25 (glow)
- Fuel tank and tubing if glow (6+ ounce)
- Muffler extension if glow - to clear fuselage side.
- Propeller
- Motor mount and mounting hardware
- Receiver - 4 channel
- Servos: Standard (Hitec HS-5065MG or similar) - 4 if electric, 5 if glow
- "Y" servo harness for ailerons - if on same channel.
- Pushrods - (6" ail., 23" ele./rud., 10" thr. if glow)
- Clevises for the pushrods.
- Two, light-weight 3" wheels.

- Covering: If you're using simple color scheme, 2 to 2-1/2 rolls of iron-on covering will be enough. You will need more if applying a more complicated livery.
- Optional - shaped spinner nut.

Additional Required Building Tools and Adhesives

- Drill & assorted drill bits
- Hobby knife and new, sharp blades
- Sandpaper: coarse (80 or 100 grit) & medium (150-200 grit)
- Pencil or pen
- Ruler
- T-Pins
- Waxed paper
- Building board
- Wood adhesive of your choice. We use medium viscosity CA (cyanoacrylate) , but aliphatic resin and/or carpenter's glues (used correctly) will work just as well and give longer working time.

We advise the following:

Closely inspect the supplied laser-cut parts for damage. If you find any damaged or missing parts, contact us within 60 days of purchase (not your dealer).

When removing the laser-cut parts from their sheets, you'll notice the parts are held in place by several small "tabs." These tabs are uncut pieces of wood and can sometimes make it difficult to remove a part. Rather than breaking and/or splintering the wood by forcing out the part, we recommend removing any laser-cut parts from their sheets by using a hobby knife with a sharp blade. A quick cut of the tab will allow the piece to be removed with no damage. Sand any tab remainders flush with the part, so there will be no problem aligning them later.

Don't remove parts from their sheets until you need them. Refer to Appendix A of this manual as a reference to what all the laser-cut parts look like and are called.

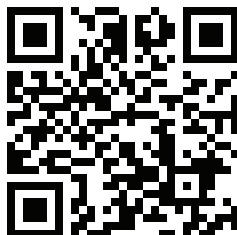
You'll notice a check box next to each step. Check these off as you go along so you don't miss a step.

There could be a step or two, which leaves you a bit puzzled. If this happens, step back and study the photo(s) for that step, both in this manual and online.

All photos shown in this manual are of different Flying Aces Sportster prototypes. Several pieces may have changed slightly with the improvements we've made, so parts may look a little different in some steps.

Online Supplementary Photos

We realize that the smaller black-and-white photos in this manual might not show some of the steps as clearly as you might want. So we've anticipated this and made these photos available on our website. You can either scan the QR code or type this address into your browser:



www.oldschoolmodels.com/mpics/fas/

IF YOU READ NOTHING ELSE IN THIS MANUAL, PLEASE READ THESE FIVE POINTS.

#1 - We've done everything we can to make the Flying Aces Sportster a fun and easy-to-assemble kit. However, this is NOT for the first time builder. This manual assumes that you have experience in constructing built-up kits.

#2 - PLYWOOD HAS SLIGHT BOWS IN IT 93.48% OF THE TIME. We don't like it, but that's the way plywood is. Because of this, we engineered the Flying Aces Sportster to eliminate these warps whenever possible - we'll make recommendations on how to overcome them as we go along.

#3 - Balsa HAS SLIGHT BOWS IN IT 81.53% OF THE TIME. We don't like it, but that's the way balsa is. We'll make recommendations on how to overcome them as we go along.

#4 - It is very important that you assemble the Flying Aces Sportster in the order described. Skipping forward in the steps could leave you without the proper lengths of wood to finish the kit. We've included enough wood to easily complete this kit, but you must take care to properly measure and not waste wood when cutting.

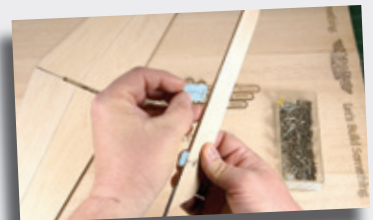
5 - Save ALL of the scrap wood as you build - the ends of sticks, the leftover sheets, etc. You will use some of this in assembly and can use other parts if you need repairs.

Whether you're hinging, mounting, gluing, sanding, soldering, or installing, chances are we've got a video tip to make the task easier.

OSMW has created a series of videos to not only help you build your aircraft, but build it better. Our Bright Idea videos can come in handy for some of the following steps.

Check them out today - they're FREE, and we're adding to them all the time!

Visit oldschoolmodels.com/tips.htm or scan this QR code.



**Remember, building is not a race.
You are the craftsman here.
If you take your time, take the time to
understand the steps, and make the effort to
do good work, it will certainly show when your
Flying Aces Sportster's airframe is completed.**

☐ InstaCAddy

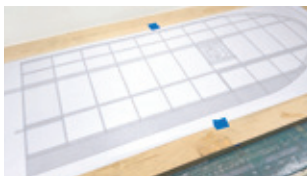
Throughout this manual, you'll see photos with our InstaCAddy on the bench. This is a unique collection of Bob Smith C/A glues, accelerator, and pipettes. What makes this special is the box, as it has cutouts that make it the perfect tool to hold everything in one spot - **and the glue won't spill!** If you're needing C/A, consider our InstaCAddy!



Let's begin with the starboard wing of your Flying Aces Sportster.

☐ Prepare your work area

Tape down the starboard wing plan on your work surface. Tear off a piece of waxed paper to cover this part and tape it to your building surface. Make sure the plans and waxed paper are completely flat with no wrinkles.



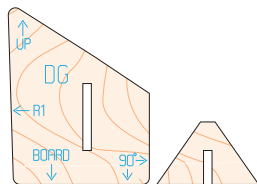
☐ Alignment tools.

Before we start on the wing construction, there are a couple of tools that are pre-cut into this kit.

They are alignment tools, one in LP2 and the other in LP6.

Using the 90° edge, these can be used to vertically align any of the parts in the construction of your Sportster. The other edge has an angle that allows you to properly angle the installation of the root ribs (R1).

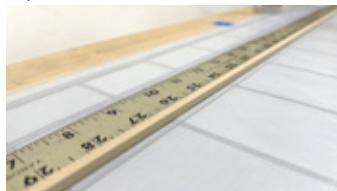
Also included are foot pieces that can be used with these tools to hold them vertically (hands-free).



☐ ☐ Step 1 - Wing Assembly (3/16" basswood lower spar)

Locate one of the 3/16" x 36" sq. BASSWOOD strips. This will form the lower spar. Position it over the plan, measure the length and cut to length.

We prefer to tack-glue this to the waxed paper, holding it in place using a few small drops of medium CA, instead of T-pins - but it's up to you. Also use a straightedge when doing this to guarantee, well, straightness.



The alignment of this spar is critical, as the rest of the wing panel is based off this piece.

☐ ☐ Step 2 - Wing Assembly (3/16" balsa lower spar)

Locate one of the 3/16" sq. x 36" BALSA strips. These will form the lower sub-spar. Position it over the plan, measure the length and cut to length. Again, we prefer to tack-glue this to the waxed paper, holding it in place using a few small drops of medium CA, instead of T-pins - but it's up to you. Also use a straightedge when doing this to guarantee, well, straightness.

The alignment of this sub-spar is critical, as the rest of the wing panel is based on this piece.



☐ ☐ Step 3 - Wing Assembly (TIP2)

Locate one TIP2 from LP6. Glue this in place to both the basswood and balsa lower spars as shown here. Make sure TIP2 is completely pressed down and resting on the building surface.



☐ ☐ Step 4 - Wing Assembly (R8 & TIP1)

Locate one R8 from BP5. Glue this in place to the lower basswood spar and where it contacts TIP2, as shown here. Make sure it is pressed down against the building surface and aligned with the plans. Then locate one TIP1 from LP6 and glue it in place to where it contacts TIP2, the lower basswood spar and the rear of R8. Make sure it is also pressed down against the building surface as shown here.



A quick note about our exclusive Web-Lock Construction.

One of the things OSMW has pioneered is our Web-Lock Construction. Instead of sheer webs being an afterthought as they are on most others' kits, we chose to engineer our sheer webs so they not only give the wing added strength, but they are also a vital tool in making sure the ribs are properly aligned and spaced. You'll have a bunch of these on BP9 and you'll use one of these along with a rib over the next few steps. These webs add massive strength to the wing, with very little added weight.



These webs do several things at the same time.

1. They give you proper rib spacing with tabs that lock into the rib's pre-cut slots (our exclusive WEB-LOCK construction).
2. They hold each rib perfectly vertical without needing tools.
3. The etched circles in SW3 and SW4 let you easily know its correct orientation.
4. The circle cutouts allow airflow between the different chambers of the wing. This is very helpful in keeping the covering from bubbling up when you're covering later on and when the Sportster is at the field in the boiling sun.

Yup, another bright idea from the warped minds of those who work at the OSMW Development Center.

We now return you to your regularly scheduled wing construction.

☐ ☐ **Step 5 - Wing Assembly (SW4)**

Locate one SW4 from BP9. Note the etched circle, which designates the top of the piece, and the side that should be up against R7 (which will be installed in the next step). Glue SW4 in place to the lower basswood spar and to R8. Make sure SW4's tab is fully inserted into the pre-cut slot in R8 and that the bottom edge is flat against the building surface, as well as pressed up against the lower basswood spar.



☐ ☐ **Step 6 - Wing Assembly (R7)**

Locate one R7 from BP5. Align this with the plans and glue this in place to the lower basswood spar, the lower balsa sub-spar, and where it contacts TIP2, as shown here. Make sure it is completely pressed up against SW4, with its tab fully inserted into R7's pre-cut slot.



☐ ☐ **Step 7 - Wing Assembly (SW3, R6)**

Locate one SW3 from BP9 and one R6 from BP5. Note the etched circle on SW3, which designates the top of the piece and the side that should be up against R7. Glue SW3 in place to the lower basswood spar and to R6. Make sure SW3's tab is fully inserted into the pre-cut slot in R7 and that the bottom edge is flat against the building surface, as well as pressed up against the lower basswood spar.



Once this is in place, glue R6 in place, aligned with the plans and also completely pressed up against SW3, with its tab fully inserted into R6's pre-cut slot.

☐ ☐ **Step 8 - Wing Assembly (SW2, R5)**

Locate one SW2 from BP9 and one R5 from BP5. These pieces are glued in place using the same techniques you've just used to install the previous ribs and shear webs. The biggest thing here is alignment and making sure SW2's tabs are fully inserted into the ribs.



☐ ☐ **Step 9 - Wing Assembly (SW2)**

Locate one SW2 from BP9. This is glued in place using the same techniques you've just used to install the previous shear webs. The biggest thing here is making sure SW2's tabs are fully inserted into the R5 rib.



☐ ☐ **Step 10 - Wing Assembly (WS1, WS2)**

Locate two WS1s and two WS2s from BP1. Glue one WS1 to WS2, mating up the modified scarf joint in both pieces. Use a straight edge to again guarantee straightness-ship-ism. Do the same for the other WS1 and WS2. When the glue has cured, glue both of the WS assemblies together, one on top of the other,

perfectly aligned and straight along their entire length. Make sure to keep glue out of the pre-cut notches in the top edge, as the ribs will seat into these notches in the upcoming steps.



☐ ☐ **Step 11 - Wing Assembly (WS assembly)**

Once the glue has cured from the previous step, you'll now glue this WS assembly in place. Position this in place as shown here and make sure that the rear of the R8, R7, R6, and R5 ribs are completely inserted into WS's pre-cut slots.



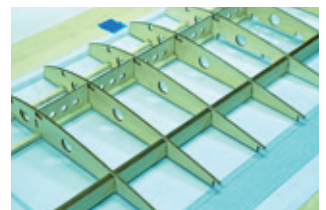
☐ ☐ **Step 12 - Wing Assembly (R4)**

Locate one R4 from BP5. Align this with the plans and glue this in place to the lower basswood spar, the lower balsa sub-spar, and to the WS, as shown here. Make sure that it's also completely pressed up against SW2, with SW2's tab fully inserted into R4's pre-cut slot.



☐ ☐ **Step 13 - Wing Assembly (R3, SW2)**

Locate four R3s from BP5 and four SW2s from BP9. These pieces are glued in place using the same techniques you've just used to install the previous ribs and shear webs. The biggest thing here is proper alignment, making sure each SW2 tab is fully inserted into pre-cut slots in the R3 ribs and all the ribs are perfectly flat against your building surface.



☐ ☐ **Step 14 - Wing Assembly (R2, SW2)**

Locate one R2 from LP1 or LP2 and one SW2 from BP9. These pieces are glued in place using the same techniques you've just used to install the previous ribs and shear webs. Again, the biggest thing here is proper alignment, making sure SW2's tabs are fully inserted into pre-cut slots in the R3 rib. Then install R2 in place, perfectly flat against your building surface and up against SW2 as shown here.



☐ ☐ **Step 15 - Wing Assembly (SW1)**

Locate one SW1 from LP4 or LP5. Note the etched circle, which designates the top and the edge that will be up against the root rib (R1, which isn't installed yet). Glue this in place as shown, with its tab fully inserted into the R2 rib and it perfectly flat against the building surface.



□ □ Step 16 - Wing Assembly (rear, basswood sub-spar)

Locate the short length of 3/16" sq. basswood left over when you cut the lower basswood spar. Measure and cut this piece to form the rear basswood sub-spar that runs from under R2 to out past the root rib (R1). **NOTE: THIS ALSO EXTENDS PAST R1—VERY, VERY IMPORTANT! Did we mention it's important? Well, it is—don't make a mistake here, or this wing panel won't plug in properly later on.**



Glue this in place—up against R2 and WS.

□ □ Step 17 - Wing Assembly (R1)

Locate R1 from LP1 or LP2. This is glued in place with the tabs from the SW1 fully inserted into the pre-cut slots in R1. Make sure R1 is firmly against the building surface and straight along its entire length.



SW1 has an angled edge, which will give R1 a little bit of an angle (dihedral) when properly installed. Use one (or both) of the angle tools we mentioned at the start of the build to help you get the correct angle.

□ □ Step 18 - Wing Assembly (1/4" rear spar)

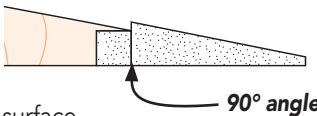
Locate one of the 1/4" sq. x 36" balsa strips, as this will be used to form the rear spar. Use this piece to measure and cut a piece that goes from R4 to the root rib (R1). Glue this in place to the pre-cut notch in the rear of each of these ribs. Make sure the rear spar is straight along its entire length.



□ □ Step 19 - Wing Assembly (trailing edge)

Locate one of the 5/16" x 1-1/4" x 36" tapered balsa strips, as this will be used to form the trailing edge. Use this piece to measure and cut a piece that runs the length of the rear spar you just installed—from R4 to the root rib (R1).

Glue this in place to the rear spar. Make sure the trailing edge is straight along its entire length, and its 90° angle is on the building surface.



□ □ Step 20 - Wing Assembly (WS3)

Locate one of the WS3s from BP9. This is used as the front spar—holding the front of each wingtip in place.

Note the etched circle, which designates the root end (glued to R1).

Glue WS3 in position, making sure all of the rib's tabs are fully inserted and everything is flat to the building surface.



□ □ Step 21 - Wing Assembly (leading edge)

Locate one of the 1/4" x 1/2" x 36" balsa strips. Use this piece to measure and cut the wing's leading edge.

Glue this in place to the WS3 you just installed, making sure it is straight along its entire length and flat against the building surface.



□ □ Step 22 - Wing Assembly (upper sub-spar)

Locate one of 3/16" sq. x 36" balsa strips. Use this piece to measure and cut the wing's upper sub-spar. This piece will slide into the majority of the rib's pre-cut squares.

Glue this in place to each rib, and note that this piece will also need to carefully bend down from R6 to R8 to touch the tips, as shown here.



□ □ Step 23 - Wing Assembly (upper sub-spar)

Locate two of the following pieces from BP1: TP3, TP4, TP5, TP6, and TP7. These are used to "thicken" up the wing tip, giving you an easily "shapeable" surface to sand and cover later on.

Refer to the plans for the proper placement of these. You'll glue one set down, then the other set right on top of them to make them thicker.



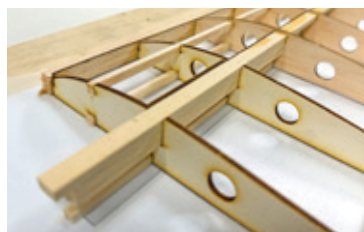
□ □ Step 24 - Wing Assembly (upper main spar)

The upper main spar serves two purposes. Obviously, it holds the wing together, but it also is part of the plug-in wing, so make sure you understand where we're going here BEFORE you cut and glue. **NOTE: THIS COMPLETED PIECE WILL EXTEND PAST R1 - VERY, VERY IMPORTANT! Did we mention it's important? Well, it is—don't make a mistake here, or this wing panel won't plug in properly later on.**

Locate one of the 3/16" x 3/8" x 36" basswood strips. Measure and cut a larger top piece (running from R6 out past R1). Then measure and cut the two smaller identical lengths from this same strip (running from the innermost R3 out past R1).

Glue the two shorter basswood pieces to one end of the longer strip, all stacked on top of each other (the 3/8" surfaces touching). When the glue has cured, then install this upper spar into the wing. Use epoxy to hold it in place from R1 through R3, then you can use medium C/A after that if you'd like.

Make sure the shorter pieces are up against R3 and the spar is completely pushed into the pre-cut slot in each rib.



□ □ Step 25 - Wing Assembly (upper sheeting)

Locate the uncut sheets of 1/16" x 4" balsa sheeting. These will be pieced together to form the wing's sheeting covering R1 and R2 as shown here.



When measuring, make sure that the grain is crosswise (flowing from R1 to R2). Also make sure the sheeting extends about 1/16" past R1.

When edge gluing the sheeting pieces together, first make sure the edges are flat (give a quick swipe or two with a sanding block). Then tape the two pieces together as shown here with a piece of tape. As you lift the sheeting from the board, you'll see that the tape will act as a hinge, allowing you to put a small amount of adhesive in the joint. When the adhesive is applied, place the sheeting back down on the waxed paper so that it's flat (as shown in the photo). When cured, you'll now have a single, longer piece of sheeting. You'll need to join a few pieces together to make it long enough to reach from the leading to the trailing edge. It's easier to join the shorter lengths of sheeting together on a flat surface, and then when the glue has cured, trim and glue the sheeting in place on the wing. Start at the leading edge and glue a little at a time. Press the sheeting firmly against the ribs and wait for the glue to cure before gluing the next section of sheeting—slowly working your way back to the trailing edge.



□ □ Step 26 - Wing Assembly (hatch rails)

You should have some scrap 3/16" x 3/8" basswood pieces around from when you make the wing's upper spars - use these first, but you have an included 18" length also - **do not use an uncut 36" length**. Measure, cut, and install two pieces that form the servo hatch rails (spanning the R4 and R5 ribs).

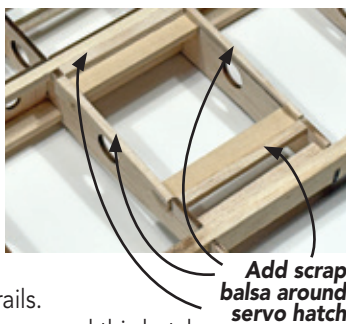
□ □ Step 27 - Wing Assembly (hatch framing)

This step is not structural, but you'll be glad you did it when it comes to covering later on.

Locate one SH from LP3 and place it in position on the servo rails.

Now, you'll need to make a frame around this hatch to serve as a "shoulder" for the covering to adhere to later on. You can make this out of scrap balsa from the kit, and these pieces will eventually be sanded smooth to match the bottom of the wing's framework.

Just be sure NOT to glue in the SH. Use the photo above for reference.



Once the glue has cured, carefully remove the wing from your building surface and place it aside, as we now have to make the matching aileron.

□ □ Step 28 - Aileron Assembly (1/4" rear edge)

Locate the piece of 1/4" sq. balsa that you used when cutting the wing's rear spar. Measure and cut a length to form the front portion of the aileron's trailing edge. Pin this in place as shown.



□ □ Step 29 - Aileron Assembly (A2)

Locate one A2 from LP5 or LP6. Glue the portion of this that contacts the 1/4" balsa strip, then pin it in place so it won't move for the following steps.



□ □ Step 30 - Aileron Assembly (A3)

Locate one A3 from BP6 or BP7. Glue it in place to the left side of the rear edge as shown here. Make sure it is flat against your building surface and aligned with the plans.

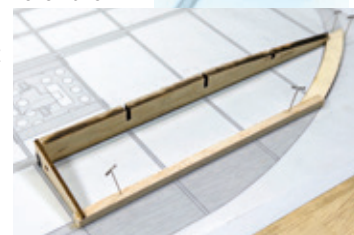


□ □ Step 31 - Wing Assembly (A3)

Locate two A1s from BP1. Glue them together, one on top of the other—perfectly aligned. On the outside edge (the thin edge), you'll need to bevel it so it will match the curve of the A2 piece already installed. Make sure you bevel this in the correct direction—look at the plans!!!!



Now glue this A1 assembly into the notch in A3 and over the A2 piece as shown here.



□ □ Step 32 - Aileron Assembly (A3, A4)

Locate two A3s and one A4 from BP6 or BP7. Glue them in place, as shown on the plans, perfectly aligned and flat to the building surface.



□ □ Step 33 - Aileron Assembly (A5, A6, A7)

Locate one A5 from BP7. As you might imagine, this is going to get glued in place too. Yup - and surprisingly enough, just as it shows on the plan.

Locate two A6s and two A7s from BP1 and glue those in place as well, one on top of the other.



□ □ Step 34 - Aileron Assembly (trailing edge)

Locate the rest of the 5/16" x 1-1/4" tapered balsa you used when cutting the wing's trailing edge. Use this scrap to measure and cut the trailing edge of the aileron.

Make sure that the 90° angle of the trailing edge is down on the building surface, just as before. Glue this in place.



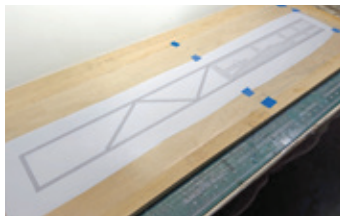
Set the starboard wing half aside and begin work on the port half.
Tape the port wing plan and fresh wax paper on your board.
Then follow steps 1 through 34 to complete the port wing half.
Once finished, then move on to the next steps

Note that when building the port half the parts will need to be glued to the opposite side (the sheer webs, for instance). Always refer to the plans to make sure you're gluing the parts together in the correct way.

Time to start work on the fuselage. We'll save the tail surfaces until later - for a reason. Fuse time!

☐ ☐ **Prepare your work area**

Tape down the port fuselage frame plan on your work surface. Tear off a piece of waxed paper to cover this and tape it to your building surface. Make sure the plans and waxed paper are completely flat with no wrinkles.



Enter the Scarf Joint

A scarf joint is a way to make a much better joint when extending the length of a stick. Always use them instead of a butt joint. For the Sportster, you'll need to make the 1/4" sq. balsa longerons a bit longer. Position this joint as shown on the plans - between formers F2 and F3. So choose one of the 1/4" sq. x 36" balsa sticks to use as your "smaller cuts" stick. Make all of the small length cuts you need for the four longerons, (and other places where 1/4" sq. scrap is called for) from this same stick.



☐ ☐ **Step 35 - Fuselage Assembly (top longeron)**

Locate one of these new, longer 1/4" sq. balsa strips from the previous step. This will form the upper longeron. Position it over the plan, measure, and cut to length. We prefer to tack-glue this to the waxed paper, holding it in place using a few small drops of medium CA, instead of T-pins - but it's up to you. Also use a straightedge when doing this to guarantee, well, straightness-ism. The alignment of this longeron is critical, as the rest of the fuselage panel is based off this piece.



☐ ☐ **Step 36 - Fuselage Assembly (FS2)**

Locate one FS2 from BP6 or BP7. Glue the top edge of this piece to where it will contact the top longeron. Make sure it is flat and pressed down to the building surface along its entire length.



☐ ☐ **Step 37 - Fuselage Assembly (FS1)**

Locate one FS1 from LP4 or LP5. Glue this on top of the FS2 you just installed and to the upper longeron. Make sure it is flat and

pressed down to the FS2 along its entire length. Also make sure to keep the pre-cut slots in FS1 free from glue, as clogged up slots will cause fitting/alignment problems later on.



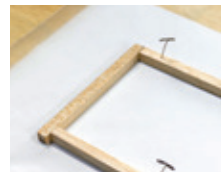
☐ ☐ **Step 38 - Fuselage Assembly (bottom longeron)**

Locate one of the longer 1/4" sq. balsa scarf-joint strips. This will form the bottom longeron. Position it over the plan, measure, and cut to length. Glue this to where it will contact FS1 and FS2. Also tack-glue (or pin) the remainder of this piece in place over the waxed paper. Use a straightedge when doing this to guarantee that it's straight-ism is straight. The alignment of this longeron is also critical, as the rest of the fuselage construction is based off this piece.



☐ ☐ **Step 39 - Fuselage Assembly (rear spacer)**

Using a piece of 1/4" sq. balsa scrap, measure, and cut this short piece that forms the rear fuselage spacer. Glue this in position to the upper and lower longerons.



☐ ☐ **Step 40 - Fuselage Assembly (framing, F7)**

Locate F7 from LP2.

NOTE - F7 is only used as a spacer right now, pressed in place, looking upright and pretty - but - DO NOT GLUE IN F7 YET, capiche?

Now, it's time to cut and miter a piece of 1/4" sq. balsa scrap that extends from the rear of the FS1/FS2 section to where F7 will be installed. Take the time to make proper angles and a good fit. When satisfied with how this piece fits, remove F7, then glue this brace in place, making sure it is flat against the building surface.



☐ ☐ **Step 41 - Fuselage Assembly (framing)**

Use this same technique to install the next two pieces of fuselage framing, measured and cut from scrap 1/4" sq. balsa sticks. You can continue to use F7 as a spacer if you'd like - just don't glue it in place.

Remove the port fuselage side frame (and plans) from your building surface and begin work on the starboard framing. Tape the starboard fuselage framing plan and fresh wax paper on your board.
Then follow steps 35 through 41 to complete the starboard fuselage framing. When finished, leave the starboard framing and plans on the board to continue on to step 42.

□ Step 42- Fuselage Assembly (F3)

Locate F3 from LP1. Test fit it by pushing it down into the pre-cut slots on FS1 and on to the upper/lower longerons.

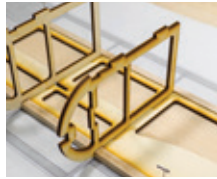
Make sure it fits properly, then remove, apply glue, and attach it to the side frame. Use that 90° alignment tool to make sure it's perfectly perpendicular to the framing.



□ Step 43 - Fuselage Assembly (F4)

Locate F4 from LP2. Test fit it by pushing it down into the pre-cut slots on FS1 and into the upper/lower longerons.

Make sure it fits properly, then remove, apply glue, and attach it to the side frame. Use that 90° alignment tool to make sure it's perfectly perpendicular to the framing.

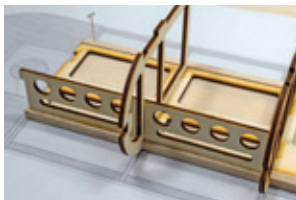


□ Step 44 - Fuselage Assembly (TR2)

Locate both TR2s from LP3. These form the lower rx-battery or ESC tray. *Now, if I was really paying attention when I designed this, I would have seen that this piece is not symmetrical. Looks like it, but nope - the center notch which goes around F3 is offset slightly to match the position of that former.*

So... to resolve this, I went back to the ol' etched circle. You'll see this in both TR2s, and those circles should both align towards the firewall when properly installed.

So with that in mind, glue in the first one as shown, then you'll pop the other one in (and glue it in) to form the completed lower tray.



□ Step 45 - Fuselage Assembly (F2)

Locate F2 from LP5. Glue this in place to form the back of the firewall. Make sure all the tabs and notches are perfectly aligned and completely inserted.

We recommend epoxy for this step, as you always need extra strength when attaching any firewall.



□ Step 46 - Fuselage Assembly (TR1A)

Locate two TR1As from LP1 and two T-nuts from the hardware pack. Tap one T-nut into each of the TR1As. A touch of adhesive will guarantee they stay lodged in the TR1As, but be careful not to get glue in the threads - *that won't be good for anyone.*

Glue one of these into the slot in FS1 - up against F3. Make sure it's completely inserted and perpendicular to the fuselage's side framing. *Place the other TR1 aside, as you'll insert that one later.*



□ Step 47 - Fuselage Assembly (DH)

I'm gonna take a little time here - this step is pretty important to get right, as it's just about impossible to fix not done correctly.

Locate both DHs from LP2. You'll see two sets of oh-so-gentle "Vs" etched in each one. These Vs are the guide lines to help you make the dihedral/plug-in box that the wing will eventually plug in to.

You should have some scrap 3/16" x 3/8" basswood pieces around from when you made the wing's upper spars - always use the scrap pieces first, but you have an included 18" length if you need it.

You'll need to measure, cut, and miter 4 pieces that fit inside the pairs of etched V lines. Two are shown in this pic. **Epoxy is highly recommended here.**

Make sure no glue gets into the center portion of this assembly.



When you glue these in, I can't stress enough how perfect you should be. These are the guides that form the wing's dihedral and will also form a box that each wing half will slide into. Any slop here could give you loose-fitting and possibly fluttering wings - and we all know how bad flutter is!

When you have these 4 pieces attached, you then need to attach the other DH to this assembly. Again, make sure it's perfectly aligned and no epoxy gets into the center portion.

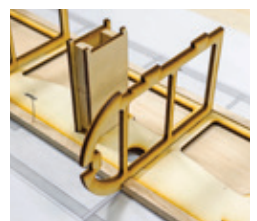
After the epoxy has cured, this assembly is inserted into the fuselage - **BUT MAKE SURE YOU HAVE THE ENDS OF THE "V" POINTING TOWARDS THE TOP OF THE FUSE.** We need dihedral here, not anhedral. You'll see I used the magic angle tool to make sure this assembly was perfectly perpendicular to the fuselage - you should do the same.



□ Step 48 - Fuselage Assembly (F5)

Locate F5 from LP2. Test fit it by pushing it down into the pre-cut slots on FS1 and into the upper/lower longerons.

Make sure it fits properly, then remove, apply glue, and attach it to the side frame. Use that 90° alignment tool to make sure it's perfectly perpendicular to the framing.



□ Step 49 - Fuselage Assembly (F6A)

Locate F6A from LP1. Test fit it by pushing it down into the pre-cut slots on FS1 and into the upper/lower longerons.

Make sure it fits properly, then remove, apply glue, and attach it to the side frame. Use that 90° alignment tool to make sure it's perfectly perpendicular to the framing.



□ Step 50 - Fuselage Assembly (F7)

Locate F7 from LP2. Test fit it by pushing it down between the fuselage framing and into the upper/lower longerons.

Make sure it fits properly, then remove, apply



glue, and attach it to the side frame.

Use that 90° alignment tool to make sure it's perfectly perpendicular to the framing.

☐ Step 51 - Fuselage Assembly (F8)

Locate F8 from LP1. Test fit it by pushing it down between the fuselage framing and into the upper/lower longerons.

Make sure it fits properly, then remove, apply glue, and attach it to the side frame. Use that 90° alignment tool to make sure it's perfectly perpendicular to the framing.



☐ Step 52 - Fuselage Assembly (port framing)

This is a step that is simple enough - attach the port fuselage framing - but it requires mating up a LOT of tabs into holes, formers into slots, etc.

It is HIGHLY suggested to dry fit this together first to make sure you account for everything and that there's nothing in the way of making this side go on flat and smooth.

Once you're satisfied with the fit, remove the port framing and start to glue it in place - starting at the nose (F2). Work your way back a little at a time, making sure the framing is flat as you go along.



☐ Step 53 - Fuselage Assembly (DH epoxy fillet)

Now that you have the fuselage sides attached, we recommend adding a little extra glue around the periphery where DH contacts the inside of both fuselage side frames. You don't need a lot, but an added bit of glue to make a fillet will give you some nice, extra-strength wing mount. Also add a bit of glue to the basswood strips that are used in this box - not inside the box, but on the outer edges.

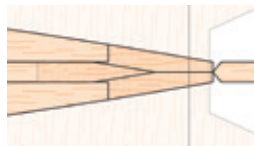
☐ Step 54 - Fuselage Assembly (TR1A)

Locate the other TR1A that you inserted a T-nut into several steps ago. This is now glued into the pre-cut slot on the inside face of port FS1. Make sure it's completely inserted and perpendicular to the fuselage's side framing.



☐ Step 55 - Fuselage Assembly (rear of fuselage)

Before you join the rear of the fuselage sides together, you need to bevel the inside faces of each side. Using this drawing (a snapshot of the plans), you can see how this should go. The rear supports should be sanded to roughly half of their width, and that bevel tapers also includes the upper and lower longerons, roughly about 3/4".



Locate F9 from LP6 as this will be installed at the same time you join these frames together. Carefully bend the two side frames in toward each other.

As you do this, you'll need to put F9 in position so it can seat properly onto the rear framing. Once you get to the back, hold the sides together using clamps, pins, or tape while the glue cures.



☐ Step 56 - Fuselage Assembly (pushrods)

We recommend flexible pushrods for the Sportster's elevator and rudder (similar to Dubro's Lazer pushrod system). Toward that end, there are pairs of holes that you might have seen in the aft formers where the pushrod's outer sleeve will snake through.

There are holes to allow this, as well as to give you the choice of which side the pushrod exits. Typically, the elevator pushrod will exit higher than the rudder, so keep that in mind. Usually these pushrods will exit on opposite sides of the fuselage from each other, but that's up to you. So now is the time to install the outer sleeve of your flexible pushrods, while you still have access to the inside to snake things through.

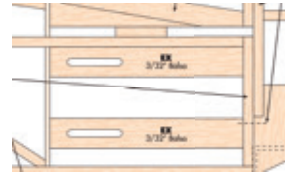


☐ Step 57 - Fuselage Assembly (pushrod exits)

Once you know where the pushrods will exit, you can attach the EX pieces from BP7.

You'll see these on the plans, underneath where the horizontal stab is mounted.

So match these EXs up to wherever your pushrods exit and take into consideration where the control horns will mount. My guess is it will be similar to the plans - one on the port side, one on the starboard side.



☐ Step 58 - Fuselage Assembly (top longeron)

Find your 1/4" sq. "smaller cuts" stick you've used earlier. If you're out, then it's time to start another one with a fresh 36" length.

Measure, cut, and attach the top longeron that spans between F6A and F7. Note that the front edge is tapered to meet up with F6B (look at the plans to see this more clearly). Also extend the aft end of this piece roughly 1/4" beyond F7, as shown on the plans. Glue this in place, completely pushed into the pre-cut notches in F6A and F7.



☐ Step 59 - Fuselage Assembly (bottom longeron)

Locate an uncut 1/4" sq. balsa stick to form the bottom longeron. Starting at F2, this runs back to roughly F8, where there is another scarf joint to make. You'll then need either another scrap piece of 1/4" sq that's long enough to complete this longeron.



☐ Step 60 - Fuselage Assembly (LG1)

While working on the bottom, let's go ahead and make the box for the landing gear. Locate both LG1s from LP4. These have an etched arrow, which should point towards the nose when installed correctly. Glue these in place, one on top of the other. Center them on the 1/4" sq. longerons and up against F4, as shown in the pic. Take care to keep the pre-cut holes free of glue.



□ Step 61 - Fuselage Assembly (1/8" x 1/4" basswood)

Locate both pre-bent landing gear legs and the short length of 1/8" x 1/4" basswood strip from the hardware bag. Measure and cut a 2.6" length from the basswood strip and set the rest aside for the moment.

Hold both landing gear legs as shown in this photo - up against the F4 former.

Then glue the basswood strip to the exposed portion of LG1, up against the landing gear legs as shown. Don't glue the strip to the landing gear legs though - those need to be removable.



□ Step 62 - Fuselage Assembly (LG2)

Locate LG2 from LP1 and a couple of the 4-40 x 1/2" hex screws from the hardware bag.

The idea here is to glue the LG2 in place - attached to the top of the basswood strip you just installed and to the rear of F4 - but...

You need to make sure LG2's holes are aligned with LG1 while you're doing this.

Push one of the screws down through the leftmost hole in LG2, through the landing gear and down into the LG1 assembly. Then push the other screw into the rightmost hole - down through the same pieces. This will hold LG2 in proper alignment while the glue cures. Once the glue has cured, remove the two screws.



□ Step 63 - Fuselage Assembly (1/8" x 1/4" basswood)

Locate the leftover length of 1/8" x 1/4" basswood strip from a few steps back. Measure and cut a 2-1/4" length. This is glued on top of the LG2 and to the back of F4 as shown here.



□ Step 64 - Fuselage Assembly (t-nuts)

Locate six 4-40 x 1/2" screws and six 4-40 T-nuts from the hardware bag. These T-nuts now need to be installed into the holes that you see on the bottom LG2.

(Yes, I know this photo is different 2-hole version LG2, as it was from a previous prototype - before I added the extra screws - but it'll give you the idea.)

To properly install each T-nut: from inside the fuselage, push one of the screws into one of LG1's holes, through the landing gear leg, and through bottom of LG2. Thread the T-nut on to this screw, with the "teeth" facing LG2. Now when you tighten the screw, the T-nut's teeth will grab into LG2, locking it in position. Do the same to install the other five T-nuts.

Put a dab of glue around the perimeter of each T-nut to make sure it stays in place, but make sure NOT to glue the screws to the T-nuts.

When the T-nuts are properly installed, you can remove the screws and slide the landing gear legs out of the fuselage. Place all this hardware aside, as you won't need it for a while.



□ Step 65 - Fuselage Assembly (BG1, BG2)

Locate BG1 and BG2 from LP3. These are glued together to form an angle guide that will be used in the next step.

□ Step 66 - Fuselage Assembly (F6B)

Locate F6B from LP1 and the angle tool from the previous step.

Lay the angle tool across the top longerons and up against F6A as shown here. Then you can glue F6B in place to the longerons and into the 1/4" sq. protruding from F6A.

Although you shouldn't glue the angle tool in place, I guess there's really no harm if it's accidentally glued in place - it isn't in the way of anything - up to you.



□ Step 67 - Top Hatch Assembly (Instrument panel)

In the back of this manual - Appendix A, you'll find a printed full-size instrument panel, similar to this example but bigger.

It's just something I made up that sort-a looks right. If you'd like to use it, now would be a good time to cut it out and glue it to the face of F6B, while you can still easily get to it. F6B will be partially obscured by sheeting in a few more steps, so why not now?



□ Step 68 - Top Hatch Assembly (H1, H3)

Locate H1 from LP3 and H3 from LP4. Also cut a piece of waxed paper that's roughly 3" square. Place the waxed paper up against the inside face of F2 so it will guard against gluing the hatch pieces to the fuselage. Now lay H1 in place on the fuselage -

you'll need to make a small cutout in the waxed paper so the front tab of H1 can fit into the pre-cut slot in F2. With H1 in place, you can now glue H3 to H1. Hold H3 up against the back side of F2 as shown here while the glue dries.



□ Step 69 - Top Hatch Assembly (H4)

Locate H4 from LP4 and cut another piece of waxed paper that's roughly 3" square.

Using the same technique as in the last step, you'll now glue H4 in place, up against F6B, with the waxed paper in-between.



□ Step 70 - Top Hatch Assembly (H2)

Locate five H2s from BP6. Glue these in place into the five pre-cut slots in the middle of the hatch. Make sure each of these is perpendicular to H1.

□ Step 71 - Top Hatch Assembly (top longeron)

Once the glue has cured, locate a length of 1/4" sq. balsa that's long enough to form the hatch's top longeron.

Measure, cut, and glue the longeron in place, making sure it is pressed completely down into the top cutouts in each H2, H3, and H4. - Also make sure you don't change the angle of H2 and H4 when doing this or your hatch will not fit correctly.

When the glue has cured, remove the hatch frame from the fuselage.

☐ Step 72 - Top Hatch Assembly (sheeting)

Locate one of the uncut 3/32" x 4" balsa sheets. You'll need a 17" length of this to form the hatch's top sheeting.

To make this curve around the curvature of the hatch, you'll need some window cleaner with ammonia in a spray bottle. Liberally spray this on the top surface of this sheet and you'll see how the balsa becomes easier to bend. Please don't try to make the complete bend in one attempt. Rather, hold the sheeting until the cleaner has evaporated (or carefully use a heat gun or hair dryer to speed things up). This will get you part of the way (like in the first pic of this step). Then re-coat the same surface, and you can bend the sheeting more (like in the second pic). Do this until you can comfortably wrap the balsa around the hatch's framework without needing much pressure.



☐ Step 73 - Top Hatch Assembly (sheeting)

To glue the sheeting to the framework, again this is done in steps.

First run a bead of glue down the inside edge of the sheeting, then press the hatch along this edge, as shown here. Make sure it is straight and flat along its entire length. Then apply glue along the top edges of the framework and the longeron so you can attach more of the sheeting.

Finally, apply more glue so you can completely wrap the framework in the sheet, as shown here.



☐ Step 74 - Fuselage Assembly (top sheeting)

Now it's time to sheet the top of the fuselage - from F6B back to F8.

Use the same technique you just used to first wet and form the sheeting, then slowly glue the sheeting in place. It should rest on top of the top longerons and be flush with the fuselage side framing.



☐ Step 75 - Fuselage Assembly (bottom sheeting)

Using this same technique, measure, cut, and attach the bottom sheeting. This runs from F2 back to F5.

This sheeting should rest on the bottom edge of the bottom longerons and be flush with the fuselage side framing.

☐ Step 76 - Fuselage Assembly (BS)

Cut into BP6 and BP7 are two BS pieces. These glued to the bottom longeron that extends rearwards from the bottom sheeting you just installed. Glue one piece to the bottom longeron - up against the rear edge of the sheeting, all the way back to the rear of the fuse. You can use the other piece to extend if a little short.

You'll see this called out on the plans.

These next few steps relate to installing the electric motor box that is glued to the firewall. If you're going glow, then you can skip forward to the installation of F1 in step 81.

☐ Step 77 - Fuselage Assembly (F1, EM1, EM2)

Locate F1 from LP6, one EM1 from LP3, and one EM2 from LP2.

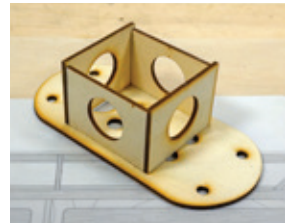
Glue EM1 into the pre-cut notches in F1. Make sure that EM1 remains perpendicular to F1 while the glue cures. Then glue EM2 to the top edge of EM1 and to F1 as shown here. Epoxy is recommended for this step.



☐ Step 78 - Fuselage Assembly (EM1, EM2)

Locate one EM1 from LP3, and one EM2 from LP2. Glue EM1 into the pre-cut notches in F1 and to EM2.

And finally glue the other EM2 to the bottom edge of both EM1s. Epoxy is recommended for this step.



☐ Step 79 - Fuselage Assembly (EM3)

Locate both EM3s from LP2 and LP3.

Using epoxy, glue these two pieces together to form a thicker EM3 as shown here. Make sure that the etching is showing on one of the pieces as they'll help in motor mount installation in the next step. Clamp these together so they stay perfectly aligned while the glue cures.



☐ Step 80 - Fuselage Assembly (motor mount)

Grab your electric motor's mount and a pencil, as now is a good time to drill the mounting holes, while you can still easily get to the back of EM3.

The lines on EM3 should be all you need. Center up your mount so the etched lines show through four mounting holes in the "X" plate and that should center everything on the center hole. Then mark the holes to be drilled on to the firewall with a pencil.

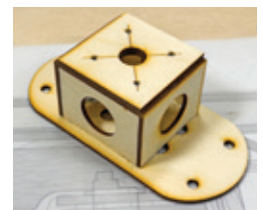
When positioning the mount, you should end up with the motor and mount centered over the hole, with the motor's crankshaft centered directly in the hole. When you have it in the right spot, use a pencil to trace the holes to be drilled on to the firewall.

Now you can drill out the mounting holes, typically for 6/32-sized bolts (not included). Usually that's a 5/32" size drill. Also typically you'd attach matching-size T-nuts (not included) to the rear of the EM3.

☐ Step 81- Fuselage Assembly (EM3)

Now you can attach EM3 to the front of EM1 and EM2. Use epoxy for this step.

Using a toothpick, small brush, or something similar, run a thin bead of epoxy around the inside perimeter where EM3 joins EM1 and EM2.



☐ Step 82 - Fuselage Assembly (F1)

Before installing F1, lightly sand the front of F2 to make sure that

sheeting is flush with F2's surface.

Using more epoxy, now it's time to glue F1 to F2. (Yes, I know that the bottom sheeting isn't shown in this prototype picture, but it will be in place on your model - and help you align F1 properly.)

Another way to make sure it's aligned is to reference the long slot that the hatch's front tab will slide into. There's one already in F2, so the slot in F1 should align with that.



Time to put the fuselage aside for now and begin assembly of the tail surfaces. Remove the fuselage plan and tape the horizontal stab plan on your building board, along with a fresh sheet of waxed paper.

☐ **Step 83 - Horizontal Stab Assembly (S1)**

Locate both S1s from BP2. Glue these together, perfectly aligned, to form a thicker S1, then pin this in place over the plans as shown here.



☐ **Step 84 - Horizontal Stab Assembly (S2)**

Locate both S2s from BP2. Glue these together, perfectly aligned, to form a thicker S2, then glue this to the rear edge of S1, as shown here.



☐ **Step 85 - Horizontal Stab Assembly (trailing edge)**

Locate a length of 1/4" sq. balsa strip that is long enough to use as the stab's trailing edge. Measure and cut this piece. Glue the center of it to the back of S2, and pin this strip in place so it's perfectly straight along its entire length - use that trusty straight-edge for more straight-a-tude.



☐ **Step 86 - Horizontal Stab Assembly (S3)**

Locate four S3s from BP2. Make a thicker S3 by gluing one perfectly aligned on top of the other. Then make a second thicker S3 by gluing the other two S3s together. Glue these in place - one on each side of the stab as shown here.



☐ **Step 87 - Horizontal Stab Assembly (leading edge)**

Locate more 1/4" sq. balsa strips that can be used to make the stab's leading edges. Glue these between S1 and S3, on each side of the stab.



☐ **Step 88 - Horizontal Stab Assembly (framing)**

Using scrap 1/4" sq. balsa strips, cut the internal framing pieces for each side of the stab. Glue these in place, making sure they are securely glued to the leading and trailing edges.



☐ ☐ **Step 89 - Elevator Assembly (E1)**

Locate two E1s from BP2. Make a thicker E1 by gluing one perfectly aligned on top of the other. Pin this in place over the plans.



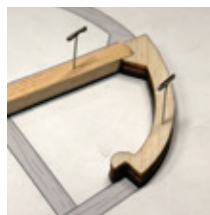
☐ ☐ **Step 90 - Elevator Assembly (leading edge)**

Locate a length of 1/4" sq. balsa strip that is long enough to use as the elevator's leading edge. Measure and cut this piece. Glue it to E1, and pin this strip in place so it's perfectly straight along its entire length - use that trusty straight-edge for more straight-a-listic straightness.



☐ ☐ **Step 91 - Elevator Assembly (E2)**

Locate two E2s from BP2. Make a thicker E2 by gluing one perfectly aligned on top of the other. Glue this in place to form the elevator's outer tip.



☐ ☐ **Step 92 - Elevator Assembly (trailing edge)**

Locate a length of 1/4" sq. balsa strip that is long enough to use as the elevator's trailing edge. Measure and cut this piece. Glue it to E1, and pin this strip in place so it's perfectly straight along its entire length - again with the straight edge!



☐ ☐ **Step 93 - Elevator Assembly (framing)**

Locate more scrap 1/4" sq. balsa strips that are long enough to use as the elevator's internal framing. Measure and cut these pieces, then securely glue them to the leading and trailing edges.



Now go back to step 89 and build the other elevator half. When finished, move on to step 94.

☐ **Step 94 - Elevator Assembly (joining)**

Locate the length of 1/4" dowel from the hardware bag. This is cut to length to form the elevator joiner. Use a straight edge when doing this, having a completely straight leading edge of the elevator will make hinging MUCH easier later on.



Time to put the stab and elevator aside for now and begin assembly of the vertical tail surfaces. Remove the stab and elevator plan and tape the vertical fin and rudder plan on your building board, along with a fresh sheet of waxed paper.

☐ **Step 95 - Vertical Fin Assembly (trailing edge)**

Locate another scrap of 1/4" sq. balsa strip that is long enough to use as the vertical fin's trailing edge. Measure and cut this piece, then pin it in place over the plan.



☐ **Step 96 - Vertical Fin Assembly (VF1)**

Locate both VF1s from BP3 and BP4. Make a thicker VF1 by gluing one perfectly aligned on top of the other. Glue these in place to the top of the trailing edge, as shown here.



☐ **Step 97 - Vertical Fin Assembly (leading edge)**

Locate another scrap of 1/4" sq. balsa strip that is long enough to use as the vertical fin's leading edge. Measure and cut this piece, then glue it in place to VF1, and pin it in place.



☐ **Step 98 - Vertical Fin Assembly (framing)**

Locate some scrap of 1/4" sq. balsa strip that is long enough to form the inner two framing pieces. Measure and cut these pieces, then securely glue them in place to the leading and trailing edge.



☐ **Step 99 - Vertical Fin Assembly (VF2)**

Locate both VF2s from BP3 and BP4. Make a thicker VF2 by gluing one perfectly aligned on top of the other. Glue these in place to the leading and trailing edges, as shown here.



☐ **Step 100 - Rudder Assembly (leading edge)**

Locate another scrap of 1/4" sq. balsa strip that is long enough to use as the rudder's leading edge. Measure and cut this piece, then pin it place over the plans.



☐ **Step 101 - Rudder Assembly (VF3)**

Locate both VF3s from BP3 and BP4. Make a thicker VF3 by gluing one perfectly aligned on top of the other. Glue this in place to the leading edge, and pin it in place.



☐ **Step 102 - Rudder Assembly (VF4)**

Locate both VF4s from BP3 and BP4. Make a thicker VF4 by gluing one perfectly aligned on top of the other. Glue this in place to VF3, and pin in place.



☐ **Step 103 - Rudder Assembly (VF5)**

Locate both VF5s from BP3 and BP4. Make a thicker VF5 by gluing one perfectly aligned on top of the other. Glue this in place to VF4 and pin in place.



☐ **Step 104 - Rudder Assembly (VF6)**

Locate both VF6s from BP3 and BP4. Make a thicker VF6 by gluing one perfectly aligned on top of the other. Glue this in place to VF5 and to the leading edge.



☐ **Step 105 - Rudder Assembly (framing)**

Locate some scrap of 1/4" sq. balsa strip that is long enough to form the inner framing pieces. Measure and cut these pieces, then securely glue them in place to the leading and trailing edge.



Now it's time to finish up some things on the fuselage. Remove the vertical fin and rudder from the building surface and set them aside.

☐ **Step 106 - Fuse Assembly (FS3)**

Locate both FS3s from BP3 and BP4. Make a thicker FS3 by gluing one perfectly aligned on top of the other. Glue these in place on top of the fuselage spanning between F8 and F9.



☐ **Step 107 - Fuse Assembly (stab sanding)**

Before attaching the horizontal stab to the fuselage, it's easier to do some sanding now. Gently sand each side of the framing to make sure it's smooth across the top and bottom surfaces - removing any lumps of glue or other unsightly things. Then round the leading edge and around to the tips - but NOT the trailing edge.

☐ **Step 108 - Fuse Assembly (align stab 1)**

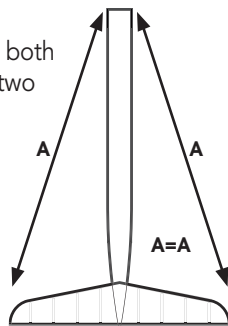
Test fit the stab to the rear of the fuselage. While holding the fuselage perfectly vertical, place the stab where it mounts to the rear of the fuselage. Sight down the fuselage and note any angle in the stab. It should be lying perfectly horizontal, but if not, you'll need to note the side that's higher. Then remove the stab and gently sand that higher side of the fuselage to remove a little balsa. Then place the stab back in place and see where you're at. Continue, a little at a time until the stab is horizontal.



☐ **Step 109 - Fuse Assembly (align stab 2)**

Now that the stab is horizontal, it's time to make sure it's not skewed. With the stab in place, measure from the stab's port tip to the port side of the fuselage, where the top longeron starts. Now measure the same distance, this time from the

starboard side. Both measurements should match. If not, adjust the stab as necessary so both measurements match. Then make a mark or two you can use to quickly re-align the stab.



☐ Step 110 - Fuse Assembly (attach stab)

Since you now know how the stab should be positioned, it's time to remove the stab, apply glue, and attach the stab to the fuselage. Take your time to make sure it's perfectly aligned and stays that way while the glue cures.

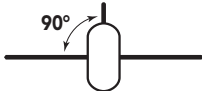


☐ Step 111 - Fuse Assembly (vertical fin sanding)

Before attaching the vertical fin to the fuselage, it's also easier to sand it now, while it's free. Gently sand both sides of the framing to make sure it's smooth across each surface - removing any lumps of glue or other unsightly things. Then round the leading edge and around to the top tip - but NOT the trailing edge.

☐ Step 112 - Fuse Assembly (align vertical fin)

Test fit the vertical fin to the stab by pressing the fin's large tab completely into the pre-cut slot in the center of the stab. While holding the fuselage perfectly vertical, sight down the fuselage and note any angle in the vertical fin. It should be pointing straight up - a perfect 90° to the horizontal stab. *(Remember those 90° angles included in the kit? Now would be another great time to use one or both of them - hint, hint.)*



If things aren't right, you'll need to remove the vertical fin and gently sand its bottom edge to remove a little balsa as needed.

Then place the fin back in place and see where you're at. Continue this a little at a time until the fin is perfectly straight.

☐ Step 113 - Fuse Assembly (attach vertical fin)

Now it's time to glue the fin in place. Make sure it's held perfectly upright until the glue completely cures.



☐ Step 114 - Fuse Assembly (vertical fin fill)

Fill in the fuselage aft of R9 with some balsa scrap. You'll need to cut a few triangular pieces for each side. These pieces also help support the vertical fin/stab joint, along with looking pretty once sanded down.



☐ Step 115 - Fuse Assembly (fitting the wings)

How about we see if those great-looking wings you made can fit into the fuselage? Well, before we do, we need to do a bit of sanding. As a matter of fact, it's now time to get quite familiar with the sanding tools of your choice, as it's time to sand everything you've built so far.

Take the time to perform a good sanding, rounding the wing's leading edge and wingtips. Go over the entire wing, making sure the sheeting is smooth and the trailing edges are blended into the sheeting, continuing the curvature of the wing. All of those wing tip pieces you glued together will need to blend together to form a seamless piece when sanded correctly.

Smooth out the framing and sheeting of the fuselage. Make sure it all blends into each other - oh, so smooth.

Go over the tail surfaces one more time, making sure they are smooth and the leading edges and sides are rounded off. Don't forget to sand bevels into the leading edge of the control surfaces and the ailerons, then take the time to round off their trailing edges. The idea is to spend some time caressing this awesome airframe you've created, smoothing the rough edges until it's something, oh so pretty.

Your Sportster should look pretty close to this right now, other than the cowl and cockpit cutout - which will come in a few more steps.



☐ Step 116 - Fuselage Assembly (wing test fit)

It's time to test-fit the wing to the fuselage. It doesn't matter which wing you start with - just grab one and slide it in position. What should happen is the front "dihedral peg" and the rear "anti-rotation peg" should fit into their appropriate cutouts in the fuselage. They should be firm fits but not difficult to push in - not requiring a lot of force or rocking back and forth to attach or remove. If either or both of these pegs won't fit in smoothly and solidly, you'll need to do a little sanding.

First, make sure that all of the exposed edges of the dihedral peg are a proper rectangular shape, with four smooth, 90° edges. If the basswood pieces weren't properly aligned, you'd need to sand/file as needed to solve this.

REMEMBER - YOU CAN EASILY REMOVE WOOD, BUT IT JUST AIN'T VERY EASY TO PUT IT BACK ON.

Continue to test fit and lightly sand - a little at a time until you're satisfied you have a nice, firm, slop-free fit. The wing pegs should push all the way into the fuselage so that the root rib of the wing is completely touching the plywood sheet inside the wing-shaped cutout in the fuselage's balsa sheeting.

Then do the same testing to get the perfect fit for the remaining wing panel.

☐ Step 117 - Fuselage Assembly (drill wing bolt)

I can't stress this enough - please make sure your wing panels fit absolutely flat and flush, completely inside the fuselage's cutouts, up against the internal fuselage plywood sides, with no slop or

wiggling. Any slop you introduce in this step CANNOT be fixed later on without a major rebuild.

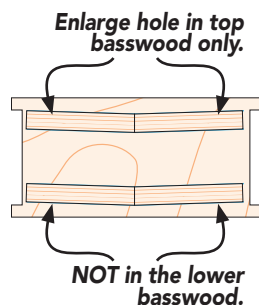
Please read through this entire step before you pick up a drill.

These Mounting Holes will be drilled in two passes - a small hole completely through - which is just large enough so the wing bolt can firmly thread into the bottom piece of basswood. - then a slightly larger hole that will enlarge part of this hole, allowing the mounting screw to push through a bit before threading begins.

Looking into the fuselage you'll see the top of the dihedral box. The center of this box is marked by the joint of the two upper basswood strips. Measure 3/8" on each side of this joint and mark a center point. Chuck up a 5/64" drill bit into your drill. Now with the first wing panel firmly pressed in place, drill a vertical hole down through everything until the bit exits the bottom of the dihedral box.

Do the same for the other wing panel - again making sure the wing is firmly pressed in place before and during the drilling.

Remove the two wing panels and replace the 5/64" drill bit with a larger 7/64" bit. Enlarge the wing peg's holes and the holes in the dihedral box's top basswood - **ONLY THE TOP STRIPS, not the bottom, or your bolt will not thread in correctly, it'll work its way out during flight, and you'll be calling me to order pieces or another kit.** I need to sell kits to eat, but I don't want to do it that way!



Time for the last big assembly project - the cowl. Technically, it's optional, but I'm pretty sure you want it on the front, so let's give it a whirl.

Please refer to the plans for how these stack, and please dry fit these pieces together to get an understanding of how they "stack", before you use a drop of glue. These pieces get progressively narrower and are centered on the assembly.

☐ Step 118 - Cowl Assembly (C1, C2)

Locate C1 and C2 from LP6 and you'll see an "UP" and an arrow pointing to their top edges. With C1 flat on your building surface, glue C2 into the top and bottom pre-cut notches. Make sure it's completely inserted and perpendicular to C1 while the glue cures.



☐ Step 119 - Cowl Assembly (C3A, C3B)

Locate four C3As and four C3Bs from BP10 and BP11. C3As have an etched circle that designates the top and also the end that will be glued to C1. So one C3A and one C3B are matched and installed up against the C2, as shown in this photo. These form sort



of a "bridge", and the pre-cut flats in these should match up with the notch in C2.

Make sure of the orientation before you glue these pieces in place. You'll install two pairs on each side of the C2 - yeah, I know only one is shown in this picture.

☐ Step 120 - Cowl Assembly (C4A, C4B, C5, C6)

Now the remaining cowl pieces are stacked as shown on the plans - a pair of C4As and C4Bs, then a pair of C5s and a pair of C6s. You'll see that they gradually "step" smaller and smaller as you round the cowl sides. Again, they won't look exactly as this photo as things have improved, but you should get the idea.



☐ Step 121 - Cowl Assembly (C7)

Locate both C7s from BP8. I couldn't put a circle on these, as I didn't want it to possibly show on your finished model, so you'll need to study how the bottom is cut at an angle to match the cowl framing you've assembled so far.

When you know how these fit, glue one to each side of the cowl, centered over the open area, as in this photo.



☐ Step 122 - Cowl Assembly (bracing)

Remove the center bracing from the rectangle hole in the nose. Leave the bracing on the back of the cowl in place for now - it holds things securely when you do the upcoming sanding.



☐ Step 123 - Cowl Assembly (C8)

Locate C8 from LP6. This is glued into the rectangle hole in the cowl's nose.



☐ Step 124 - Cowl Assembly (rough shaping)

This is the part where you basically remove everything that doesn't look like a cowl.

Also, remember it's also easier to remove the wood than put it back on, so use care here.

First, focus on shaping the outer perimeter. Sand the top and bottom edges to match the curvature of C1 as seen nose on.

Second, work on shaping the top and bottom of the nose, rounding these edges to the C8 plate of the nose, as shown here.

Third, then slowly round and smooth everything until you have a perfectly rounded cowl with even and matching radii on the 4 corners. You should eventually end up with a cowl that looks a lot like what's shown here.



☐ Step 125 - Cowl Assembly (magnets)

Locate eight of the magnets from the hardware bag. Four of these will go into the pre-cut holes in C1 and the other four will go into the pre-cut holes on the firewall (F1). Make sure the magnets are

oriented properly to attract, not repel each other. A little CA on the back of the magnets will help hold them in place over time.

☐ **Step 126 - Hatch Assembly (magnets)**

While we're on the subject of magnets, locate the remaining four magnets from the hardware bag. Two will be inserted into the pre-cut holes in F6B, and the other two into the pre-cut holes in H4. Again, a little CA on the back of the magnets will help hold them in place over time.

☐ **Step 127 - Fuse Assembly (cockpit)**

Printed on the fuselage plans is a template that can be used to cutout the top sheeting for a cockpit area.

If you're adding a cockpit in your Sportster, cut this template from the plans and position it in place as shown, using its dotted center line as a guide. It should be positioned as shown on the fuselage top plan view, between F7 and F8. Hold in place with a little tape, then use a sharp hobby knife to cut around this template, through the sheeting.



☐ **Step 128 - Fuse Assembly (CF)**

Locate CF from BP4. This is the "floor" of the cabin, where you can glue your pilot to if you want.

Glue CF, centered on the underside of the top longerons, which show in the newly formed cabin area. Then you can attach the pilot of your choice - like one of our Cranky Cockpit Club pilot figures as shown here.



☐ **Step 129 - Fuse Assembly (servo rails)**

Locate the four SRs from LP3 and LP6. Glue two of these together, perfectly aligned, to form a thicker SR. Then glue the other two together so you have a pair of them.

SRs are the servo rails for mounting the elevator and rudder servos and are installed into pre-cut slots in the inner ply side sheets of the fuselage.

They are inserted with a slight twisting motion and then held in place with glue. You'll see that the fuselage slots are long so they can accommodate a wide variety of servos lengths.

We found it best to glue the first SR in - into the forward-most part of the slot. Then you can use your servos to judge where the other SR should be and glue that in position.



☐ **Step 130 - Servo Hatches (SH, parte uno)**

Locate both SHs from LP3, and you'll have some leftover 3/16 x 3/8" basswood that was used in the spars and various things. Using that scrap basswood, cut four 5/8" pieces to use as aileron servo posts.

Now place the SHs on your work surface, mirroring each other as shown here.

Position your aileron servos on the inside of the SH1s so the



servo arm output shaft is centered in the opening.

On the inside of each aileron hatch, glue one post on each side of the servo as shown in the photo.

Note that the left hatch is a mirror image of the right hatch.

☐ **Step 131 - Servo Hatches (SH, seconda parte)**

Now fit the servo hatches into position on the bottom of the wing. Using the pre-cut holes as a guide, drill four 3/32" mounting holes into the hatch mounting strips. Harden the wood with a bit of thin CA, and you can use the supplied #2 x 3/4" self-tapping screws to secure the hatches in place.



This completes assembly of your Flying Aces Sportster's airframe. These next steps can be done in most any order, but it's probably advisable that you do the covering first.

Covering

Before covering your Flying Aces Sportster's airframe, double-check that all surfaces are smooth and ready to cover. Sand as necessary, then cover the entire airframe with the covering/finish of your choice.

You can also download a blank livery sheet .pdf from our website and print as many copies as you'd like. They are perfect for planning the color scheme for your model. Get out your crayons, markers, colored pencils, paint & brushes - or whatever you use - and let your creativity go berserk.

To cover the Flying Aces Sportster as shown in our prototypes, it took a couple rolls of red and then parts of a roll for each of the other colors involved. But 2-3 rolls of iron-on covering would easily cover the entire airframe, with some to spare.

Logos, numbers, etc.

If you want to use graphics similar to the ones we used, Old School Model Works has teamed up with Callie Graphics as a supplier for pre-cut vinyl. She is a very well-known provider of custom graphics for R/C models.

We have supplied her with the artwork needed, and you can order straight from her, choosing the colors that work for you.

Contact Callie Graphics at this link: <https://callie-graphics.com> or scan the QR code.

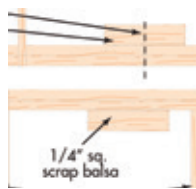


Note that Callie Graphics is not affiliated with Old School Model Works, nor does Old School Model Works generate any income from this partnership. She just does good work at a very reasonable price!

Attach the Control Surfaces (CA hinges or your own type)

Before you slot the surfaces for hinges, note on the plans that there most of the hinge location show a small balsa scrap added to give the hinge more purchase when it's attached. These can be made from scraps of 1/4" sq. balsa or even 1/4" x 1/2" balsa.

Note that on the ailerons, the inner scrap balsa is shown as longer - it's so it also supports adding the control horn later on.



Also, before installing the elevator, you need to install the rudder first. However, before installing the rudder, decide whether you are using a steerable skid or tailwheel assembly (not included). You might need to install parts of your skid/bracket into the leading edge of the rudder first. So now's the time to figure that out.

Attach all the control surfaces to the airframe by gluing the hinges in position with thin C/A. We've noted suggested hinge locations for each of the control surfaces on the plans, and you'll need to make the appropriate slots for each hinge.

When using the CA hinges, first push a pin through on one side, at the center of the hinge, as shown here. This will keep the hinge centered as it's pushed into the surfaces. When you've got all the hinges for a surface in place, then remove the pins and glue the hinges. (AND SEAL THOSE HINGE GAPS!)



Attach the main gear

If you haven't already cut open the sheeting covering the port and starboard sides of the landing gear mounting slots you made earlier. Locate both the pre-bent main gear and the six 4-40 x 1/2" hex mounting screws. Push the gear in position, lining up the holes and then install and tightening the screws.

Locate the two axle shafts and their matching nuts from the hardware bag. These are attached to each side of the main gear as shown here. Make sure they are nice and tight, but don't over-tighten and strip the threads.



Test-fit the wheels onto the axles, then mark where the wheel collars will be positioned on the axles. Remove the wheel and collar, then grind a small flat on the axle. Reattach the wheel and collar. Use a touch of thread-locking compound on the grub screw to make sure it doesn't vibrate loose later on down the road (or, more to the point, down the runway).

Radio installation

Now it's time to install your receiver and hook up all of the radio for the first time.

Attach the aileron servo hatches (with the servos mounted) and run the wires through pre-cut holes in the ribs, and out of the R1 (root ribs). They will then feed into the fuselage via the matching pre-cut holes on each side of the fuselage. Plug into your receiver, or more likely into a "Y" harness that's plugged into your receiver.

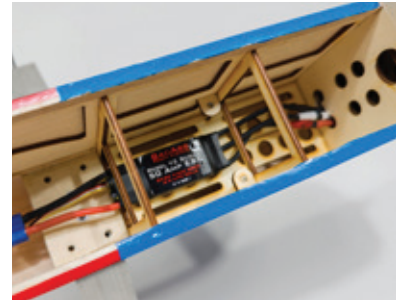
To install the rudder and elevator servos, those are mounted in the SR rails, already installed in your fuselage. If you're going glow, there's a cutout towards the rear of TR1 (on LP1) for your throttle servo to mount. Bolt TR1



(from LP1) in place with two 4-40 x 1/2" screws from the hardware bag.

Finish the layout of your radio gear by adding the receiver and ESC (or rx battery if glow powered). We mounted the receiver to the side of the fuselage with some hook-n-loop (not included). The ESC (or battery) goes up front, under the removable TR1 tray in the hatch area.

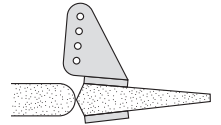
Use a bit of self-adhesive hook-and-loop (not included) to hold the receiver, battery, and the ESC in place.



Control horn installation

Now it's time to mount all of the control horns, one for each control surface. A control horn consists of the horn's plastic backer plate and two 2-56 x 1/2" self-tapping screws; you'll find all of that in the hardware bag. (Use the longer 3/4" screws for the aileron control horns.)

Each control horn should be mounted so it's in line with the pushrod opening, and the holes in the control horn should be in line with the hinge, as shown in this diagram.



You'll need to carefully mark and drill the mounting holes, using the control horn as a guide. Then you insert the screws and thread them into the backer plate from the other side. Tighten the screws to firmly hold the control horn in place, but do not crush the wood of the control surface.

Pushrod installation

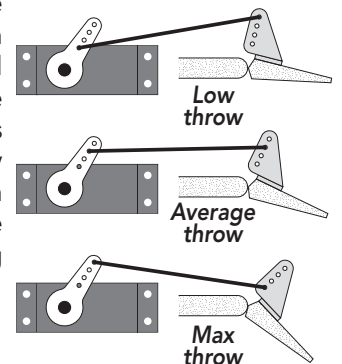
As for the pushrods, we're not going to go in-depth on how they work, as that's covered in their included instructions. Basically, you'll measure and cut the pushrods to length, taking into account the length of any clevises (or z-bends) on the end of the pushrods.

We typically have one end of the pushrod (the exposed end for the elevator) that has an adjustable clevis. The other end is usually a simple Z-bend that attaches to the servo horn. Doing it this way



allows for fine adjustments in the field without having to get inside the plane, taking things apart.

Also, when setting up the pushrods, the various holes in the servo arm and the control horns can drastically change the amount of throw that the surfaces will have. Here's a rudimentary diagram that shows how you can remove or add throw to a surface mechanically - simply by changing the holes used.



Please, please, please!

Check the direction that each control surface moves.

Then double check the directions.

Walk away for a while, then come back and check the directions again.

The number one cause of a crash of any brand new airplane on its maiden flight is having the wrong throw for one (or more) of the control surfaces.

Recommended Control Throws:

These are starting numbers. So you'll need to play with these to find the right combination of agility and controllability for your style of flying.

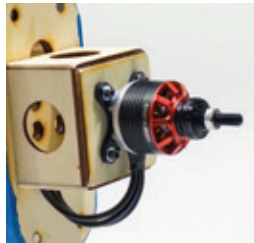
Aileron 1-1/8" up/down (35% expo)

Elevator 3/4" up/down (30% expo)

Rudder 1-1/4" port/starboard (15% expo)

Power system install (electric)

Mount your motor to the firewall and run the wires either in through the center cutout or make a small cutout in the firewall underneath where the tray is.



Power system install (glow)

Mounting a glow engine is fairly straightforward, simply bolting it to the firewall, usually in an upright orientation. You'll have to make cutouts in the cowl clear your engine. Also you'll probably need a muffler extension or two if using a 2-stroke, so the muffler will clear the fuselage.

The tank rests on the internal tray and the fuel and vent lines would then run through the pre-cut hole in the firewall. However, you will have to mount your throttle pushrod and drill a hole for the throttle pushrod in the appropriate spot on the firewall.

Recommended C.G. setting

An important part of preparing the aircraft for flight is properly balancing the model. This is especially important because of the various motor/battery combinations that can be used.

CAUTION! DO NOT SKIP THIS STEP!

The recommended Center of Gravity (CG) range for the Flying Aces Sportster is 3-1/8" from the leading edge of the wing, and you'll see this marked on the fuselage plan with this symbol.

If necessary, move the battery and/or receiver until the correct balance is achieved.

If absolutely necessary, weight can be added - stick-on weights are available at your local hobby store and work well for this purpose.

C.G. BALANCE POINT



Preflight:

Charge both the transmitter and receiver pack for your airplane. Use the recommended charger supplied with your particular radio system, following the instructions provided with the radio. In most cases, the radio should be charged the night before going out flying. Check the radio installation and make sure all the control surfaces are moving correctly (i.e., in the correct direction and with the recommended throws). Test run the engine and make sure it transitions smoothly from idle to full throttle and back. Also ensure the engine is tuned according to the manufacturer's instructions, and it will run consistently and constantly at full throttle when adjusted. Check all the control horns, servo horns, and clevises to make sure they are secure and in good condition. Replace any items that would be considered questionable. Failure of any of these components in flight would mean the loss of your aircraft.

Range check your radio before flying

Before each flying session, range check your radio. This is accomplished by turning on your transmitter with the antenna collapsed. Turn on the radio in your airplane, but do not attach the arming switch.

With your airplane on the ground, you should be able to walk 30 paces away from your airplane and still have complete control of all functions.

If not, don't attempt to fly! Have your radio equipment checked out by the manufacturer.

Flying the Sportster.

First off, our Flying Aces Sportster is best at lower wind conditions. It's a lightweight plane with light wing loading. Big gusts can knock it around, and it's not the best choice to fly on a windy day.



That said, when the winds are calmer, I've found that the Sportster is one of the most relaxing, docile designs we have. When properly set up, it can easily cruise around at 1/2 throttle.

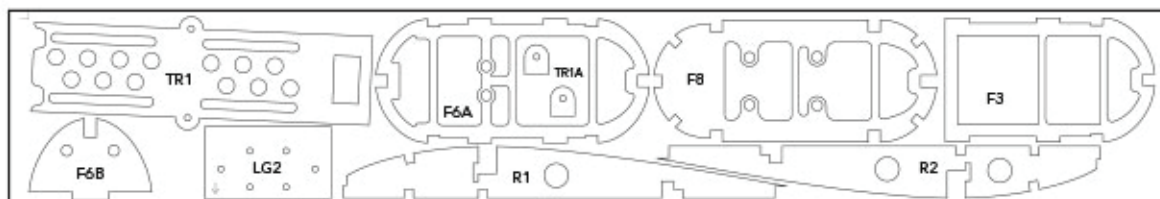
As you'll see from our online videos, it is gentle to take off, land, and perform touch-and-goes on a paved runway. It's also effortless to hand-launch. Landings on short grass are easy, but depending on the length of grass, the Sportster might not taxi very well unless your field is nicely prepared - which most aren't.

It is capable of a nice array of barnstormer-type aerobatics, even from level flight - loops, rolls, hammerheads, split-S, Immelmann turns, etc. Obviously this isn't a precision pattern plane, so expect loops to be a bit oval-shaped, rolls to need a bit of down elevator when inverted, etc.

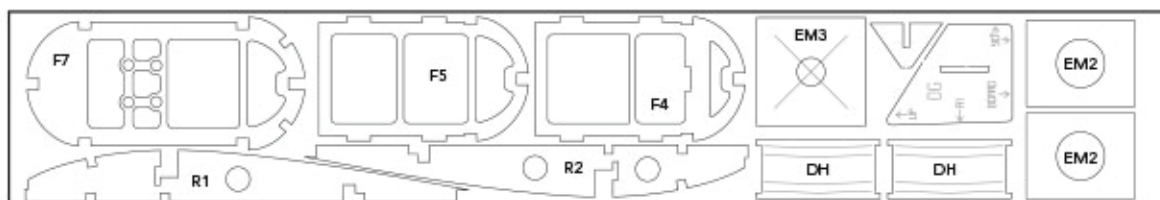
Flight times on a standard 3s 2200mAh battery are 8-10 minutes with proper throttle management - obviously less if you don't power down as much.

But all in all, you should find that our Flying Aces Sportster is just a beautiful-looking plane that's easy and very relaxing to fly.

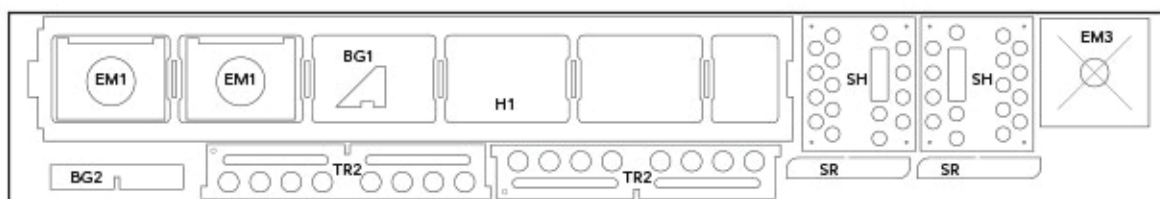
LP1
1/8" Lite Ply



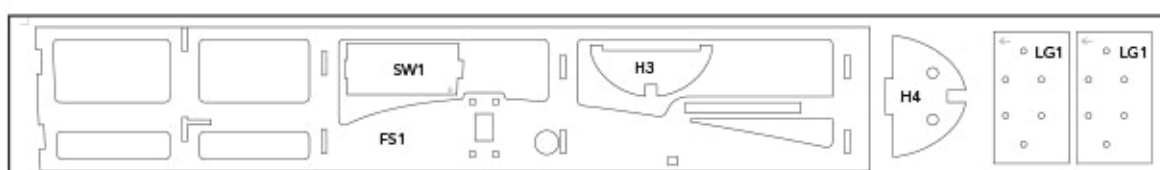
LP2
1/8" Lite Ply



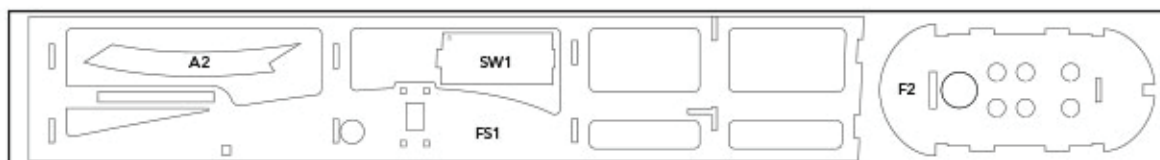
LP3
1/8" Lite Ply



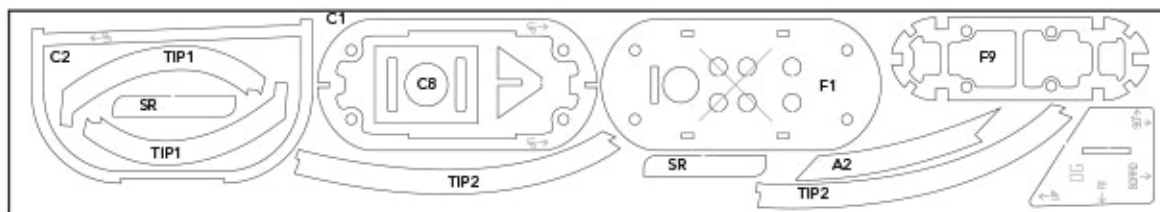
LP4
1/8" Lite Ply



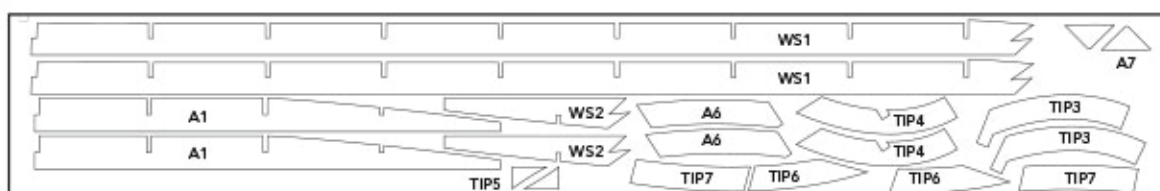
LP5
1/8" Lite Ply



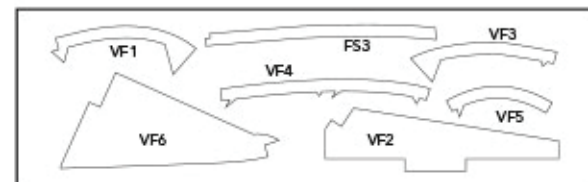
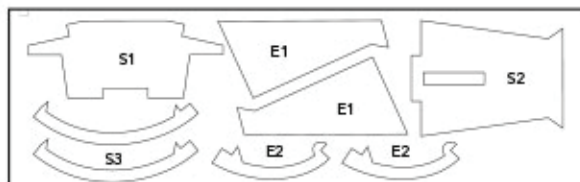
LP6
1/8" Lite Ply



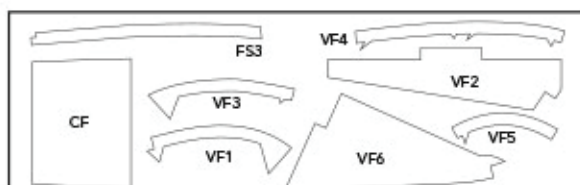
BP1
1/8" Balsa



BP2
1/8" Balsa

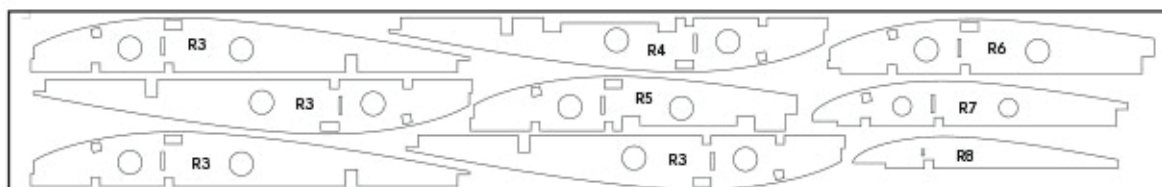


BP4
1/8" Balsa

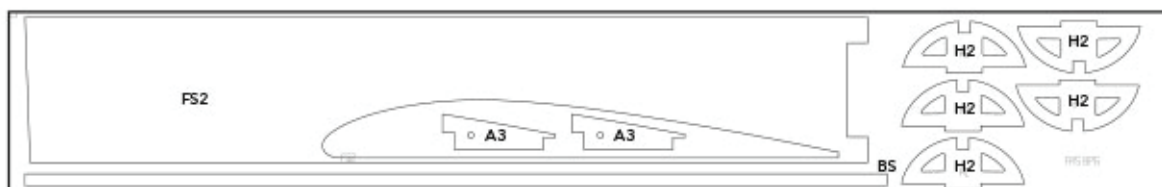


BP3
1/8" Balsa

BP5
3/32" Balsa



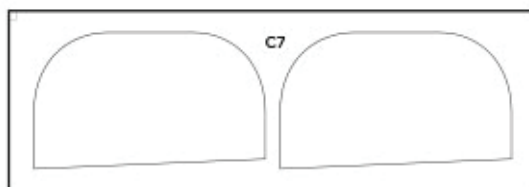
BP6
3/32" Balsa



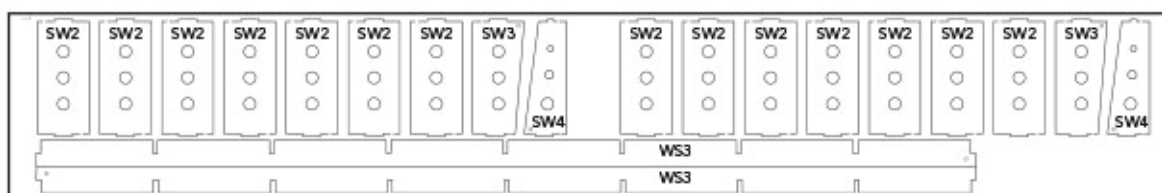
BP7
3/32" Balsa



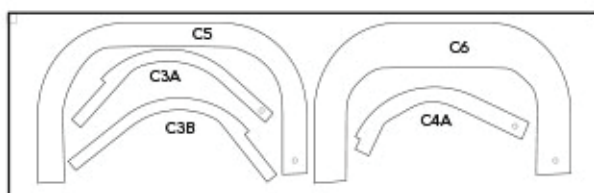
BP8
3/32" Balsa



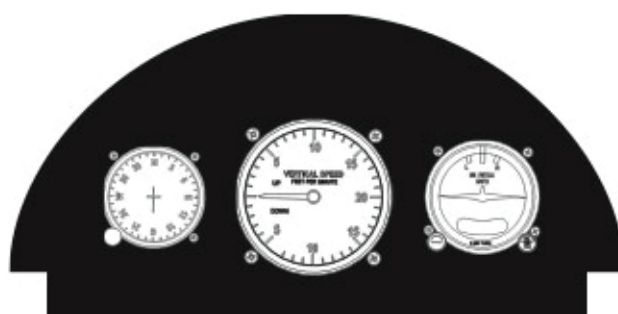
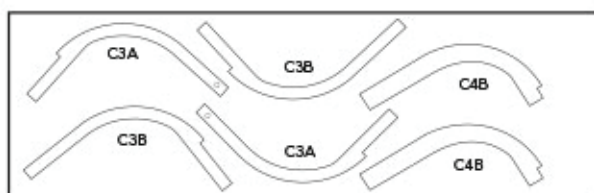
BP9
1/16" Balsa



BP10
1/16" Balsa



BP11
1/16" Balsa



Warranty Information

Old School Model Works guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any parts damage by use or modification. In no case shall **Old School Model Works'** liability exceed the original cost of the purchased kit. If you find any damaged or missing parts, contact us within 60 days from purchase to receive replacement(s).

Further, **Old School Model Works** reserves the right to change or modify this warranty without notice.

In that **Old School Model Works** has no control over the final assembly or material used for the final assembly, no liability shall be assumed nor accepted for any damage of the final user-assembled product. By the act of using the product, the user accepts all resulting liability.

Limit of Liability

In the use of this product, our only obligation shall be to replace such quantity of the product proven to be defective. The user shall determine the suitability of the product for his or her intended use and shall assume all risk and liability in connection therewith.

If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return this kit immediately in new and unopened condition.

As of this printing, you are required to register with the FAA if you own this product. For up-to-date information on how to register with the FAA, visit:

<https://registermyuas.faa.gov> .

For additional assistance on regulations and guidance of UAS usage, visit: <http://www.knowbeforeyoufly.org> .

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