

# Dallaire *Sportster*



*Build this timeless freeflight design  
updated for modern R/C gear!*

**By Joe Redan**

PHOTOGRAPHY: JOE REDAN

**T**he Dallaire *Sportster* was designed in 1935 by Frank Dallaire for the Stix Baer National Contest held in St. Louis, Missouri. Frank flew his design to second place in open age gas in the Rise Off Ground (ROG) category. Since 1935 the Dallaire *Sportster* has won countless contests and titles. Back then the Dallaire *Sportster* came in a four-foot paper bag which held all the wood necessary to build a 108-inch freeflight model. Today, your model comes in a sturdy box with all the necessary wood, a full-size plan sheet, and an eight-page set of instructions.

The Dallaire *Sportster* is not a beginner's model but, if the modeler is into building, this can be a great learning experience. After all, those of us who started modeling before Almost Ready to Fly (ARF) had to build our own planes.

Where do you find a Dallaire *Sportster* kit? One place is on the web at Penn Valley Hobby Center's site (<http://pennvalleyhobbycenter.com>). The other is in the actual Penn Valley Hobby Center, located in Lans-

dale, Pennsylvania. Before moving to Florida from New Jersey, I visited the Penn Valley Hobby Shop on several occasions. Each time it was like I was back in my youth; the store contains all manner of wonderful items—plane kits, boats, cars and trains and more.

One of those wonders was the Dallaire *Sportster* kit now being manufactured by Shive Specialties. A 75-year-old design still in production; how's that for staying power?

## Getting started

Well, now that I have told you where to buy a Dallaire *Sportster*, let's build one.

Like most kits it comes in a large box and is packed with sheet balsa and sticks that will become a beautiful model. Since the kit comes with only one full-size plan sheet, and it is used to build on, I decided the best thing to do was to go to the local print shop and make two duplicate copies—one to build on and one as a back-up.

Before starting to build the model you have to decide if you are going to make the

## AT A GLANCE

<b>Type:</b>	Old Timer R/C
<b>Construction:</b>	balsa and lite ply
<b>Wing span:</b>	108 inches
<b>Length:</b>	54 inches
<b>Airfoil:</b>	undercambered Clark Y
<b>Weight:</b>	6.6 pounds
<b>Wing loading:</b>	10 oz./sq.ft.
<b>Wing area:</b>	1,550 sq. in.
<b>Engine:</b>	up to .60 two-stroke up to .70 four-stroke
<b>Radio:</b>	3+ channels standard servos

**Manufacturer:** Penn Valley Hobby Center  
837 West Main St  
Lansdale, PA 19446  
215-855-1268  
[www.pennvalleyhobbycenter.com/](http://www.pennvalleyhobbycenter.com/)



The Dallaire *Sportster* arrived in a sturdy box with no damage (above). The sheet balsa, of which there is plenty, is contest grade and neatly packaged. Included in the box and packaged separately are the balsa blocks which will form the nose.

model and hitting into something. The horizontal stabilizer, when finished, is as long as some 40-size models' wings.

Now is a good time to line up the elevator and horizontal stabilizer and mark them for the location of your hinges. I used 3/4-inch by 1/2-inch CyA hinges. Since you will be cutting into basswood use caution as this is tough wood and does not cut easily. To make this task easier I scribed a groove at each hinge location to help start my cut and then lined up my Great Planes "Slot Machine" and pro-

ceeded to finish cutting through.

**Wing:** Next I went to the wing. After deciding to build a two-piece wing, I then had to figure out how I was going to mount the wing halves to the fuselage.

The plan only shows the left wing; however, the only difference between the left and right wing is the placement of the wing tip formers. So take your time and make sure you place the wing tip formers on the correct end. The wing ribs come pre-cut and are easy to put in place. To make sure that I



The elevator and rudder are built over the plan using 1/2 x 1/8-inch basswood strips (above, below). Balsa pre-cut end pieces form the rounded elevator and rudder ends. Joe used CyA medium and thin for both assemblies. Once dry he lined up the pieces and marked them for hinge location.

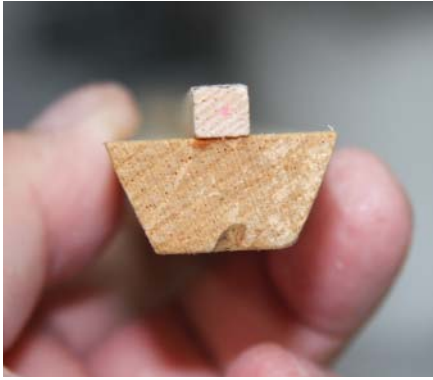
wing one or two pieces and if you are going to make it gas or electric. The plans are drawn for gas power but a conversion to electric does not look like it would be much of a challenge. The cabin of the Dallaire has plenty of room so, if electric is your choice, go for it.

**Empennage:** After looking over the plans and instructions I decided to start with the rudder and elevator assemblies. The horizontal stabilizer, elevator, vertical fin and rudder are built over the plan.

All the ribs on both the elevator and rudder are made from 1/2 x 1/8-inch basswood strips. The leading and trailing edges as well as the wing tips are formed from pre-cut balsa. Since the instructions are very basic, the designer has drawn on the plan an outline of all the major pre-cut parts, which makes identifying them easy. It is also handy if an error makes replacements necessary. This is a good time to remind the reader to plan ahead for the growth of your model. The few replacement parts I have needed so far have been due to moving my



# Dallaire Sportster



A  $\frac{1}{4}$ -inch square strip was centered on the inside of the leading edge and glued full length in order to provide a better glue surface for the wing ribs to adhere to (at left). A mating notch was made in all the wing ribs and they were glued in place using either CyA thin or medium. A series of gussets were made from  $\frac{1}{8}$ -inch scrap balsa and glued to each wing rib trailing edge to further reinforce the wing (at right). Per the plan strips of balsa were glued between the upper and lower leading edge spars. Joe added similar sheer strips on the trailing edge spar out to the fifth rib. Each wing half center section was then covered with  $\frac{3}{32}$ -inch sheeting top and bottom. For additional strength Joe added a strip of  $\frac{1}{16}$ -inch balsa sheeting to the top leading edge only.



placed the ribs at their correct position I lined up the leading and trailing edges and marked the rib spacing. The plan calls for the ribs to be butt glued to the leading and trailing edges. Since this method provides little glue area, I added a  $\frac{1}{4}$ -inch square strip to the leading edge by locating the center of the leading edge and marking its location. The  $\frac{1}{4}$ -inch square strip is then glued in place. Next I stacked the wing ribs and cut a mating notch for the ribs into the leading edge. The ribs were reinforced at the leading and trailing edges with gussets as shown.

Now that the basic wing structure has been glued together a box has to be constructed at the wing root into which the dihedral braces will slide to align both halves

of the wing. The instructions include a sketch which gives the builder a good idea how this is done. A box has to be made on both the leading and trailing edge spars on each wing half.

I also reinforced the root area by making the root rib out of  $\frac{1}{4}$ -inch lite ply for strength and reinforced with balsa to increase the glue surface area. At the trailing edge I added a large gusset and placed a filler strip on top to fill the gap between the sheeting which was added later. The wing mounting  $\frac{1}{4}$ -inch nylon screw goes through the gusset.

The dihedral braces supplied in the kit were used as a pattern to make the  $\frac{1}{4}$ -inch lite ply braces which were lightly sanded to make a non-binding slide fit into the wing spar boxes.

Before applying the wing sheeting, sheer webbing was glued between the upper and lower spars on both the front and rear spars for added strength. The rear spar sheer webbing was added by me and is not shown on the plan.

Wing sheeting is added both top and bottom out to the third rib. I then decided since the Dallaire Sportster was now an R/C model and will be flown a little harder than as a freeflight model I added  $\frac{3}{32}$ -inch sheeting on the top of the wing from the leading edge to the first spar.

**Fuselage:** Now that I had the major components framed out it was time to start the fuselage. Since the fuselage is 54 inches long, a flat clear work area is required. The sides of the fuselage are built one on top of

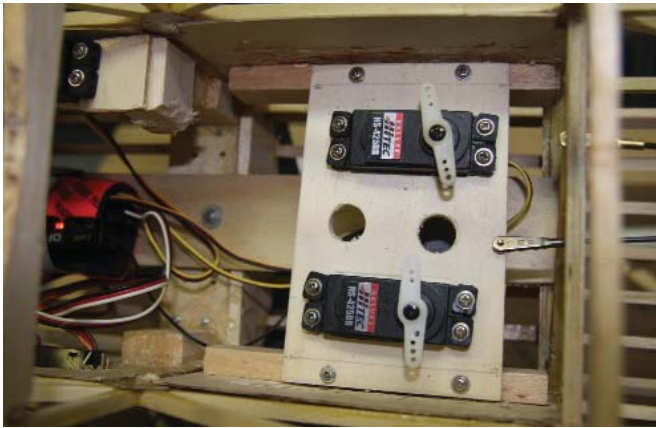


Since the wing is in two halves a box section was constructed in each wing at the root to both reinforce and except the new dihedral braces (above left). By using the original dihedral parts as templates two new braces were made out of  $\frac{1}{4}$ -inch lite ply and sanded to be a snug fit. Once the fuselage sides have been joined a level is placed across the wing mounting cabin area to check the alignment (above right). With the fuselage held in place the level is then moved to the elevator platform to make sure both the cabin wing mounting and tail are aligned. If in doubt double check and make the necessary adjustments till both



are correct. To reinforce the cabin for the two-piece wing a separate  $\frac{1}{8}$ -inch plywood bulkhead was traced and then epoxied in place (below left). When the wing was positioned in place the wing and bulkhead were match drilled for the wing dowels. The dowels were CyA'ed into the wing and a clearance hole drilled into the bulkhead. The rear of the cabin was reinforced for the wing mounting screws as shown (below right). With the wing in place the trailing edge was match drilled for standard nylon hold down screws. After the plywood mount was tapped the threads were hardened with thin CyA.





The Dallaire cabin is large (above left); however for some reason it is never big enough for Joe's fat fingers. For control three standard Hitec HS-425BB servos were used. The Hitec 2.4GHz receiver is wrapped in a vibration absorbing pad and secured to a plywood strip with a hook and loop tie strip. The antenna runs under the servo tray and is left free to move. Since the Dallaire *Sportster* weighs a little shy of seven pounds Joe decided to use a four-cycle



Magnum XL 70 (above right) which is sold in the US by Global Hobby Distributors, Fountain Valley, CA ([www.globalhobby.com](http://www.globalhobby.com)). After some carving to permit access to the choke and needle valve extensions and a lot of sanding, the engine was in place. A ten-ounce fuel tank was installed and secured with hook and loop strips and the fuel lines connected. Now it was time to run the engine and go flying!

the other and then framed together with the cabin cross members. With so many cross braces I found it helps to have a miter box. I made one out of scrap hard wood and cut the required angles with my razor saw.

I decided the best way to mount the wing to the fuselage was in the conventional manner with dowels in the leading edge and nylon screws securing the wing trailing edge.

A ¼-inch lite ply former was added to the front of the cabin and lite ply cross bracing to support the wing trailing edge. The front cabin former was first made from a piece of stiff cardboard onto which I traced its outline. When I was satisfied with the fit, the cardboard outline was transferred to the ply piece and cut out. The wing was now placed in position on the cabin and its position checked and rechecked. Once satisfied the wing was centered it was clamped in position and pilot holes were drilled for both the leading edge dowels and the trailing edge mounting screws.

The trailing edge holes were enlarged to the proper diameter and tapped for the ¼-20 thread. The holes were then hardened by coating the area with thin CyA. The leading edge holes were then enlarged to accept a ⅜-inch dowel. The mating dowels were glued into each wing leading edge panel.

Nose blocks were now added to the front of the fuselage and rough shaped to blend into both the engine and fuselage.

### Finishing

The servo tray was added and moved as far forward as I could get it while still leaving room for the throttle servo and 10-ounce fuel tank. The servos I selected are standard size Hitec HS-425BBs. Three are required—one each for rudder, elevator and throttle.

Since the Dallaire *Sportster* is a big plane with a long fuselage I used ¼-inch diameter hardwood dowels with short lengths of 2–56 threaded rods to connect to the servos and control surfaces.

The engine and battery were trial fit and the balance point was right where the plans say it should be. However, to get the battery where I wanted it I had to make a hatch directly under the engine. I hollowed out the

balsa block under the engine which left plenty of room for a 4.8 volt, 1100 mAh Ni-Cd battery.

The plane was finished with transparent red and blue MonoKote.

The radio used is my Hitec Eclipse 7 converted to 2.4 GHz by unplugging the old 72 MHz module and inserting the new 2.4 GHz module. A special thanks to Shawn Spiker at Hitec for rushing me the new module in time to complete the Dallaire *Sportster*.

By now the new 2.4 GHz standard conversion modules for the Eclipse 7 should be available at your local hobby shop. The standard module with one receiver is part number 29412 and with two receivers is part number 29424.


### Flying

From the moment I opened the rear lift gate of my van the Dallaire *Sportster* became an attention getter. Size really gets people's attention and at nine feet the Dallaire *Sportster* is big! With the help of Gerry Testa, the Osceola Flyers Safety Officer, we

performed a full check list—range test, c.g. check, control movement and engine run. With me on the camera and Gerry on the radio we were set to go.

The moment Gerry released the tail the Dallaire wanted to go almost straight up. Power was brought back to approximately one-quarter and the plane did what it was designed to do, float. With a two-minute engine run it took seven minutes to get the plane down. I had forgotten how great a freeflight model can fly. Even converted to R/C the Dallaire *Sportster* is still a freeflight model and a beautiful one at that.

The only change required was to move the rudder from the normal rudder position on the left stick (Mode Two) to the aileron position on the right stick. There are no ailerons on the Dallaire *Sportster* so most fliers are more comfortable with the rudder on the right stick.

If you like building and want a large, easy to fly, fun plane then get a Dallaire *Sportster*. 



What does 108 inches of wing look like? Here is Joe holding it. Although designed in 1936 the Dallaire *Sportster* is every bit a champion now as then. This is a plane that just loves to float and it looks beautiful doing it.