

FOKKER DVII 58.625" 1/6 SCALE

R/C SCALE MODEL INSTRUCTIONS



Designed by M.K. Bengtson
Prototype by Brian Williams

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FOKKER DVII 1/6TH SCALE

Thank you for buying the AerodromeRC Fokker DVII. 1/6th scale laser cut short kit for electric flight.



MODEL SPECIFICATIONS

MORE THAN 288 LASER CUT PARTS

Scale: 1/6th
 Channels: R/E/A/T
 Prop: 13x7
 Wingspan: 58 5/8"
 Wing Area: 839 sq in
 Weight: ~70 oz ready to fly
 Power System: Reverse mounted direct drive AXI 2826/10 brushless outrunner
 Prop: 14x7
 Wheels: Balsa & plywood, Neoprene foam tires
 Airfoil Type: Flat bottomed, nearly scale shape
 Cowl: Built up balsa
 Spinner: N.A.
 Designer: M.K. Bengtson
 Prototype Builder: Brian Williams

BUILDING THE MODEL

BEFORE STARTING

A note about the photos. The photos were taken of from other builds and the parts supplied may look slightly different from them. However, the concepts illustrated are the same.

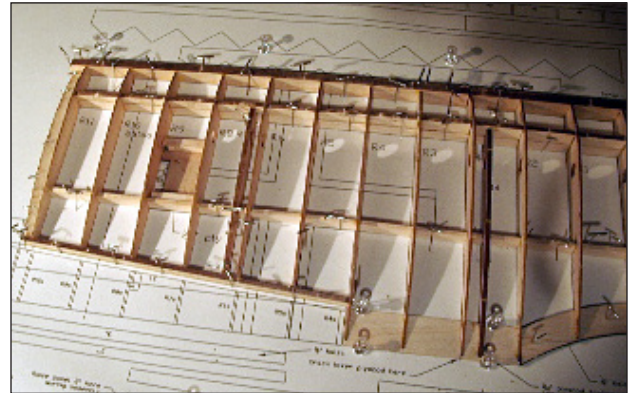
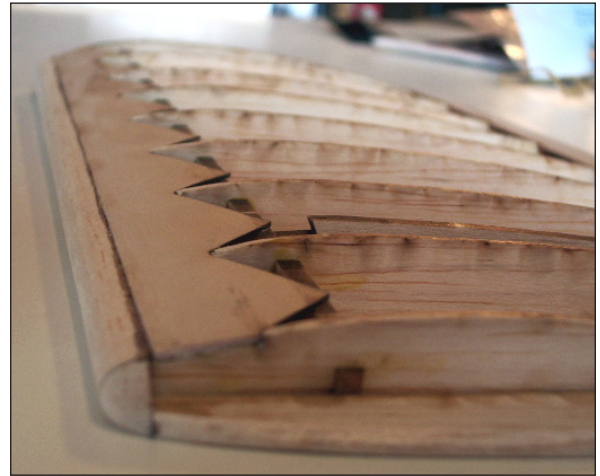
The Fokker DVII prototype was built by Brian Williams.

WINGS

Build the top wing in three pieces. Note that the trailing edges are 1/32" plywood and are supplied in the kit. The leading edges are laser cut 1/4" balsa. The slotted spars align the ribs so that they are in a true vertical orientation when the wing panels are in raised into position.



The forward spar also serves as an attachment point for the tabs of the sawtooth shaped 1/32" plywood leading edge extension.



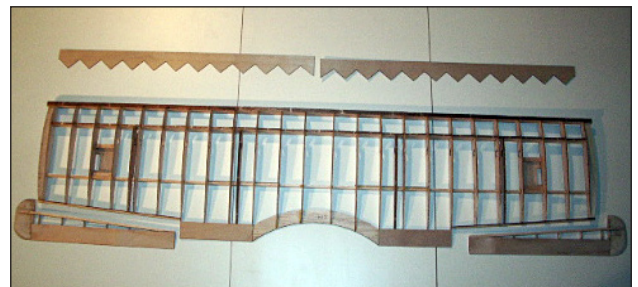
This is a scale as well as strength enhancement in the design.

Build the ailerons and sand the leading edge to shape. Choose a rounded shape for center hinging or a bevelled shape for top hinging.

Finished lower wings:



Final top wing assembly. Note: the jig supplied in the kit is placed under the main spar at the position shown at the wing tip so that the top of the wing is level.



Aileron servos are attached with short threaded rods to the ailerons. Aileron servos are fit in servo compartments located in the lower wings with the supplied 1/32" plywood servo covers. Route servo wires through holes in lower wing ribs. Use a "Y" wiring harness connector to wire the servos to a single radio connection. Alternatively, two RC channels can be used when mixed electronically. If differential aileron throws are desired, rotate each servo horn forward about 20 degrees, while maintaining the neutral position of the aileron. This should counter any adverse aileron yaw.



IP STRUTS

The IP struts are fashioned using 3/32" diameter music wire cut as shown on the plans. The top and bottom of the IP Struts are held to the wing using a ring terminals screwed with 4-40 bolts into blind nuts in the plywood mounts in the wing. Assemble the laser cut plywood fairings around the wire and sand to shape. Make the IP struts as close to the plans as possible for accurate wing mounting. Note: use Epoxy and emery cloth cleaned parts instead of solder. Just as strong as soldering but easier to align.

FUSELAGE CONSTRUCTION

The fuselage is built as two separate box structures, the front sheet area and the rear built up section, which are then joined over the plan. This system not only keeps each stage simple, but it also helps to ensure a straight fuselage. Some modelers prefer to build each side completely on the plan and then join both halves over the top view. Both systems have their advantages and drawbacks. The following is the front/back method.

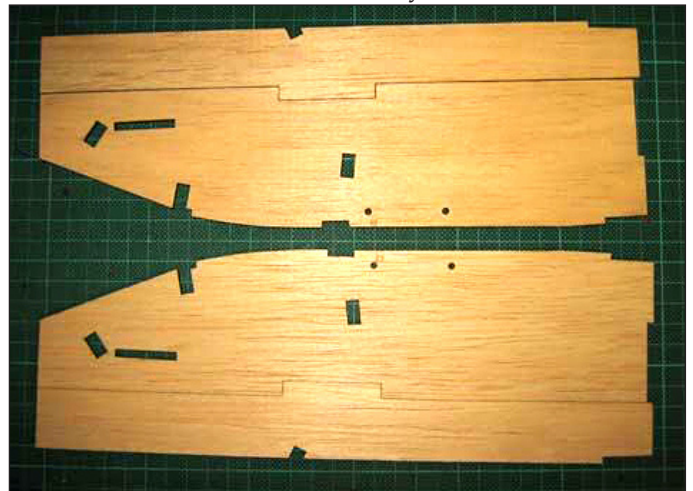
FRONT BACK METHOD

Begin by building two rear fuselage frames over the plan and allow to dry. Select hard balsa or laminated balsa for the longerons. Add diagonals for a rigid structure. Repeat with the other side. Some builders build the second side over the first to insure they match perfectly. Be sure to use wax paper or Saran Wrap between these or you'll not be able to get them apart.. Join the sides over the top view of the plan and add the cross members and tail skid mount. Check and check again to insure that the structure is square and straight or you will end up with a banana fuselage. Finally add the wedge shaped horizontal stabilizer supports. Wait until the front fuselage is joined to add the

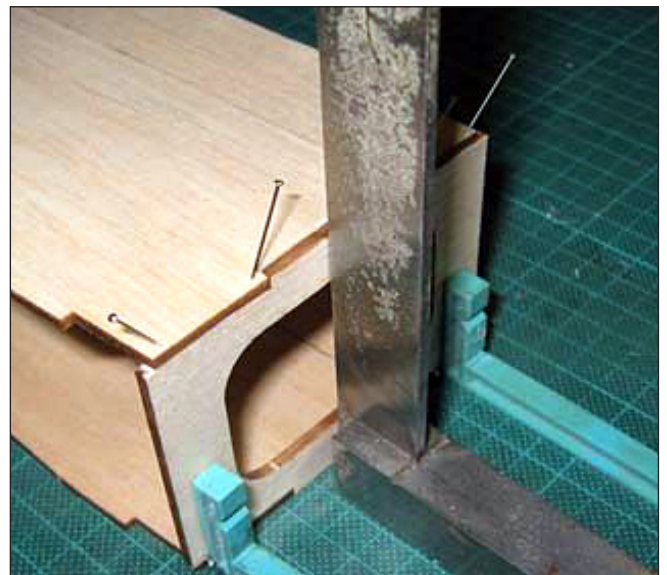
turtle deck formers and stringers.

BUILD THE FRONT HALF AND DECKING

Lay the front sides on the plan and glue them together. The alignment notch insures that they mate properly. On the inside surfaces glue the 1/32" plywood doublers. Use a heavy weight and slow setting glue like epoxy. If water based glue is used, warping may occur so allow the glue to dry under the weight. Join the sides with the front F1, laminated plywood FB motor mount and back F3 former and laminated 1/16" ply undercarriage mount cross members. Add the decking and top formers, and carefully trim to size and fit 3/32" sheeting. The cabane strut mounts are made from bass or spruce and sections of 1/8" brass tubing. A cross section is shown on the plans. CA or Epoxy the cabane struts into these mounts at assembly. CAB 3 is built into the fuselage with a full length mount and left loose inside the tubing until final assembly. Alternately, cut CAB 3 in half and insert at assembly.



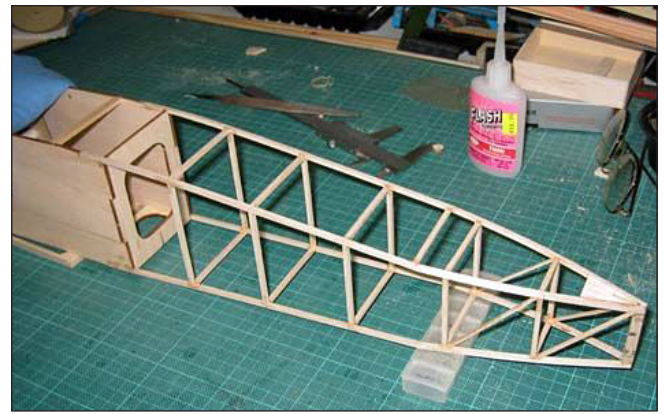
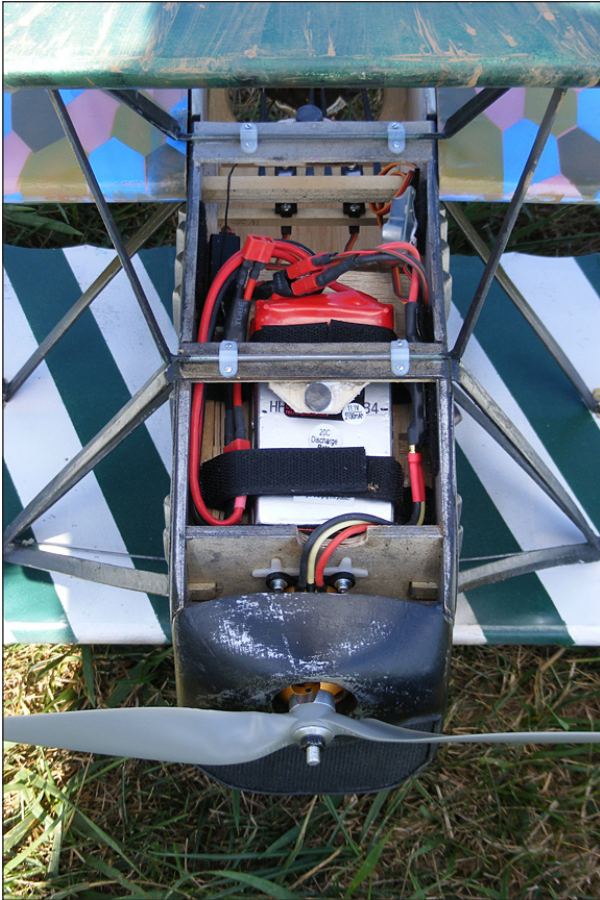
The AXI Brushless motor is mounted in reverse on the internal motor mount. Use the mounting bracket for the AXI to set approximately 2-3 degree right and down thrust angles.



BUILD THE REAR HALF AND DECKING

The rear of the fuselage is built up from 3/16" sq. sticks and 1/16"X3/16" strips. The fuselage is joined at the tail. Pin the fuse down over the top view, and block up the nose and tail to keep it from rocking. A square slid up to the outline of the fuselage on the plan is used for alignment. If the vertical leg of the square just touches the edge of the longerons, you know you're "On".

The balsa cross members were cut to length from the top view, and then glued into place. Again, the square was used to make sure everything stayed aligned. The top formers were then glued on top of the cross members.

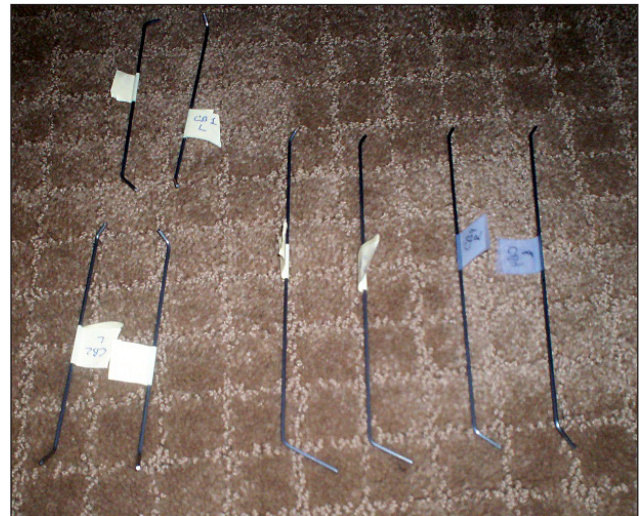


JOIN FUSELAGE SECTIONS

Join the front and rear sections over the top view plan. Add 1/16" balsa turtle deck sheeting and the 3/32" balsa cockpit floor.

CABANE STRUTS

The cabane struts are fashioned using 3/32" diameter music wire bent as shown on the plans. The top of the cabanes form a bar that is held to the wing using a strap of tin plate screwed with 4-40 bolts into blind nuts in the plywood mounts in the wing. Use a bit of Kevlar thread and CA (or wire and solder) to lash the cabanes together for extra strength. Balsa, bass or scrap plywood can be used to fair the cabanes. Add balsa fairings at assembly time.

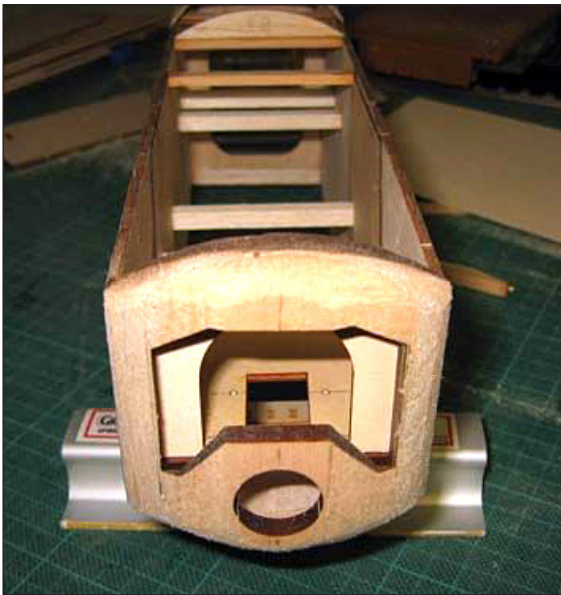


RADIATOR COWLING AND FUSELAGE UNDER NOSE

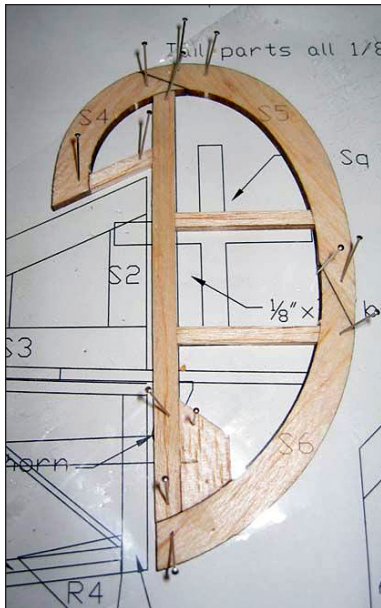
The cowling is built up construction using laminated 1/4" balsa C1 and C2. The holes are for the locating dowels that extend from the firewall former F1. (Alternatively, two of these can be enlarged and used as mounting holes for neo magnets.)

Make a cardboard template from the plan as a guide for sanding the balsa into shape.

The cowl should be sealed, sanded and primed until no wood grain is left showing. Baby (Talcum) powder in clear dope makes an excellent balsa sealer. Talcum



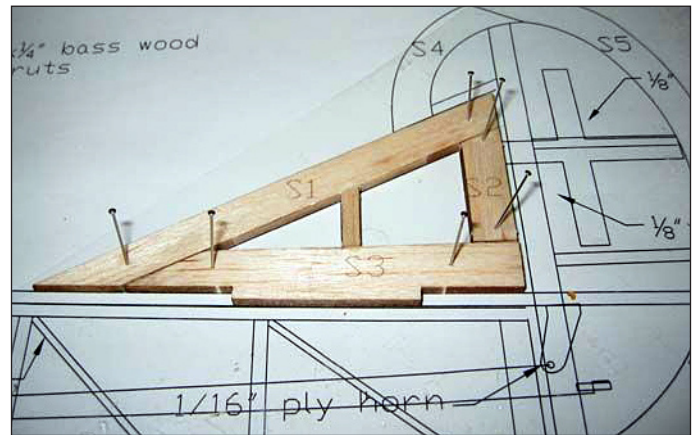
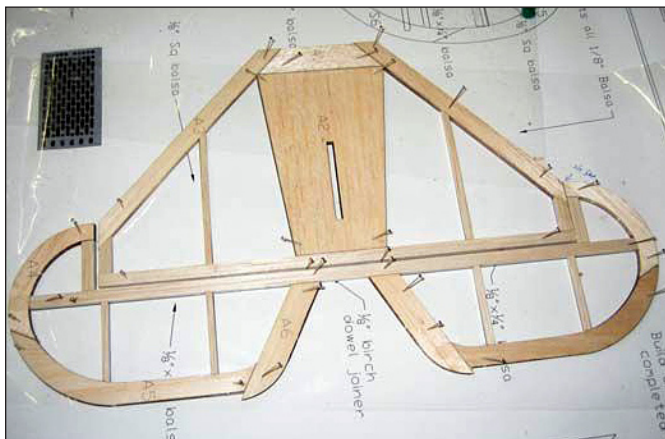
powder mixed in white glue makes excellent filler for gaps or gouges. Sand down after it dries. Use the supplied window screen material to fabricate the radiator in the opening of the cowl. Construct the under nose area of the fuselage by gluing the laminated two 1/4" balsa FB section



sanded to shape. This area may be made optionally into a hatch. Finish in a fashion similar to the radiator.

TAIL SURFACES

Lay out and glue parts of the tail surfaces on the plans. Sand the tail parts, rounding off all edges. Don't add the horns or hinge the surfaces until after covering is complete.



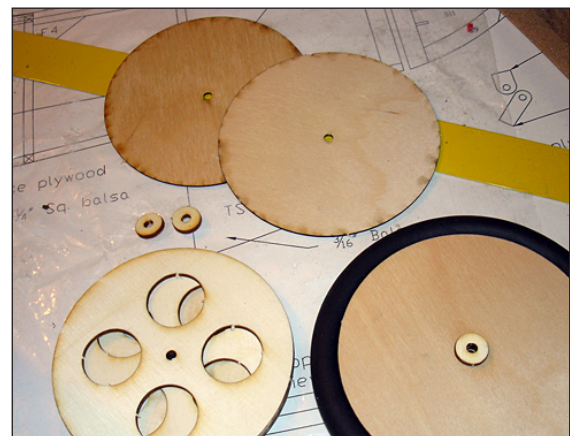
LANDING GEAR

The landing gear are fashioned from 1/8" diameter music wire. Bend as shown on the plan and lash together with copper or brass wire and solder securely. Using a torch to heat the music wire the red hot state prior to bending makes the job simpler. After bending the struts, mount them in place on the fuselage. The best jig is the actual airplane, after all. The axle is then laid on top, and everything gets bound together with soft wire before soldering.

To get a good joint, clean the wire well with emery cloth, wrap tightly with soft wire, and then apply flux with a brush. Use a Weller 40W iron, it gives plenty of heat. Touch the iron to the assembly, let it get good and hot, and let the solder flow into the joint. The final result is tough as nails. Alternately, use Kevlar thread and CA then Epoxy the joints. This is an effective alternate to avoid soldering problems. Attachment is via landing gear straps screwed with 4-40 bolts into blind nuts inside the plywood mounts.

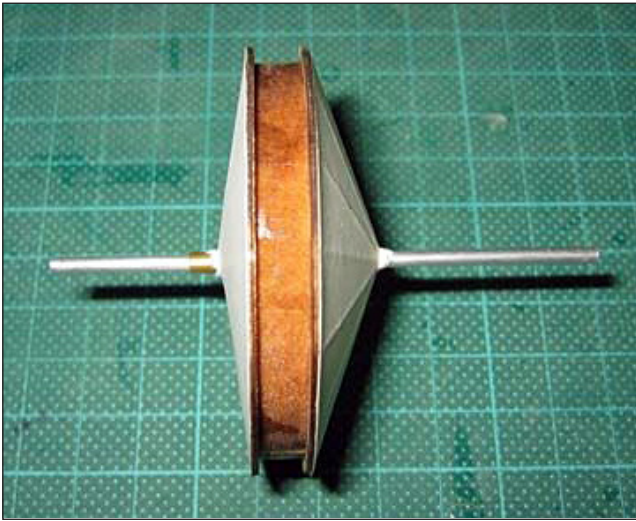
WHEELS

Gluing the ply sides on the laminated 1/8" balsa core makes the basis for the wheels. Use the brass hub for alignment. Epoxy the hubs in place and add a sufficient amount of epoxy around the base of the hub to reinforce the connection of the hub to the ply. Plywood reinforcing



hubs are provided that are to slip over the brass tubing as shown. Next, CA glue the neoprene cord together

to form a "tire". Use thin CA sparingly as the CA bonds very aggressively to the rubber. Press the CA wetted ends together for an instant bond. The best way to align the ends is to glue them while they are in place on the wheel. Then attach the tires to the wheels and CA in place. A thin bead of CA around the rim makes for a secure tire.

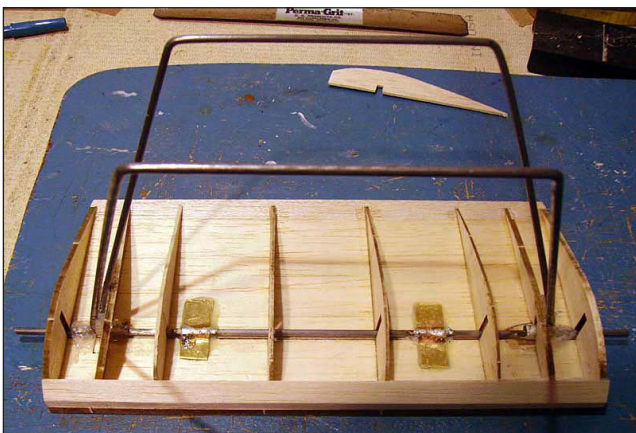


Paper cones are cut out. Use a ball point pen to score each line on the back to make an impression of "spokes". It is helpful to do this operation on a paper tablet so that the pen makes a good crease. Fold the paper along the crease lines to exaggerate the raised lines. One of the sections forming a wedge is cut out. Make cuts to the center of the circle along a pair of the spokes. Close the paper cutout to form a cone and tape the joint inside the cone.

The inside cones may now be attached to the wheels. The outside cones may be attached at this point if wheel collars are to be used. Alternatively, after installing the wheels on the landing gear, a washer may be soldered to hold the wheel in place and then the cone is attached. This method makes a very nice scale appearance.

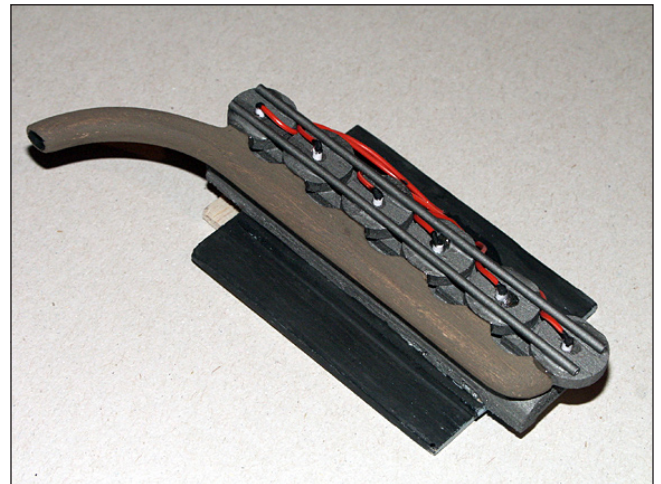
UNDERWING

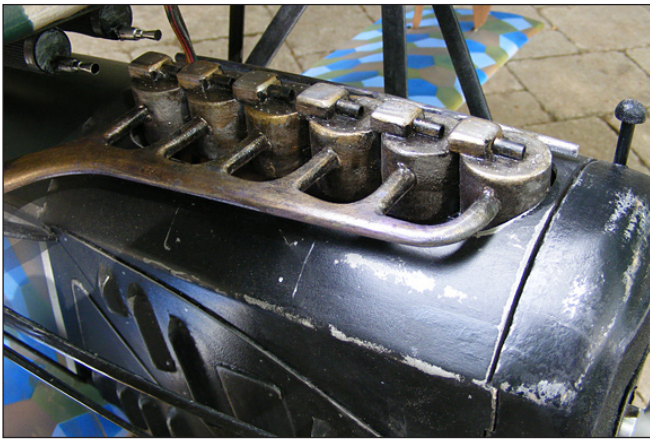
The underwing is built around the axle with a 1/4" balsa leading edge G3 and a 3/16" balsa bottom with ribs. If desired, sheet the top with 1/32" balsa instead of leaving it open to cover. Be careful to set the incidence correctly. The underwing adds some lift to the model in flight.



DUMMY MOTOR

A partial dummy motor is included in the kit. It is the part that is visible on top of the fuselage. Make up the cylinders using the laser cut parts. Laminate and sand the exhaust manifold. Add as much detail as desired to finish the motor. Note: the motor and mounting plate may be optionally fashioned as a hatch.





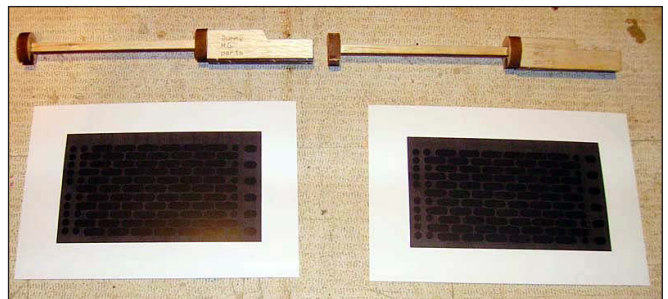
PILOT

A proper scaled pilot - interlocking laser cut parts is provided with this kit. Slide the front and side profile pieces together. Fill open quadrants with either soft balsa or blue foam. Start carving with a #11 blade. After you have a nice face and body, you can cut off the head at the neck and turn his head and also sand an angle on the neck to make him look up or down. Glue his head back on and use some body to smooth out the cut area. Some builders build up a scarf from body putty. This is also the time to cut the torso shorter to fit at the proper height in the cockpit. Sand and primer him smooth.



SPANDAU MACHINE GUNS

The kit includes balsa parts for making the twin Spandau machine guns. There is a pattern on one of the plan sheets for the cooling jacket and in the decal file on the web site. Print the patterns out on 4X6 photopaper. Cut them out and wrap around the balsa assemblies.



Here are the finished Spandaus. These were dry brushed some silver over them for a bit of weathering, just to break up the monotony of the flat black.



COVERING

Any lightweight covering material can be used. Polyspan with dope or Minwax Polycrylic makes a good choice, Litespan is also popular.



Decal outlines for this model are available on:
www.aerodromerc.com/decals in Adobe Acrobat pdf format for printing out on decal paper.
 Windsock Datafile "Fokker DVII" publication has details on placement and markings.
 Available at: www.byrdaviationbooks.com/

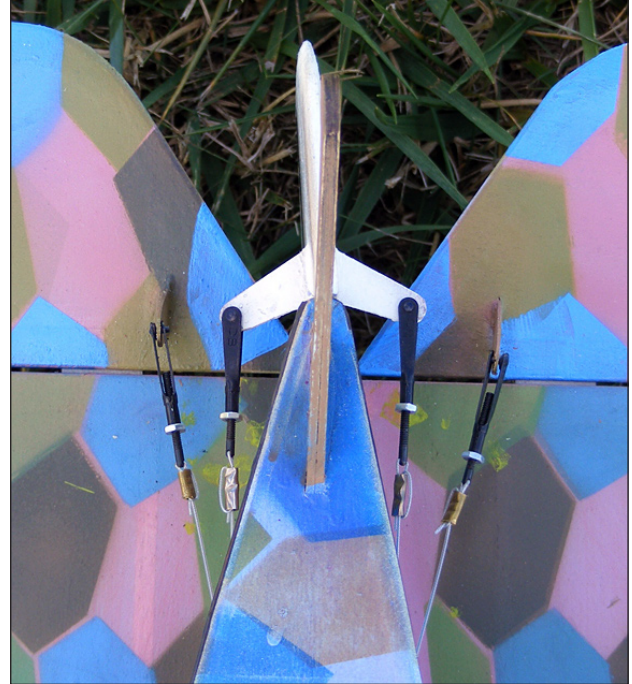
FITTING TAIL SURFACES

Attach the rudder to the vertical stabilizer using 1/8" strips of CA hinges. Similarly, attach the elevator to the horizontal

stabilizer. Glue the horizontal stab/elevator assembly onto the fuselage. Then glue the vertical stabilizer and rudder assembly into the slot in the horizontal stabilizer.

RUDDER/ELEVATOR SERVOS

A pull-pull setup for connecting these control surfaces to the servos is recommended. Connect them to the 1/16" plywood control horns fitted in the elevator and rudder.



AILERON SERVOS



Connect them to the 1/16" plywood control horns fitted in the bottom of the aileron.

FITTING THE RIGGING WIRES

Use strong thread or Kevlar fishing line or elastic beading cording to simulate rigging wires. Use small screws, fishing hook eyes, straight pinheads or small eyelets to attach the lines. These "wires" can add a degree of strength to your model.

BATTERY HATCH

Fashion a battery hatch at the bottom of the fuselage between the landing gear legs from 1/32" plywood

ASSEMBLY

The lower root rib mounting holes and nylon bolt are designed to make alignment of the top wing easier. First attach the lower wing to the fuselage. This is best done before the landing gear are permanently attached. Take the dimensions from the side view on the plan and make a foam board template to support the top wing on top of the fuselage. After attaching the lower wings, insert the sanded and painted IP struts. In a dry fit process add the top wing and then insert the cabane wires and test for fit. When satisfied epoxy the IP struts and add a drop of CA into the cabane music wire mounts to set them in place.

BALANCING THE MODEL

Balance the model at the point shown. Choosing a larger battery is preferred to adding lead.

FLYING

The model should ROG on grass, pavement or hard surfaces. The model may require coordinated turns using both ailerons and rudder control. This is due to adverse yaw. Halving the aileron down throw may reduce the yaw. This effect can be accomplished by rotating the control arm of the aileron servo forward about 20 degrees.

Let the model gain altitude slowly off the runway. Applying too much up elevator at slow speeds risks a stall. Make your turns gently as tight turns risk tip stalling in any model. Don't expect the elevator to make the model climb. Think of the elevator as a device to change the attitude of the model. The wing and airspeed ultimately make the model climb. Often down elevator applied at stalling can

avoid a major crash. The most important details for proper flight operations are:

- CG location. Tail heavy models never fly well or at all.
- Down and right thrust
- Straight and non warped wings

FLIGHT REPORT



BRIAN WILLIAMS flight report: "At last I am able to report a successful first flight of my/your Aerodrome RC 1/6 scale Fokker D V11. As usual with your models, I found the build straight-forward... but after all the work involved in painting the lozenge patterns, fitting the control systems and many hours of detailing, I was too intimidated to trust my own flying skills to its maiden flight. Therefore, my thanks to Jack Cann, [our clubs test pilot], for his patience, help and advice.

Motor used is an AXI 2826/12 with a 4 cell, 4200 li-po battery pack, a 40 amp esc, separate bec and a 13x7 prop. With the battery tucked up to the firewall, the balance point was right on the mark. No extra weight needed.

The weather was perfect...a cool Canadian evening with just a gentle breeze from the South West. Everything was checked twice. It was time to fly!

Jack gave the motor about 3/4 throttle, applied a touch of right rudder and after a 20 foot run she floated herself airborne, wings perfectly level, steady and oh... so graceful. What a thrill to see air appear under the wheels for the first time. The Wright Brothers must have experienced a somewhat similar feeling.

Compared to my 1/12 scale Pfalz, the Fokker's 1/6 scale made everything appear to be happening in slow-motion. Then, at about 4 foot altitude the motor quit...fortunately with enough field remaining to land straight ahead. No damage!

And so it was back to the pits to analyze the problem where we found it impossible to get a consistent motor run. I decided that 4 cells might be proving too much for the esc to handle, resulting in the shut down of the motor. But thankfully, by having a separate bec, the surface controls had operated without a glitch.

We were about to call it a day when I remembered that I had a 3 cell 4200 pack with me but no matching prop. So I installed the 3 cell pack combined with the original 13x7

prop. Motor cut-off problems were cured but thrust was reduced considerably. By then we had perfectly calm air and it was just too nice an evening not to enjoy just one gentle circuit of the field. Take-off was definitely longer than on the first hop,..... more thrust would have been nice, but a smooth, slow and very stable flight was the result. Some power was kept on for landing. Surprisingly not one click of trim was used ...that's a first for me! Balanced where the plans indicated, proved to be right on."

CONTACT INFORMATION

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