Vickers 151 “Jockey” 32.6”

1/12 Scale

R/C Scale Model Instructions

CONTACT INFORMATION
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Vickers 151 "Jockey"

Thank you for purchasing the VICKERS 151 "Jockey" 1/12 scale model kit for electric flight.

THE MODEL

A semi scale adaptation for the Vickers 151, this model is designed to be easy to build and exciting to fly.

SPECIAL PARTS

To attach the motor box on this model, you will need 4 extra long (1¾ inch) 4-40 screws. Most hardware stores will only have 1/1/2 inch long screws. Start your search now! This builder found the screws at McMaster-Carr Hardware Supply. This builder chooses to use 2 inch long screws.

- On the internet---www.mcmaster.com.
- Click on Fastening and Sealing.
- Click on Socket Head Cap Screws.
- Click on Head Style – Standard.
- Click on 4-40.
- Click on the length you want.

You will need 4 --- 4-40 blind nuts for these screws.

POWER SET UP

The model is designed for an AXI 2208 or 2212 outrunner brushless motor. Any equivalent motor will have to be adapted to the motor mounting plate. A 10x5 prop is recommended for the above listed motors. 2-3 Li-po or 6-10 Nimh cell batteries are recommended. Due to the small area inside the fuselage, no more than 6 Nimh will fit inside.

R/C GEAR

A four function mini receiver and four micro servos are all that are required.

MODEL SPECIFICATION

More than 260 laser cut parts

Scale	~1/12th
Channels	R/E/A/T
Wingspan	32.6 inches
Wing Area	158 sq in
Weight	20 ounces
Motor	AXI 2208/2212
Prop	10x6
Wheels	Balsa, plywood, Neoprene foam
Cowl	Built up
Spinner	N/A
Decals:	Available on the website

TAIL SURFACES

The tail surfaces are a good place to start – to get acquainted with building with laser cut parts. Find all the "S" parts in the 3/32" balsa sheet. Pushing the parts out will cause damage - cut the small bridges where the laser has skipped over with a #11 blade to release the parts from the sheet. All the "S" parts make up the vertical stabilizer and the rudder. Use the plastic bag that the kit comes in to cover the plans in each of the building steps. Slit the bag down one side and the sealed end to open it up into one large sheet. Pin the "S" parts to the plan – glue them with CA glue. Cut 1/16" x 3/32" strips from the

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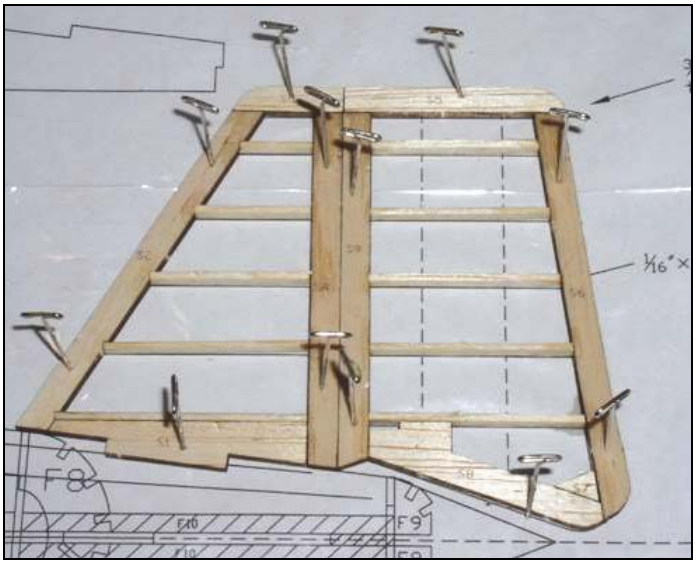
excess areas of the 3/32" balsa sheet and fill in the ribs on the vertical and rudder – CA glue.



Remove the completed parts from the plans. Carefully sand the parts and round the edges. Sanding can be left until later – this builder likes to sand as each part is finished. The control horn from the 1/16" ply sheet can be CA glued in the slot in S8 (either side) at this time or left until after the part has been covered.

A decision needs to be made as to what type of control system is used – push rod or pull-pull.

- If push rod, only one horn on either side is needed. Then the elevator horn will be on the opposite side.
- If pull-pull, the control horn will have to be on both sides.

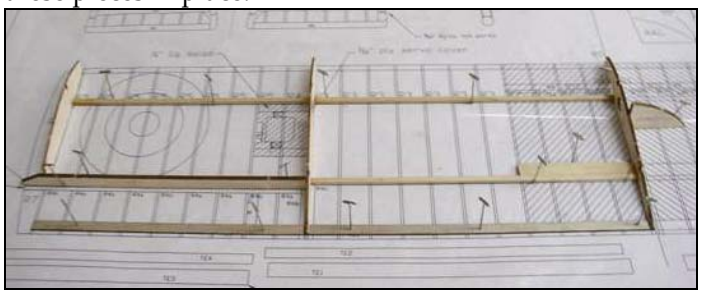
A similar procedure is use to build the horizontal stabilizer and elevators. Find all the 3/32" balsa "A" parts. Pin them to the plans and CA glue. Cut the 1/16" by 3/32" ribs and CA glue. This builder added a 3/32" aluminium tube between the elevator parts so that they would work as one unit

Now that you are an expert at building with laser cut parts, we can proceed with more complicated structures.

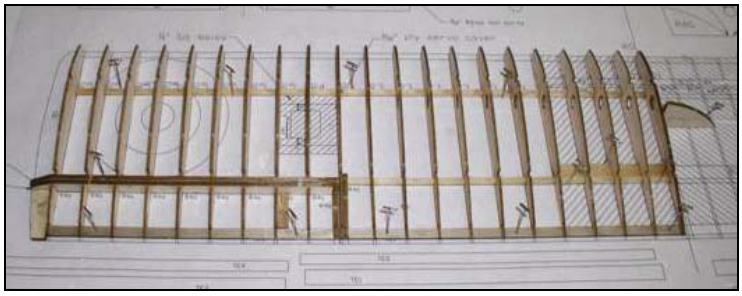
WINGS

Cut out all the "R" parts from the 1/16" and 1/8" balsa sheets. Cut out the TE parts from 1/32" plywood sheet. The 1/8" balsa spars and 3/16" leading edges are not furnished in this kit. Cut the spar and leading edge pieces to proper length. Lay out all the wing parts in there proper position to acquaint yourself with the wing assembly.

Starting with the left wing, pin down the front and rear 1/8" spar, the 1/32 ply TE2 and TE4, the 1/8" balsa aileron TE, the R8 1/8" plywood plate and the R5 wing tip rib, R3 aileron edge rib and the R1 center rib – using the RAG piece to set the rib at the correct inward angle. CA glue these pieces in place.



Glue in the rest of the ribs and aileron parts. Do not put on R6 at this time. R6 does not lay flat with the bottom of the ribs. The forward edge centers on the 3/16" leading edge. The aft edge is at the bottom of the ribs.



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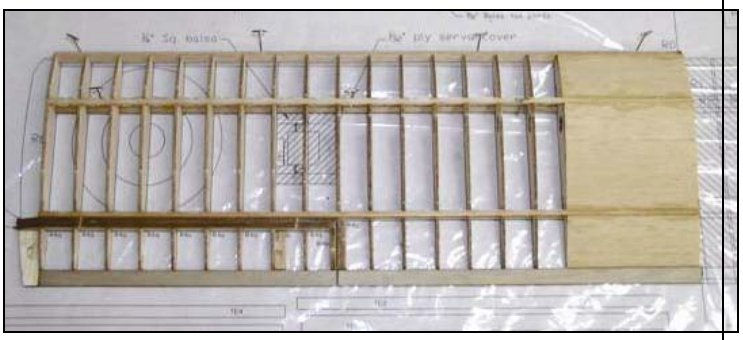
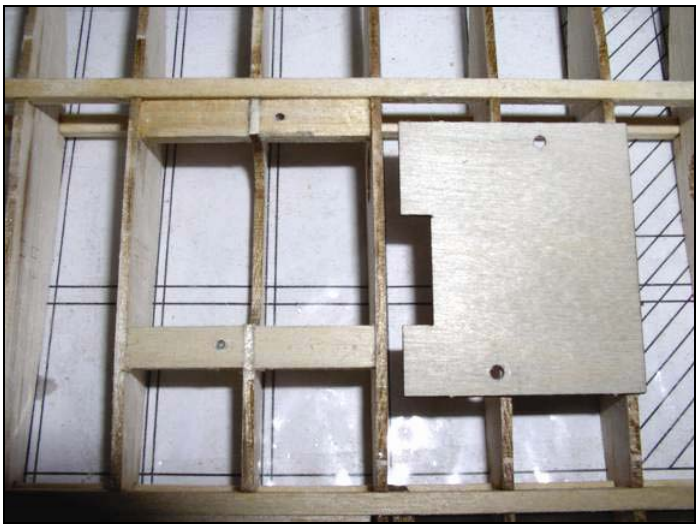
Put in the top 1/8" spars and the 3/16" leading edge. Add the 1/32" ply TE3 and TE1. CA glue everything. Add the 1/32" balsa sheeting between ribs R1 and R2. Remove from the plans, turn over and add the 1/16" ply R10 and the two R9 pieces to make the landing gear mounting blocks. Use epoxy on this assembly. Add the wing tip R6 at this time.



Very good! One wing half complete. Repeat the whole procedure for the right wing.



Find the 1/32" plywood servo plate and mount it to the servo bays in your favorite manner. This builder chose to add 1/8"x1/4" bass cross pieces with 4-40x1/8" wood screws to secure the plate. This is mainly to have something for the covering to adhere to. The servo mounting plates can be inset or set on the surface.

This builder chose to mount the servo with thick CA glue. First, the side to be mounted was covered with masking tape. The thick CA was applied to the masking tape – then to the mounting plate – in hopes that it will be easy to remove at a later time. .0039 music wire was used for the linkage with a "V" bend to adjust the length.

Time to assemble the wing. Pin down the left wing panel to the plans.

Cut a scrap of balsa sheet to 2 ½ inches x 6 inches. Pin this fixture to the dashed line on the outer panel of the right wing plan. Place the right wing panel on top of the fixture. This will be the built in dihedral.

Place the 3/32" balsa R0 rib in the center of the two wings. This rib must be perpendicular to the building board. The leading edge of both wings must match the plan. Sand where necessary to make this assembly perfect. You will

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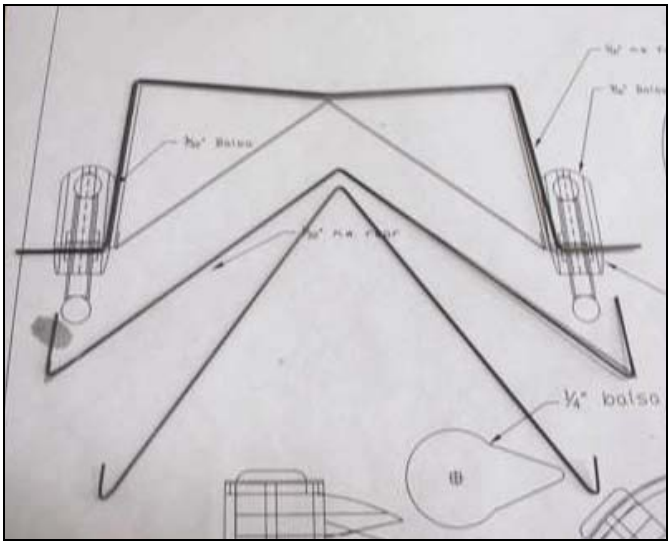
notice that R0 has a part that sticks up 1/8 inch above the top sheeting. **This VERY important as it will fit into keel part KB1 on the fuselage, which determines the incidence of the wing as well as centering the wing on the fuselage.** When you are satisfied that all is perfect, epoxy the three sections together.

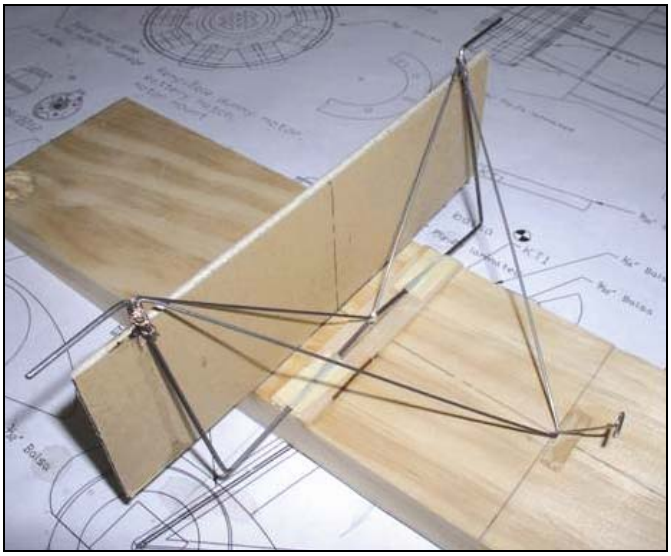
Sand to the finished shape, as shown on the plans. Bevel the TE and LE pieces of the ailerons for top hinging or round the LE for center hinging. Hinge the ailerons and rudder/elevator surfaces in your favorite manner.

LANDING GEAR

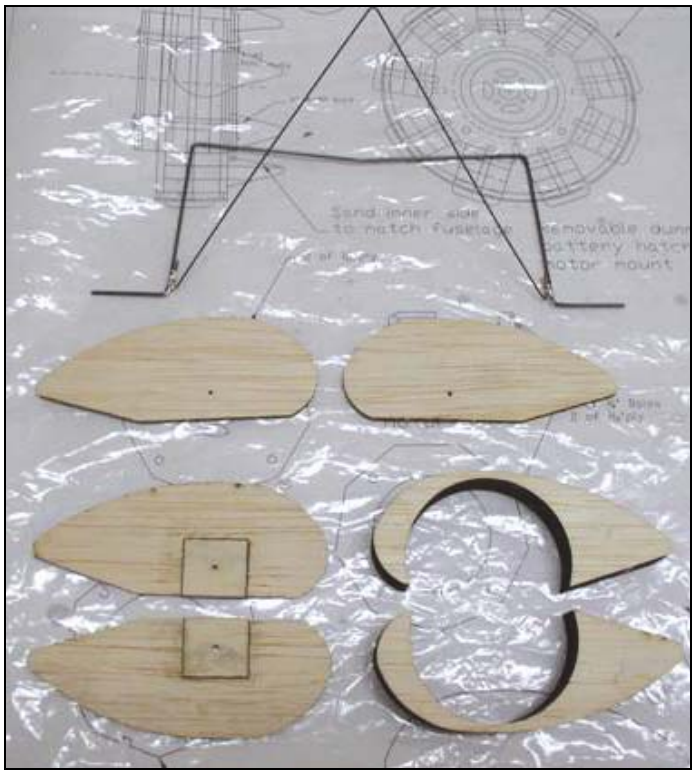
The landing gear is part of the wing assembly – so make them next.



You will need 1/16 inch and 1/32 inch music wire. Bend the three sections per the plans. The rear wire will need a lot of attempts to get the exact length. This builder chose to make a fixture to bend the wire to correct angles. Use measurements from the plans to make the fixture. Wrap the joints with copper wire and solder.



Find the balsa parts for the wheel pants and laminate them together. Be sure to make a left and right side. Insert the plywood plate on the inside cover. Leave the outside 1/8 inch balsa cover off. Then temporarily tack glue it on for sanding to shape. It will have to be removed later to mound the wheels on the axel.



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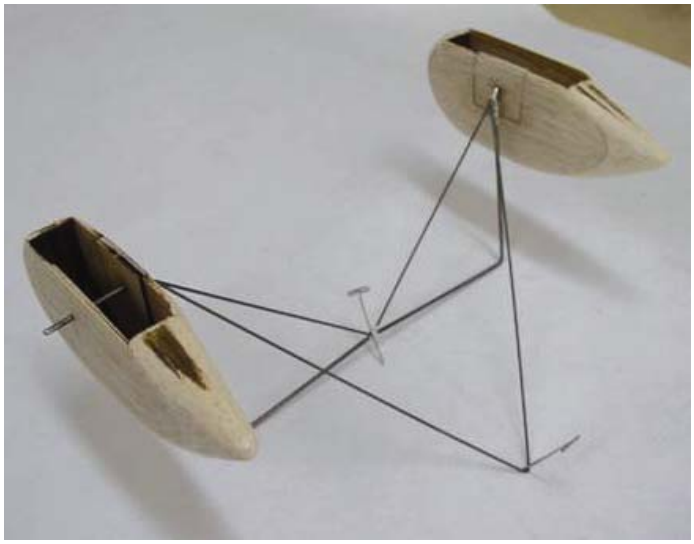
Sand the covers to shape per the plan.



WHEELS

Find the wheel parts. Use a 3/32" brass tube to center the 1/32" ply rim plates on the 1/4" balsa wheel core – laminate them together. Add the 1/16" ply collars. Massage the Neoprene foam rod into a circle, then CA glue the ends together. Take time to get it into a smooth joint. Roll the Neoprene tire onto the balsa core. CA glue the Neoprene to the 1/32" rim plates. Use the CA sparingly, as it really likes the Neoprene. Cut two small lengths of 3/32" brass tubing to insert into the center hole to act as a bearing on the 1/16" music wire axel. Paint the ply rims silver at this time as once installed into the wheel pants they will be difficult to paint.

Carefully remove the outside cover of the wheel pants and slide the wheels onto the axel. Glue the covers on permanently with the axel sticking out of the cover. Trim the axel off even with the cover. Find some scrap 1/8" balsa and make the wire strut fairing as per the plans. This builder chose to attach the landing gear to the wing with small metal clips designed for this purpose from the local hobby shop.

A small hole was drilled in R0 rib at the location where the rear strut contacts the wing and a cotter pin was put on the music wire and thru the hole in the wing to secure the rear strut.

BUILDING THE FUSELAGE

Find the "F" and "K" parts and lay them out on the plans to familiarize yourself with their positions. Note that KL is longer that KR. This builds in the side thrust for the motor. We will build the left half of the fuselage first so be sure to use KL. We need to laminate a couple of parts together before we can start assembling the fuselage. Laminate 2 1/16" plywood F1 parts together. When the glue has cured secure the 4-40 blind nuts on the rear side of both F1 parts. Laminate F5a to F5, make sure F5a is in the forward position on both F5 parts. Pin down KT1, KT2 and KB1.

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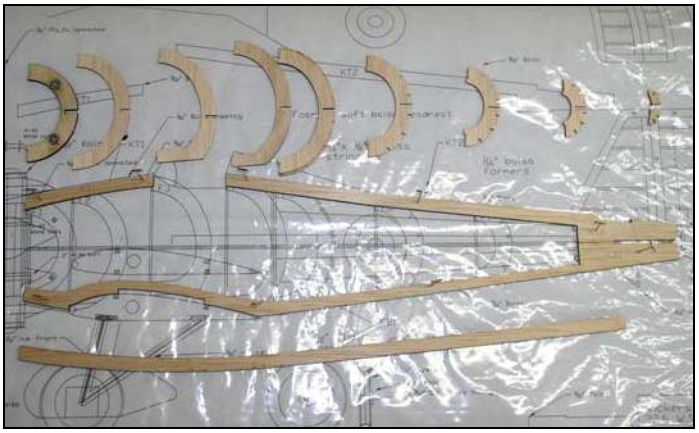
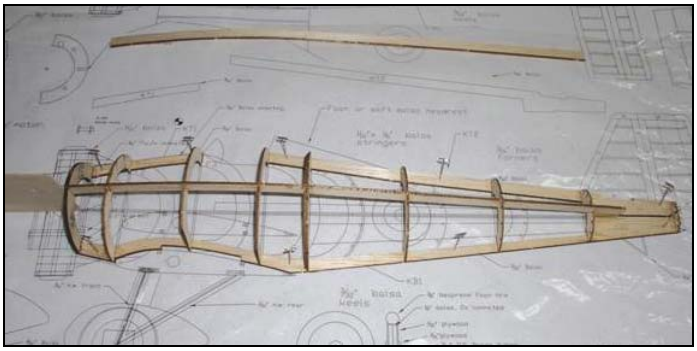
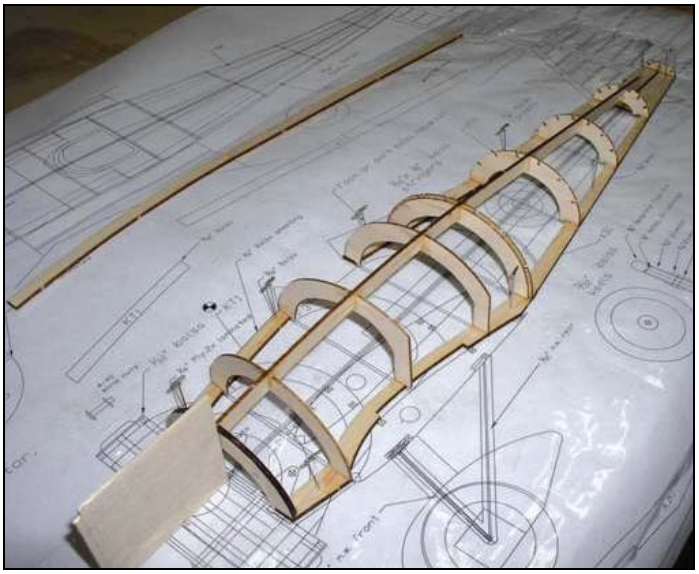


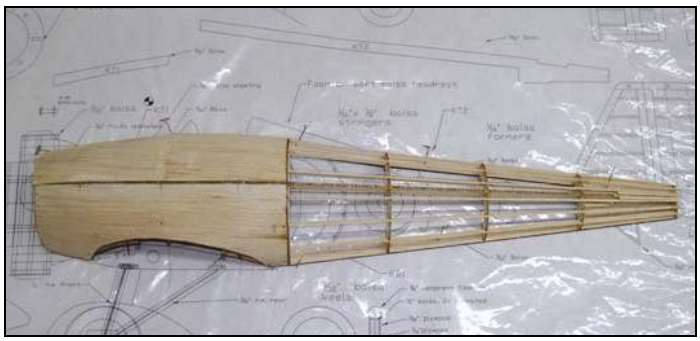
Glue in each "F" part making sure they are square with the building board. F1 does not glue square to the board. This builder made fixture to fix the correct thrust angle to F1 by copying the plans on a piece of balsa. Epoxy was used on all F1 joints. Add KL to the formers.



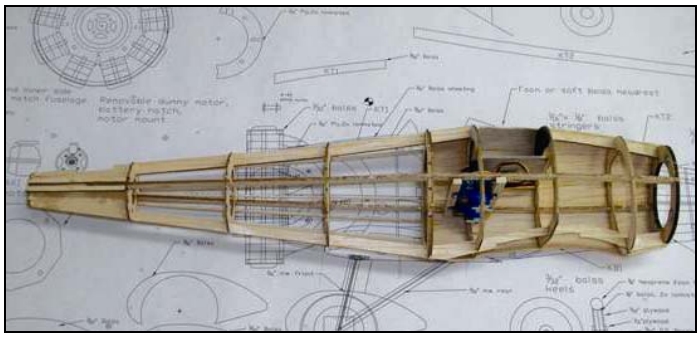


From the 1/16" laser balsa sheets, cut some 1/8" wide stringers. Glue them between F5 and F9. Note that the 1/8" balsa F10 parts are glued between F8 and F9 with a 3/32" space between them where the horizontal stabilizer will be mounted. Do not remove the fuselage half from the building board.

The forward part of the fuselage is covered with 1/16" balsa sheet. Because of the compound curves, this builder found it necessary to soak the sheeting pieces in very hot ammonia water. This builder chose to use three pieces of sheeting. 1 piece from F1 to F5a on the bottom half. 1 piece from F1 to F3 and 1 piece from F3 to F5a on top. Rough cut the wing cut out so that the sheeting will bend better.



Allow the wet sheeting to dry overnight. Unpin the fuselage half and remove it from the plans. Turn it over. Glue on the formers and KR in the same manner as the on the left half. This builder chose to add the servo mounting pieces and cockpit bottom at this time.



Add the stringers as before and do the sheeting in the same manner.

Add two scrap balsa pieces to KT2 at the aft end where the vertical stabilizer mounts to the fuselage, one on each side. Make a pattern from card stock of the cockpit, mark it on the sheeting and cut it out. Sand the fuselage.

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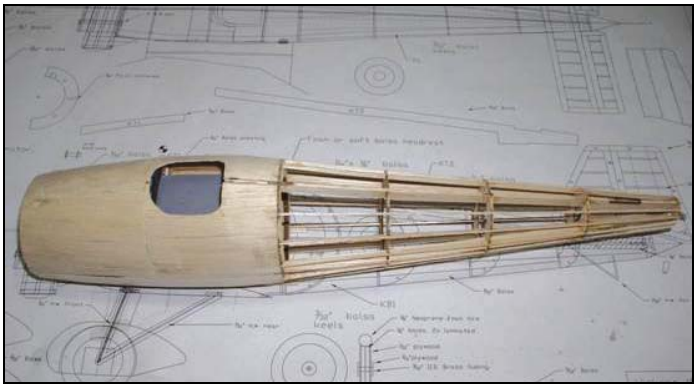


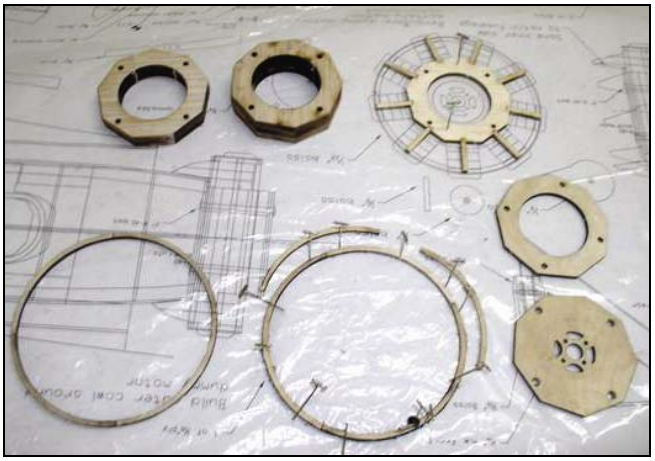
Carefully trim away the wing saddle. The 1/8" stub sticking out of the top of the center wing (R0) must fit perfectly into the notch in KB1. This is important as it sets the incidence of the wing. Also make sure that the fuselage center line is perpendicular to the wing. This builder blocked up the wing tips equally to get the fuselage square with the table.

DUMMY MOTOR UNIT

Study the side view of the motor unit on the plans. There are several parts involved in this assembly and must be in the correct sequence.

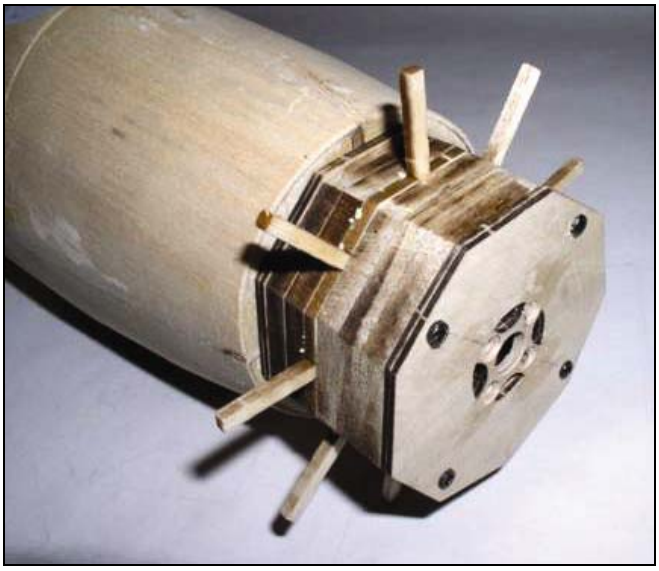
We need to first do some preliminary laminating before final assembly.

Find the 2 1/16" ply motor mounting pieces (laminate). Find the 2 1/16" ply rear mounting pieces (same as motor mount with center cut out) (laminate). Find the 5 1/4" balsa motor pieces (same as rear mounting ply). Laminate 3 pieces together. Laminate the other two together. Find the 1/8" balsa piece with the 9 notches in it. Pin it to the front view plans and glue in the 9 1/8" squares pieces from the laser sheet. Find the 16 1/16" quarter round cowl pieces. Pin 4 to the plan view and glue together. Laminate 4 more on top, but rotate the joints so that they are centered on the quarter round. Make two of these cowl rings.



Now we need those 4-40 x 1 3/4" machine screws. This builder waxed the screws so that they would not get glued in the laminating process. Trial fit the all the pieces with the 4 screws before gluing.

On the screws, slide on the motor mount ply pieces. Next slide on the 3 1/4" balsa pieces. Next slide on the 1/8" balsa piece with the sticks. Next the 2 1/4" balsa pieces. And finally the rear ply mounting piece. Match it to the side view plan to see if it is correct. Screw it to F1 on the fuselage to see that all holes match up.



Glue it all together, making sure all is square, right on the fuselage. When the glue is dry, unscrew it and it should remove easily and be able to be remounted with a perfect fit.

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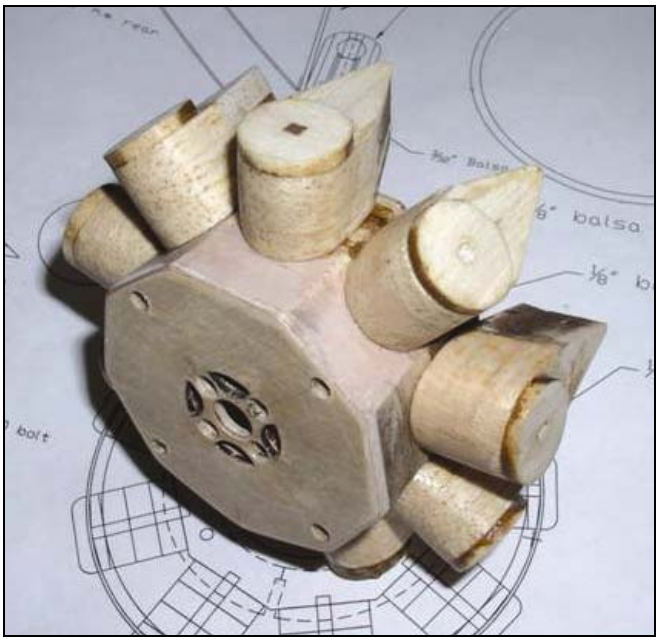
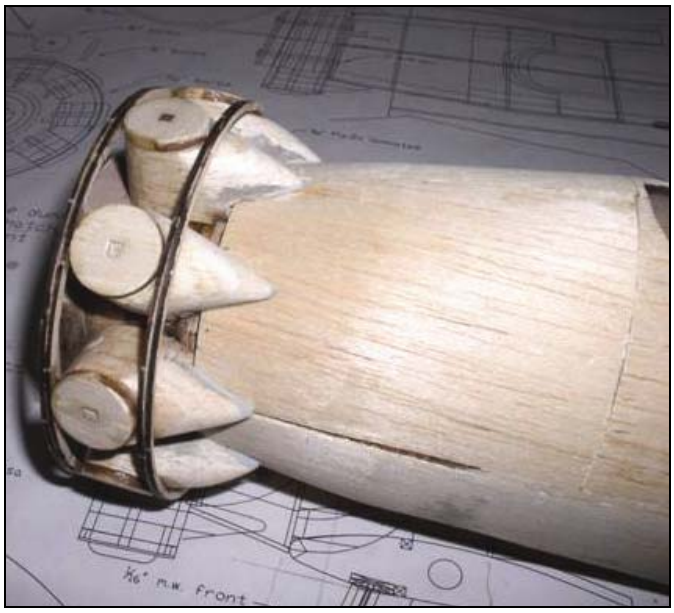
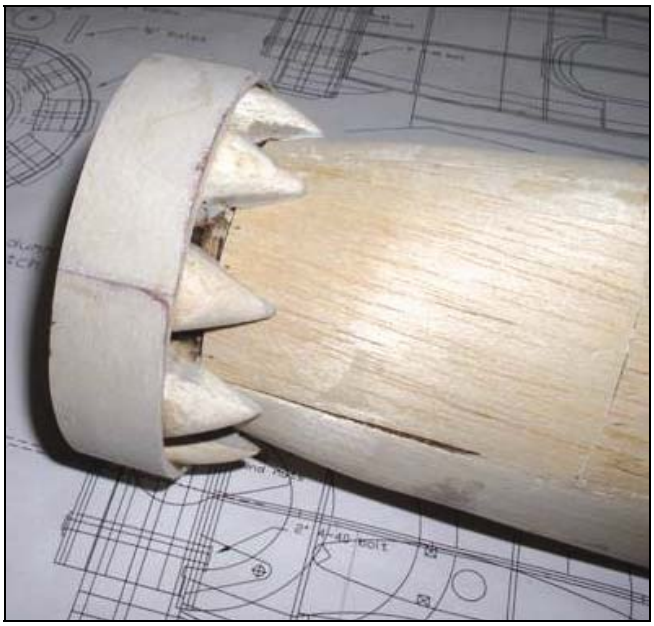
Find the 1/4" balsa motor cylinder pieces and carefully slide them onto the 9 motor cylinder centering sticks (3 on each stick). Top them off with the 1/8" balsa cylinder disk.



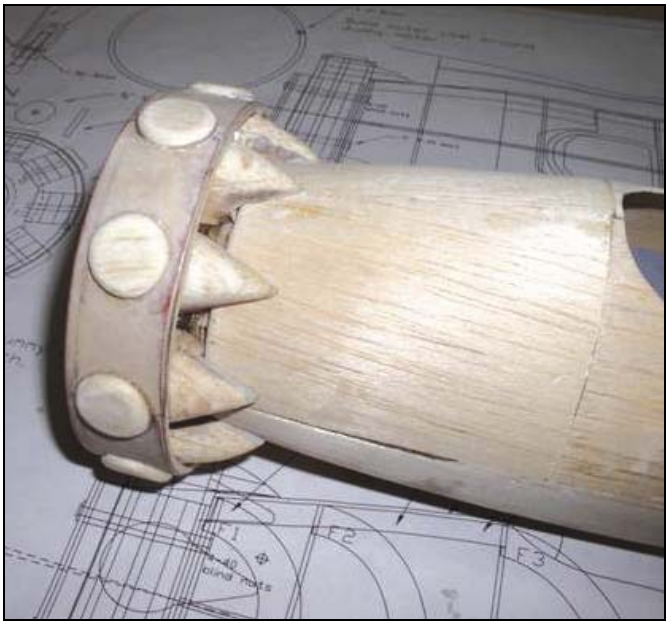
Slide the 1/16" laminate cowl ring on the front and rear of the cylinder disk. Some sanding will be necessary for a good fit. Glue at each cylinder. Sand the whole thing ROUND.
Carve and sand the bottom rear portion of the cylinder fairing to fit the fuselage and round off the top areas.



Cover the top of the cowl with 1/32" balsa. This builder used the excess 1/32" ply from the laser sheet. Make the joints fall in the middle of the cylinder disks.



Sand the whole assemble to a beautiful ring cowl.
Find the 9 cylinder tops and round the edges. Glue them exactly over each cylinder.
At this time, this builder suggests that you grind away more space on the bottom inside of the motor unit. This builder added 2 ounces of lead to that area for the final balancing. That space of needed for the weights.



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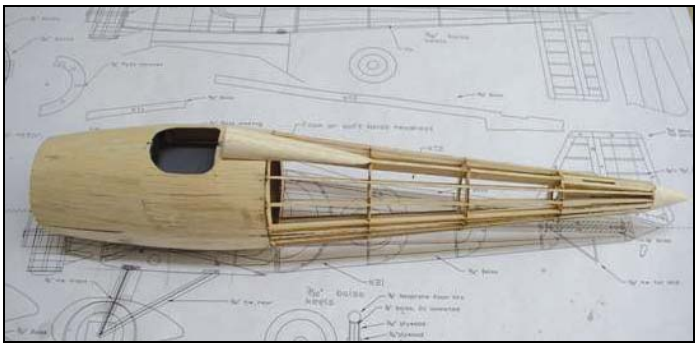
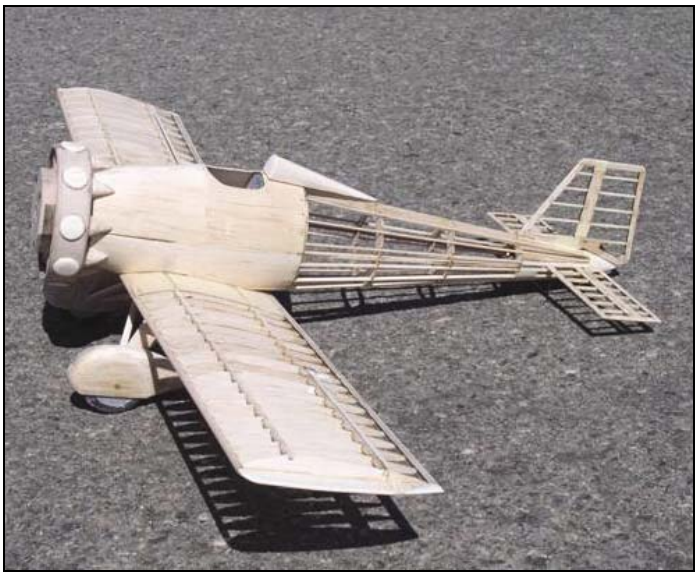
HEAD REST AND TAIL CONE
Two more items to make and we have built a model. Find some scrap 1/4" balsa and laminate together for the head rest and the tail cone. Refer to the plans for the shapes. The tail cone piece can be tack glued to the aft end and carved to shape using F9 as a reference.

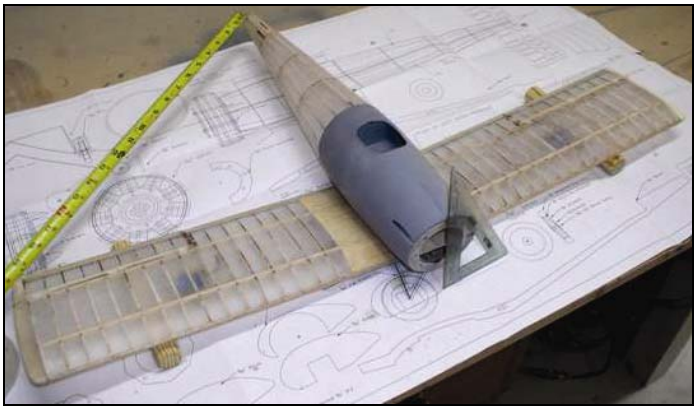
For the head rest this builder taped some sand paper over the fuselage top and carved away and sanded the bottom of the head rest until it fit perfectly on the substitute covering. If you want, leave this step until you actually put the real covering on the model.



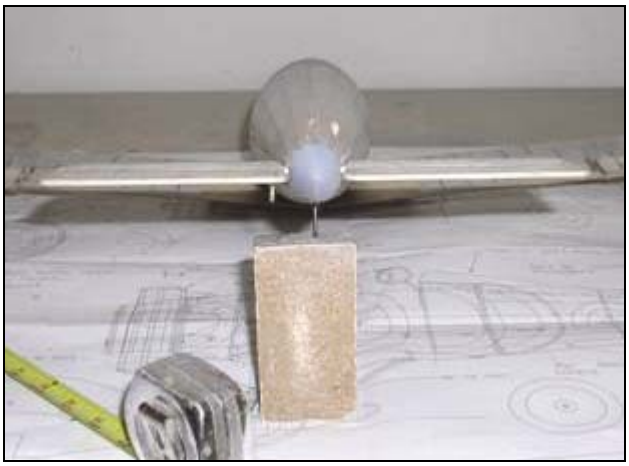
TRIAL FIT
Time to put the whole thing together and see how it looks!



FINAL ASSEMBLY
Attaching the wing. Use the triangulation method to assure that the wing is square to the fuselage. Measure from the wing tip to the tail post on each side. The measurement must be the same. Recheck that the fuselage center is square to the table. The R0 stub must be seated perfectly in the KB1 notch. Glue it together.



Mounting the Horizontal Stabilizer/Elevators. Slide the horizontal into the rear slot. Sight thru to the wing and make sure it is exactly parallel. Measure from the wing tip to tip of the horizontal to be sure the measurements are the same. When satisfied, apply glue.



Attaching the Vertical Stabilizer/Rudder. Put S1 into the slot in KT2 and make sure that the vertical is square with the horizontal. When satisfied, glue it together.

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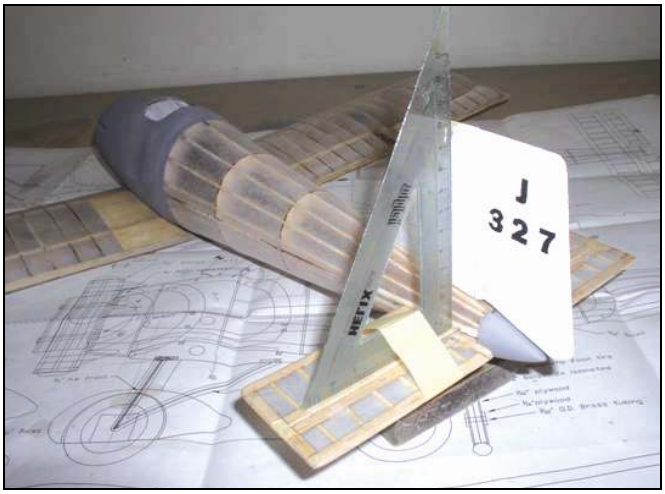

COVERING

Cover the model with your favorite product. This builder chose to use Polyspan with MinWax Polycrylic filler.

ADDENDUM

This builder chose to build the model with a removable wing. The inside fuselage area is very small. Mounting the radio system was much easier with the wing off. The battery is still removed from the front with the motor unit off.

FLIGHT REPORT

The Vickers finally got into the air this morning and back on the ground safely. I must admit my heart rate was very high for this test flight. I've test flown many models in the past without any worry, but this one had me going. I must be getting old and have fallen in love with this little beauty. Weight as flown is 23.6 ounces. I added 2 ounces of lead as far forward under the motor and have the 3s 1250mAh lipo right up against the motor (no interference, of course). The balance point is right on the forward spar. Elevator with 3/8 inch throw is VERY SENSITIVE (didn't try high rate)---I guess I need more weight in the nose---except that with no throttle the nose drops very rapidly. By the way, not too much change in attitude from high throttle to low throttle. Speaking of throttle---power is AXI 2212-26 with 10x5 APC prop----WAY TO MUCH MOTOR. As soon as it jumped off the ground I went down to approx. half throttle. Didn't have the courage to try to fly at full throttle on this flight. The stall is not to bad, the nose drops and the left wing dips a little---all come back up with added throttle. Rudder with 1 inch throw both ways is WAY TO MUCH, full left rudder made the left wing drop, nose down as if going into a spin---scared me---with a little rudder I got some turns (both directions), I think this could be a rudder only model. I was afraid to use the rudder on landing, until I get used to the model. Landing---was a pleasure, I knew because of the heavy wing loading I would have to maintain some speed, which I did, maybe 1/4 throttle, enough to have a reasonable sink rate, I flew it down to about 6 inches than cut the throttle and it plopped down on all three points and skidded for about 4 feet to a stop (on dirt baseball diamond). I checked my underwear for any unwanted substance. All is well. I was so excited I forgot to turn off the battery in the airplane until I put it back on my work bench. As you can see by the way I'm blabbering on here---that I'm pretty happy with myself and this model. -----Bert

CONTACT INFORMATION

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