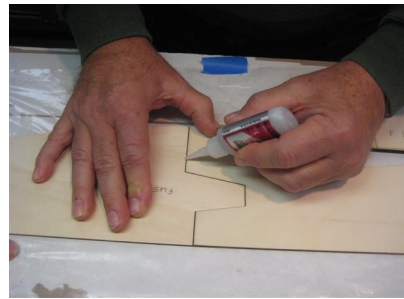
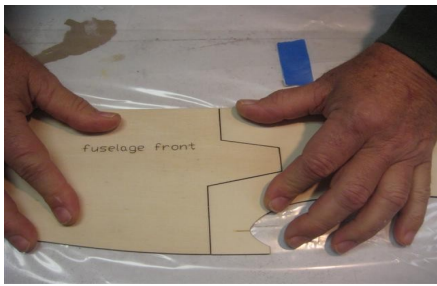
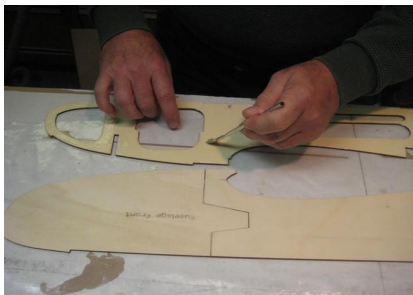


FUSELAGE CONSTRUCTION

- *Note: prior to building and gluing on the work surface use protective covering on your building surface. (wax paper or clear wrap)*
- *Fit the laser cut "Fuselage Front" and "Fuselage Rear" parts together, while laying the parts flat on the work surface. Make sure you line up these parts with the laser scribed lines and /or the part identification on the same side forming a right and left hand assembly. Now glue them together.*



- *Lay the "Fuselage Front" and "Fuselage Rear" glued assembly flat on the work surface, lightly sand the glue joint and line up the "Fuselage Doubler" to the "Fuselage Front" and "Fuselage Rear" glued assembly using the matching edge areas and the scribed outlines as locating guides. Pin in place (the pins serve as locating dowels), then separate and glue the parts together, again forming a right and left hand assembly.*

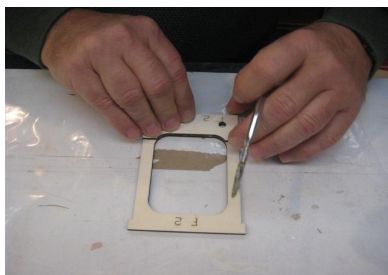


- *Prepare the firewall former "F1" by beveling the lower edge from the laser cut rear edge to the laser scribed line on the front surface of the former.*
- *Line up the motor mount (of your choice) per the manufacturer's instructions using the laser scribed center lines on the front face of the firewall. Temporarily mount the motor mount and engine/motor to the firewall. You may at this time drill the holes for the fuel lines and throttle push rods per your engine requirements or any hole needed to install an electric motor.*

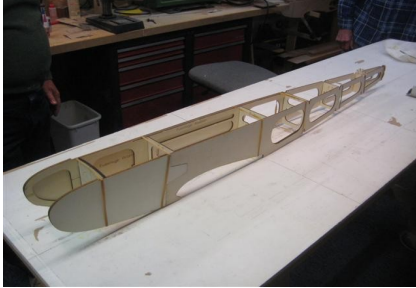
Note: the fire wall will have a built in 2 degree down thrust when installed in it's place in the fuselage.



- *Prepare the former "F2" by gluing the "F2 Bottom" former to the front face of "F2" former making sure the 1/4" dia. holes line up.*



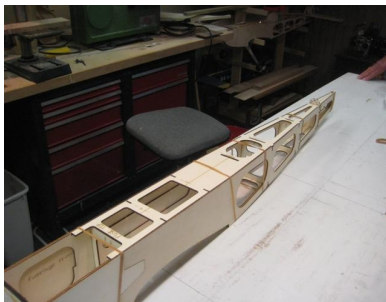
- *Assemble all the fuselage formers ("F1" through "F6") between the fuselage side assemblies and hold the total assembly together with rubber bands at each former location.*



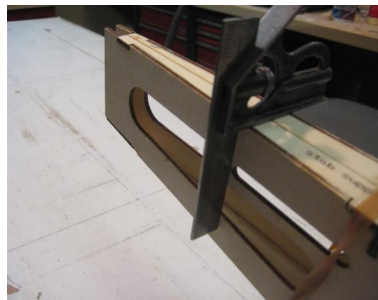
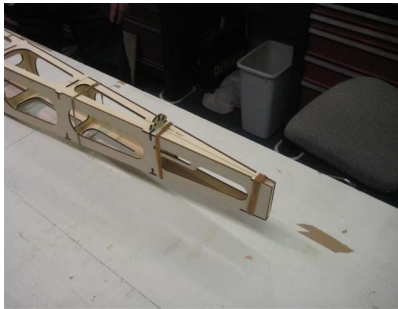
- *Once the total assembly is held in place with the rubber bands, slide the laser cut lite ply "Fuselage Bottom Rear" under the rubber bands on the bottom of the fuselage assembly. It should self locate in position when the tabs drop in the slots of the fuselage sides.*



- *Install the laser cut lite ply "Fuselage Top" by sliding it under the rubber bands and on top of the fuselage assembly. It should self locate in position when the tabs drop in the slots of the fuselage sides.*



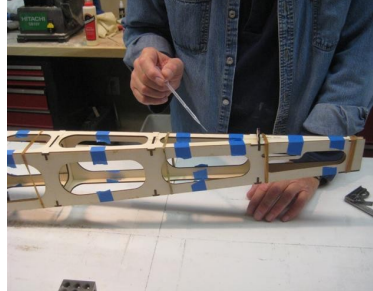
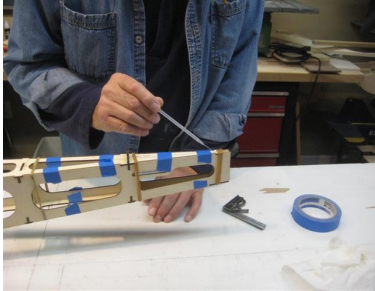
- *Install the laser cut lite ply "Stab support" between the fuselage assembly with the front edge butting to the rear of the "F6" former. It should self locate in position when the tabs drop in the slots of the fuselage sides. Hold the fuselage assembly and the stab support in position with masking tape.*
- *While the full fuselage assembly is still held together with the rubber bands and tape, check for alignment. The tabs and slots in the parts should align the assembly and cancel out any warped individual parts. If there is any twist, now is the time to adjust it by twisting or pushing the assembly into alignment. Make sure the rear of the fuselage sides are square to the fuselage top, this will affect the alignment of the vertical fin and horizontal stab.*



- *Install the laser cut lite ply "Fuel Tank Tray" to help the alignment of the forward section of the fuselage. Do not glue it in place at this time.*



- *Now is the time to glue the parts together in the fuselage assembly (except for the fuel tank tray). Start by spot gluing the corners of the assembled parts, working from the inside of the fuselage while constantly checking the alignment of the assembly.*



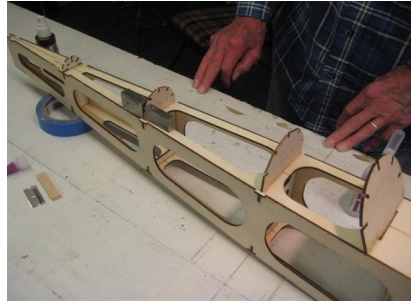
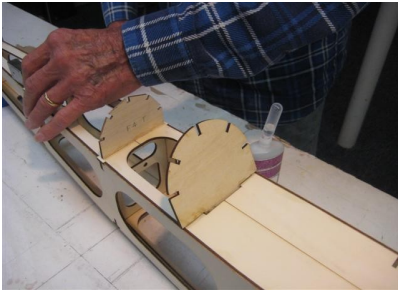
- *When the spot gluing is complete and dry, apply the glue to all the joints of all the parts in the assembly (except for the fuel tank tray). After the glue is completely dry, remove the rubber bands and any tape used to hold the assembly temporary together.*



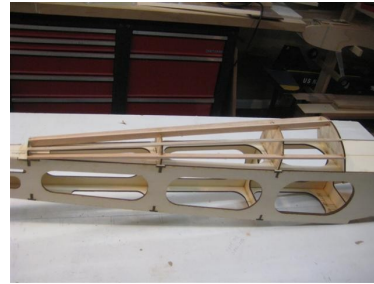
- *Position the laser cut lite ply "Headrest" former" in the slot on the top of the fuselage (approx. 15" rear of the front edge of the top), and use the laser cut lite ply "headrest set gage" to position it in the correct angle. Glue the former in place.*



- *Position and glue the laser cut 3/32" balsa top formers "F4 " and F5" in their correct slots in the fuselage top.*

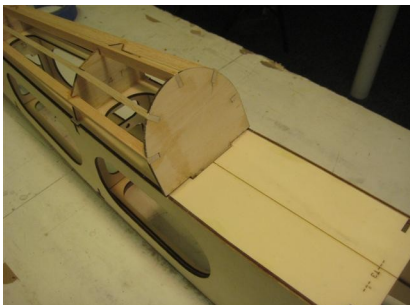


- *Glue 5 pieces 1/8" x 3/8" balsa fuselage stringers in the slots of the fuselage top formers and the headrest.*

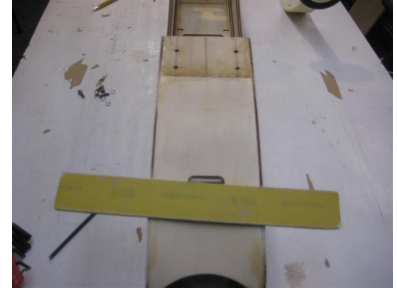


- *After the glue dries, trim off the ends of the stringers flush to the front face of the "Headrest" and to the rear face of "F6". Sand the top edges of the bottom stringers flush with the fuselage sides, but do not sand the top edges of the rest of the stringers. The top edge of the stringers should be higher than the edge of formers F4 T and F5 T.*

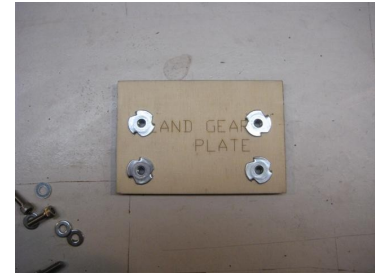
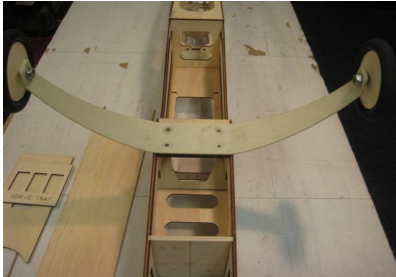
A slight fairing in of the top edge of the stringers is needed, so they will be flush to the edge of the Headrest and to former 6.



- *Steam, bend, Position and glue the laser cut lite ply "Fuselage Bottom Front" to the forward portion of the fuselage between the fuselage side and keyed in place by the notches in the fuselage doubler.*



- *Prepare the laser cut $\frac{1}{4}$ " plywood "landing Gear Plate" by drilling the holes and installing blind nuts per the direction of the manufacturer of the landing gear of your choice. *



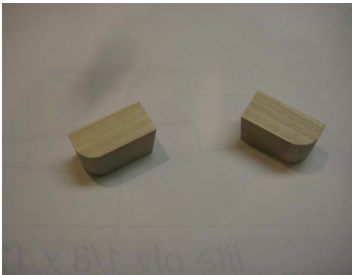
- *Position and glue the "Landing Gear Plate" to the fuselage sides, doubler, and the bottom of "F2" and "F2 Bottom". Cut two 1-15/16" lengths of 3/4" balsa triangle stock and bevel the rear edge to match the "F2" former. Clear any areas that may interfere with any "T" nuts. Glue in place. Use Plenty of epoxy in the joints. This plate takes the stress of all the landings.*



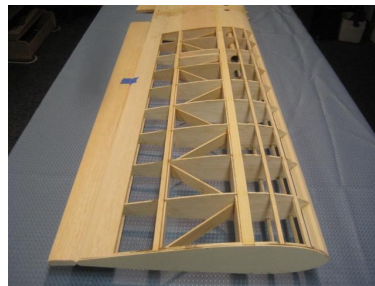
- *Cut two 4-1/2" length of 3/4" triangle stock and bevel the bottom edge to match the fuselage bottom. Glue in place to reinforce the back side of the firewall to the fuselage side. Clear any areas that may interfere with any "T" nuts. Use Plenty of epoxy in the joints. Add an additional epoxy fillet around the front of the fire wall and around the engine compartment. This firewall takes all the stress of the engine/ motor.*



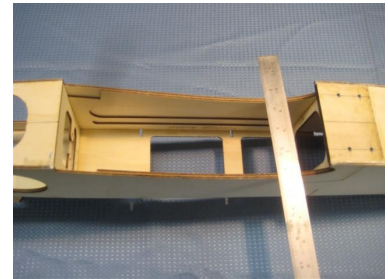
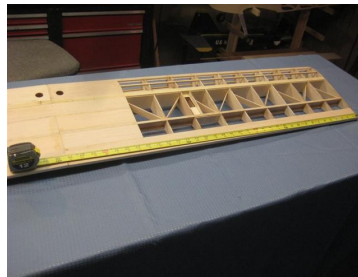
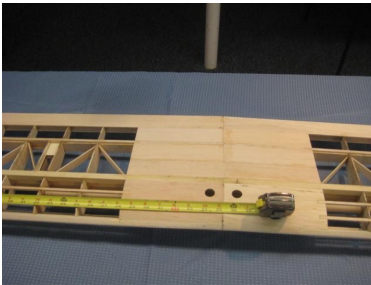
- *Cut and fit two 3/4"x3/4"x1 1/2" basswood wing hold down blocks to size. The blocks should key in place in the laser cut notches in the fuselage doubler. Glue the blocks in place.*
- *Cut two 1-3/8" lengths of 3/4" triangle stock and bevel the back edge to match the former "F3" and glue in place above the hold down blocks, the fuselage doubler and the former.*



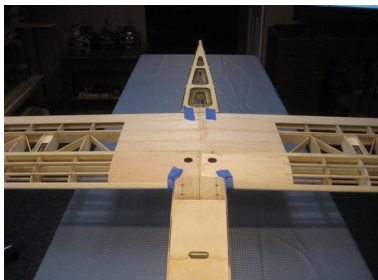
- *Note: the fully assembled main wing should be complete, less hardware and covering at this time.*



- *Carefully and accurately measure the wing span and mark the bottom of the wing at the leading and trailing edges with the center line of the span. Measure the width of the fuselage at the front and rear of the wing saddle and mark the center line on the front and rear bottom surface of the fuselage at the wing saddle.*



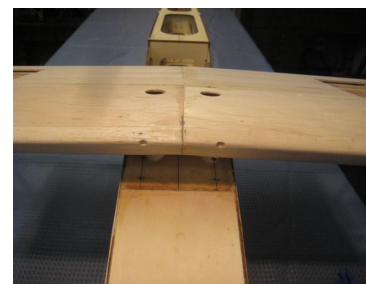
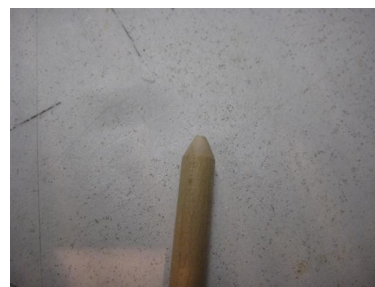
- *Position the main wing in place on the fuselage wing saddle by lining up the marked center lines on the wing and on the fuselage and check for fit. If the wing doesn't fit properly in the saddle, now is the time to adjust the fit by lightly sanding any bumps and/or filling any gaps to match the wing surface. Be careful not to change the wing incidence.*



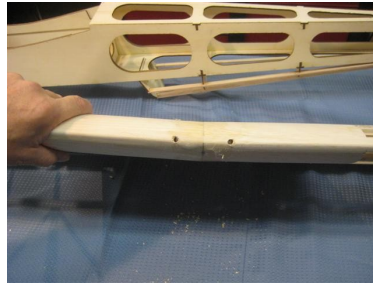
- *Temporarily tape the wing to the fuselage and measure the distance from each wing tip to the center of the tail end of the fuselage. The measurement should be the same on each side. If not, keep the center line of the leading edge in place and rotate the wing slightly till each side measurement is the same. Remark the new rear center line on the wing. Drill four small holes (the diameter of your 'T' pins) through the wing and in line into the fuselage saddle. Insert the 'T' pins as dowels to firmly hold the wing in position.*



- *Taper one end of a 1/4" diameter wood dowel to a sharp point. Make sure the point is concentric to the center line of the dowel. Insert the sharpened end through the front side of the two 1/4" diameter holes in the "F2" former. Firmly press the sharpened end of the dowel into the leading edge of the wing, thus marking the location of the holes to be drilled in the wing, in line with the dowel holes in the "F2" former.*



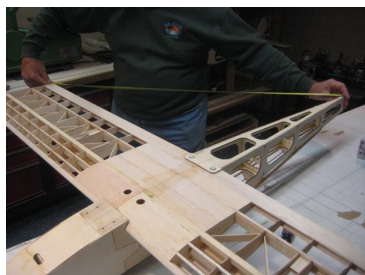
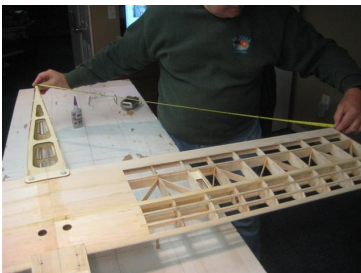
- *Remove the wing from the fuselage and drill 1/8" diameter holes in each of the two marked hole locations in and through the leading edge of the wing. Take care to keep the two holes in alignment with the center line of the wing and the wing cord. Enlarge the two 1/8" diameter holes in the leading edge to 1/4" diameter. The 1/4" diameter hole should be a slip fit for the wood dowels.*



- *Insert two wood dowels into the 1/4" holes in the leading edge of the wing leaving approx. 3/8" of the dowel exposed. The exposed end of the wood dowels should have a slight taper to aid in the installation and removal of the wing.*



- *Trial fit the wing in place making sure the dowels and the holes line up along with the surface of the wing fitting the saddle of the fuselage.*
- *Re-install the wing to double check the wing alignment.*



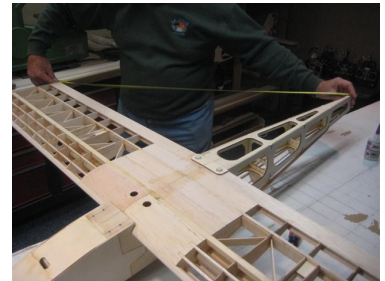
- *Drill two 13/64" diameter holes on center through the laser cut rear wing hold down plate, through the wing and through the hardwood blocks in the fuselage. Keep the drill perpendicular to the bottom surface of the wing.*



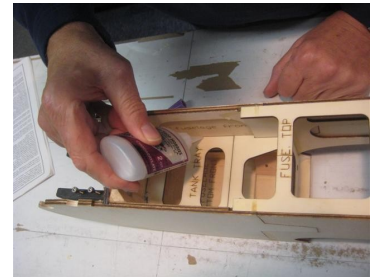
- *Remove the wing and apply thin CA glue into the 13/64" holes. When the glue is dry, tap the holes with a 1/4-20 tap. After tapping the holes re-apply thin CA and let it dry. Clean out the threads in the holes by re-tapping the holes.*



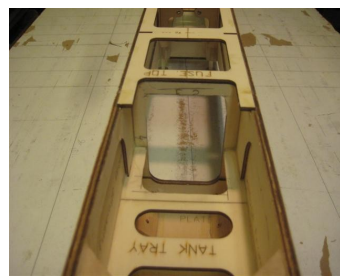
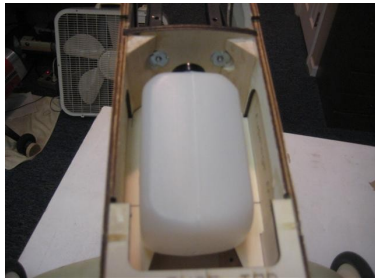
- *Re-install the wing and fasten the wing to the fuselage with 1/4"-20 nylons bolts, and double check the wing alignment.*



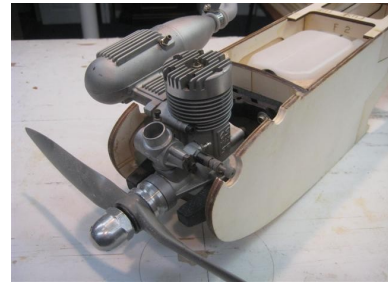
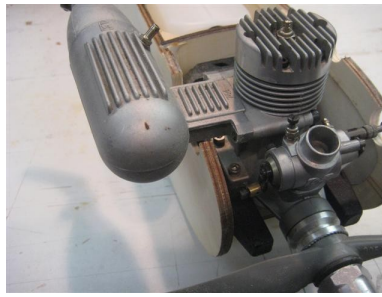
- *Remove the wing and install the tank tray. Make sure it's seated down on the fuselage doubler and against the backside of the firewall. Clear away any interferences.*



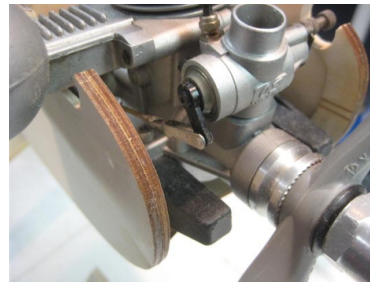
- *Now is the time to prep and install the fuel tank or make provisions for an electric motor. Trial fit the fuel tank of your choice, so it can be installed and removed through the rear side of the opening in former F2. Carefully clear away material from former F2 and or the fuel tank tray to allow for the fuel tank positioning. Also, add any blocking or foam blocks needed while this area is still accessible. Drill any holes needed for fuel lines or electric wiring as required. When satisfied with the clearances, glue the fuel tank tray in place.*



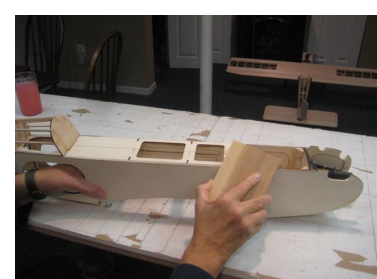
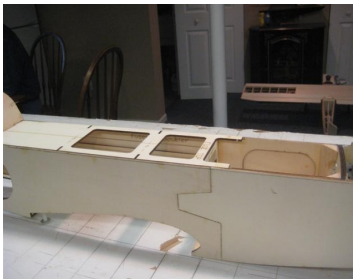
- *Temporarily install the motor mount to the firewall and temporarily install the engine to the mount. Make the necessary clearances to the fuselage sides for the muffler, needle valve, etc.*



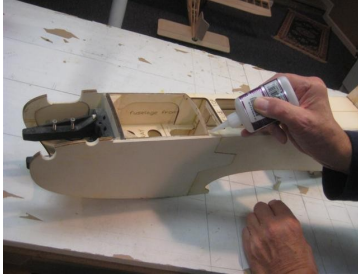
- *Remove the fuel tank, if installed, and install the nylon housing for the throttle push rod, check for any binding.*



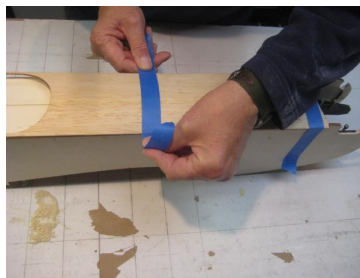
- *Draw a line on the fuselage sides 1/16" down from the top. This creates a chamfer or bevel angle. Sand the fuselage sides to that line which will conform to the extended top edge of the cowl formers F1, F2 and F3. Start the bevel from the notch in front of the firewall and ending at the headrest.*



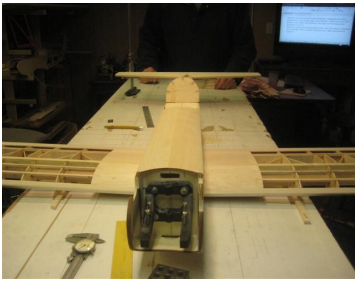
- *Glue the laser cut balsa wood top deck formers to the fuselage top. "T1" is glued to the front edge of the fuselage top, "T2", and "T3" are glued in their labeled slots on the fuselage top.*



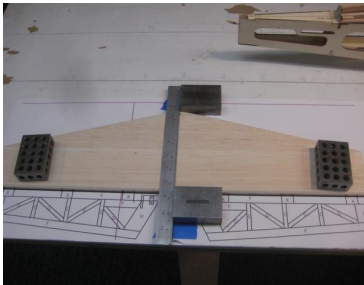
- *After wetting the top surface of the laser cut balsa "top deck" with water, carefully locate it using the forward notch in the fuselage sides, and warp the part to fit the formers, taping it in position. Apply medium CA to the top deck from the inside of the fuselage. Remove the tape when the glue is dry and sand the excess material of the top deck edges flush with the fuselage sides.*



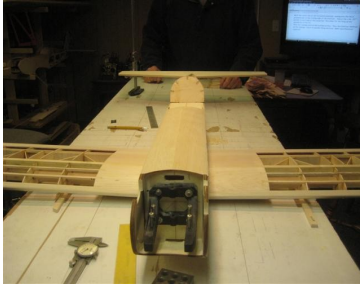
- *Remount the main wing to prepare for the tail feather alignment and installation.*



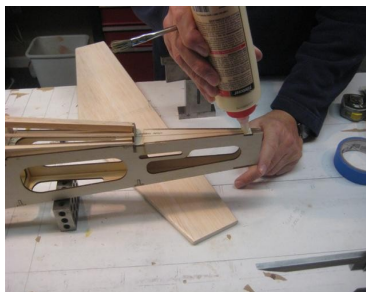
- *Mark the center line on the top surface of the "horizontal stabilizer", making sure the line is perpendicular to the trailing edge of the stabilizer. Now scribe a line .200 " parallel to each side of the center line. This will visually aid in the positioning the fin during it's installation.*



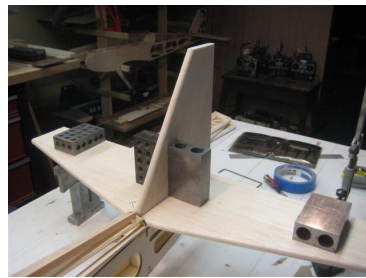
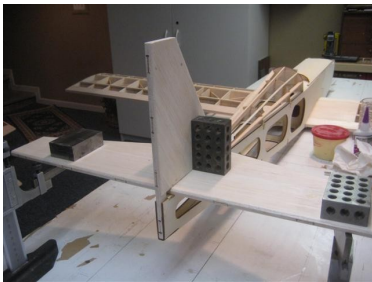
- *Place the fuselage level on the building surface by leveling the flat surface of the "fuselage top" parallel with the table. Place two equally high spacers under the same rib location on the right and left side of the main wing, thus balancing the main wing to the table. Place the "horizontal stabilizer" centered on the "stab support" of the fuselage. Make sure the bottom of the horizontal stabilizer is level and in the same plane as the top of the fuselage. Add equally high support blocking under the tips of the horizontal stabilizer to maintain the level position. Make adjustments as required.*



- *Measure the distance from the wing trailing edge tip to the horizontal stabilizer trailing edge tip making sure both side are of equal distance. When satisfied with alignment, pin the horizontal stabilizer to the stab support of the fuselage. These pins will also act as locating dowels. Now remove the horizontal stabilizer and apply glue to the top surface of the stab support. Replace the horizontal stabilizer using the pins as locators with the ends of the horizontal stabilizer supported by the equally high support blocking and place weights on the top surface of the stabilizer. Re-check it's location and let the glue dry.*



- *Place the "vertical fin" onto the horizontal stabilizer between the previously marked lines on the top surface of the horizontal stabilizer, inserting the long fin trailing edge between the rear of the fuselage sides. When satisfied with the fit and alignment remove, then apply glue and position it in place. Make sure the fin is perpendicular to the stabilizer by holding it in place with square blocks or triangles.*



- *Note: The "rudder" and the "elevator" should be installed after they and the fuselage are final covered. For clarity, the following photos were taken before the final covering was applied.*
- *The "rudder" is assembled and hinged to the vertical fin after covering. The tail wheel assembly is fastened to the bottom of the fuselage and connected to the rudder per the manufacturer's direction.*



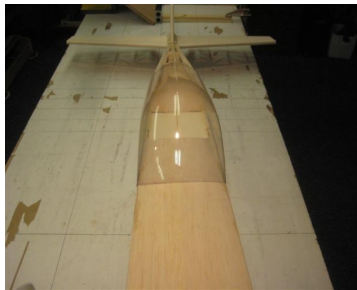
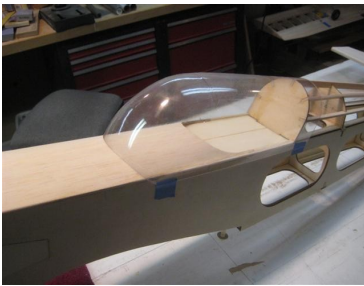
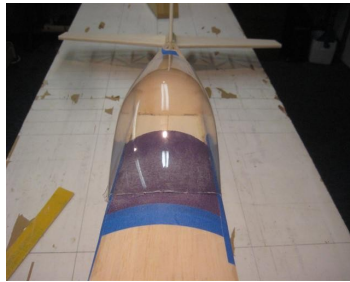
- *The "connecting rod" between the elevator halves should be placed through the opening between the horizontal stabilizer and the trailing edge of the fin above the fuselage stab support. Locally clear the covering and glue the ends of the rod into the holes in the elevators. This is done when assembling and installing the hinges that hold the elevator to the horizontal stabilizer.*



- *Cut to size and glue in place two pieces of 3/8" x 3/8" balsa triangle stock to reinforce the joint between the vertical fin and the horizontal stabilizer (one on each side of the vertical fin).*

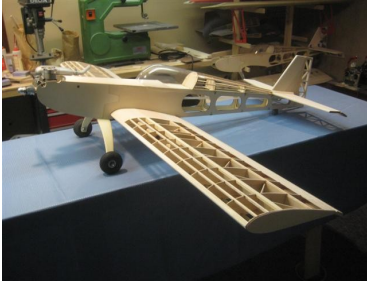


- *Trim the vac formed canopy to the trim lines registered in the part and fit it to the fuselage. Fasten it to the fuselage with small wood screws or glue it in place after the fuselage is final covered.*



The basic plane construction is complete at this point.





- *The installation of the servo tray and servos, the push rods, control horns, the battery and receiver, the final sanding, covering, trim, paint, and hardware is left to the discretion of the builder.*
- *Soften all edges and a final sanding is required before final covering.*
- *Note: It is very important that the CG of the plane is balanced before the first flight. A starting balance point should be set at 25 percent of the total distance of the wing cord length including the aileron. Adjustments could later be made to suit the needs of the individual builder/flier.*
- *The recommended surface movements:*

<i>Elevator-</i>	<i>3/4" up, 3/4" down</i>
<i>Rudder-</i>	<i>1" right, 1" left</i>
<i>aileron-</i>	<i>5/8" up, 5/8" down</i>