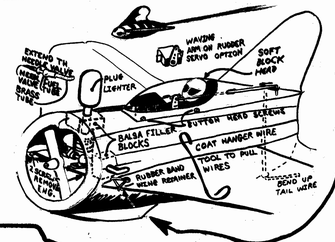
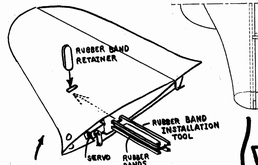
FINAL ASSEMBLY

Use coat hanger wires to pull servo wires through the fuselage. The vacuum-formed intake-lip is glued on to the nose. The receiver is mounted on the front cockpit floor using velcro. It is covered by a cardstock instrument panel shroud. You should make or buy a hood to use for a pilot! The canopy is held on with button head screws, the rudder push rod is held in place, on to the rudder horn, by the canopy. The rudder is held on by a wheel collar at the bottom of the fuselage. The elevons can be hinged with covering or CA hinges. Control throws (elevons) are 5/8" each way for elevator and 3/8" each way for aileron. For straight and level flight, you need down 1/8" up elevon. All measurement is at the trailing edge. Rudder throw is 3/4" each way. Make sure it balances to the plans.

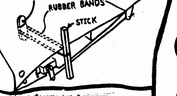
Happy Landings

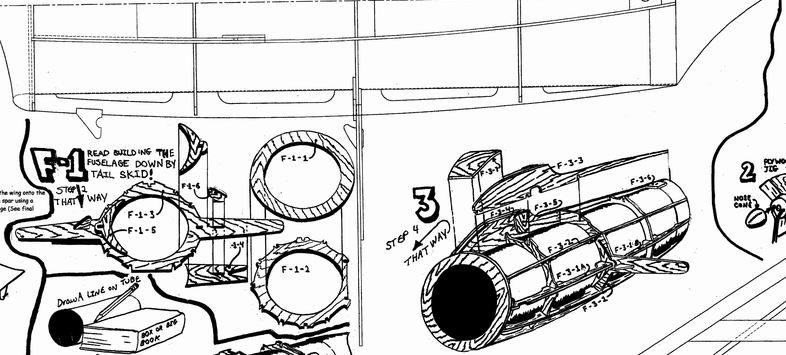




ATTACHING THE WINGS

When attaching the wings to the fuselage, you must use the rubber band tool to install rubber bands in the wing. Then slide the wing onto the spar. The elevon servo is plugged in and the rubber bands are hooked onto the spar using a stick or a piece of wire. More rubber bands hold the wing on at the leading edge (See final assembly drawing).



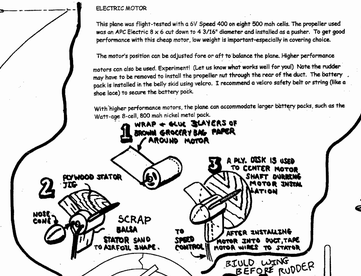


ELECTRIC MOTOR

This plane was flight-tested with a 6V Speed 400 on eight 500 mah cells. The propeller used was an APC Electric 8 x 6 cut down to 4 3/16" diameter and installed as a pusher. To get good performance with this cheap motor, low weight is important-especially in covering choice.

The motor's position can be adjusted fore or aft to balance the plane. Higher performance motors can also be used. Experiment! (Let us know what works well for you!) Note the rudder may have to be removed to install the propeller nut through the rear of the duct. The battery pack is installed in the belly skid using velcro. I recommend a velcro safety belt or string (like a shoe lace) to secure the battery pack.

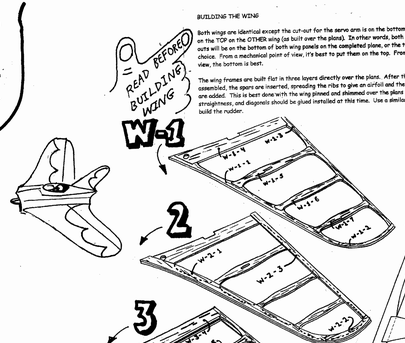
With higher performance motors, the plane can accommodate larger battery packs, such as the Watt-age 8-cell, 800 mah nickel metal pack.

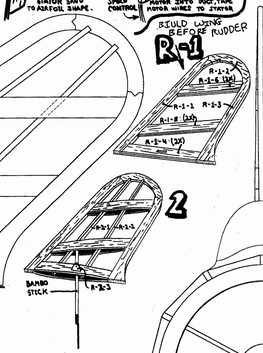


BUILDING THE WING

Both wings are identical except the cut-out for the servo arm is on the bottom on one wing and on the TOP on the OTHER wing (as built over the plans). In other words, both servo horn cut-outs will be on the bottom of both wing panels on the completed plane, or the top-it's your choice. From a mechanical point of view, it's best to put them on the top. From the artistic view, the bottom is best.

The wing frames are built flat in three layers directly over the plans. After the frames are assembled, the spars are inserted, spreading the ribs to give an airfoil and the diagonal braces are added. This is best done with the wing pinned and shimmed over the plans to ensure straightness, and diagonals should be glued installed at this time. Use a similar procedure to build the rudder.





BUILDING THE *TURBO BEE*

You should begin by carefully studying the blueprints and the sketches illustrating the building sequence. Build the model twice! Once in your head, and once on the building board. All the laser cut parts are engraved with letters and numbers. The letter "F" stands for "Fuselage" part, "W" is for "Wing", "R" is for "Rudder". The first number is the assembly drawing number and shows which drawing the part is used in. The last number shows where in the assembly drawing the part goes. The assembly sequence in these drawings are arranged for the convenience of the author. Always use pins, rubber bands and clamps to hold as much of an assembly together as possible without glueing it. Then spend some time carefully checking the alignment of the assembly before dribbling glue into the joints. I recommend THIN CA for this purpose. This method avoids mistakes in assembly, and reduces glue wastage and fume inhalation.

An important note about the printed plans: The laser cut parts are very accurate. The plans are NOT, because of the printing process and the fact that paper expands and contracts more than most materials with weather changes. So, if a part doesn't match the plans exactly, adjust the assembly to the parts. Do NOT modify the parts to fit the plans!!!

RADIO CHOICE

I recommend using a small receiver and Cirrus BB-20/HS 55 -sized servos. Anything heavier will affect performance. The servos are installed using double-sided foam mounting tape. Coat wood with glue before mounting the servos.

The receiver sits under the front of the canopy under a simulated instrument panel shroud.

OPTIONAL: CLEANING LASER-CUT PARTS

You can remove the burnt edges of the laser cut parts by soaking them in bleach for a few minutes then rinsing with water. You must dry the parts straight by weighting them down on a flat surface.

COVERING

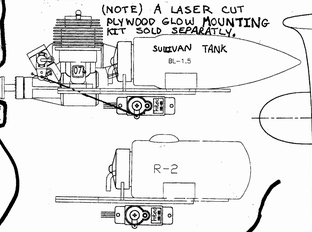
Choose your covering by weight. There is a lot of surface area on this model, so keeping this covering light really counts. This is especially important with the less powerful motors.

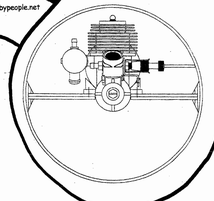
To reduce the chances of warping, always cover both sides of a surface before doing any shrinking, and avoid using high heat. If you use the least amount of heat necessary to apply iron-on covering, your covering will stay tight longer and better. To avoid using high heat to shrink wrinkles, tack the covering down using just enough heat to get it to stick. If a wrinkle appears, lift the covering and move it to remove the wrinkle instead of trying to shrink it out. Once you're satisfied with the tack-down job, go over the edges with high heat.

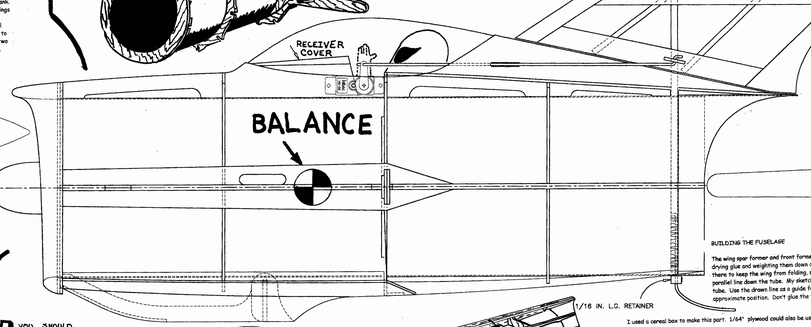
GLOW POWER

.061 to .074 sized engines can be used. An 8 x 5 prop cut down to fit in the duct. I encourage experimentation with different cut-down propellers (Be careful not to over-rev your engine!). Use a tachometer and the throttle to make sure you don't exceed Mfg-recommended RPMs. If so, try a higher pitch or a bigger cut-down prop.

The engine is mounted on a sliding plywood tray along with the throttle servo and the fuel tank. This tray slides into the laminated plywood slot fairings. After they are shaped, these fairings are glued to the inside of the duct. Use the propeller shaft centering jig to make sure the motor is centered. The tray is locked into these slots with 2 small screws. An extension will have to be made for the needle valve using fuel tubing and brass tubing. Two holes will have to be made in the plane for the glow plug lighter and the needle valve. The place where these two holes will be drilled will have to be filled in with blocks of soft balsa as shown in the sketch. The receiver may be mounted in the cockpit or the skid. The battery goes in the skid. Everything inside must be fuel-proofed using dope or other coatings.







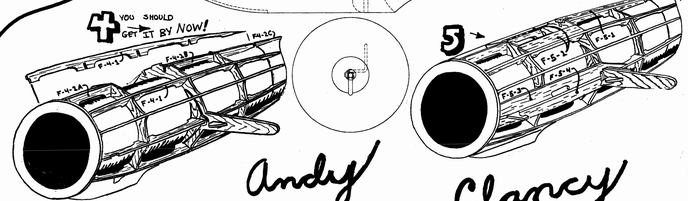
BUILDING THE FUSELAGE

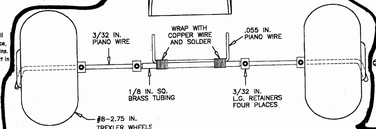
The wing spar former and front former are built up by laminating these parts with strong, slow drying glue and weighting them down on a flat surface. The glue joints on the spar former are there to keep the wing from folding, so do a good job! As an alignment guide, you must draw a parallel line down the tube. My sketch shows you how to do it. Next slide the formers onto the tube. Use the drawn line as a guide for top dead center, and the plane for their fore/aft parallel alignment position. Don't glue the formers. Make and glue the cord stock piece onto the tail. approximate position. Don't glue the formers. Make and glue the cord stock piece onto the tail.

1/16 IN. L.G. RETAINER

I used a cereal box to make this part. 1/64" plywood could also be used.

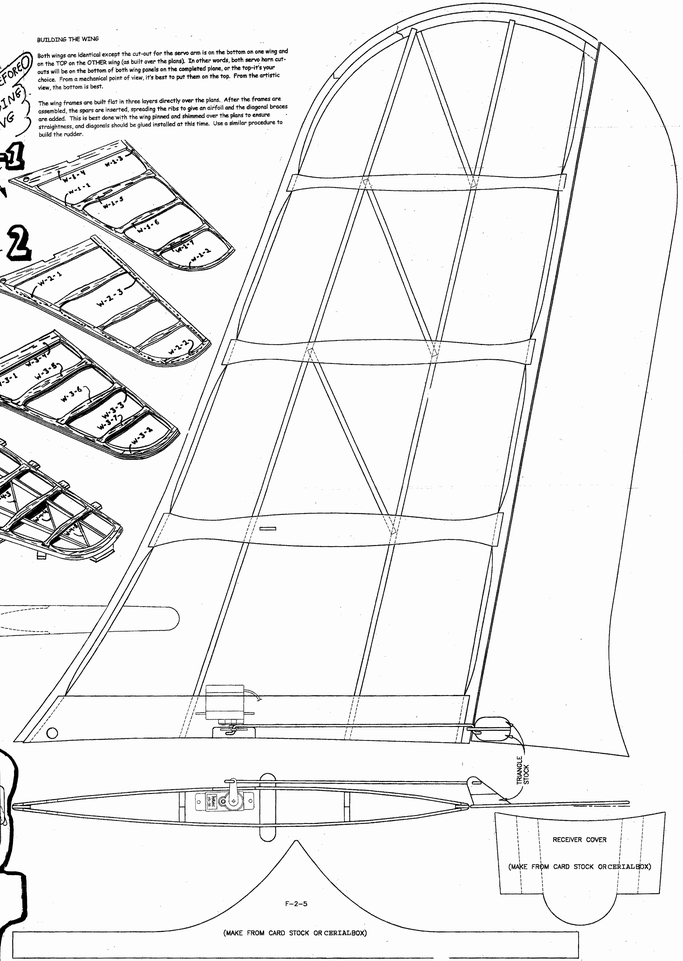
Next the stringers are added. Use my assembly sketches to locate where each type goes. All fit perfectly. Do not force or modify the parts. If it doesn't fit, it may be in the wrong place, or it may be an alignment problem. Don't glue. Hold them together with rubber bands and pins. Use the drawn center line and line of sight from several angles to make sure there is no twist in the formers. Once you are satisfied that everything is in the correct place and aligned perfectly, dribble in the glue.





DROP-OFF GEAR

It is an option to take off using drop-off gear. The axle passes through a tube and both wheels are rigidly attached to the axle by having cut a slot in the outside of the wheel hub, which is engaged by a bend in the axle. The wire pins that slide into the belly skid are arranged so that they can be adjusted by bending them. If they are not adjusted PERFECTLY, the gear will hang up. Study the plans and the sketch. The material for this option is not provided in the kit. The reason the axle and wheels are locked together is to keep the plane going straight during take-offs.



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Turbo Bee™

.049 TO .074 GLOW OR ELECTRIC

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SCALE: 1:1 | REV: A 12/2001 | SHT: 1 OF 1

Andy Clancy