

COL. BOB
THACKER'S

TURNER SPECIAL

By COL. BOB THACKER . . . Col. Roscoe Turner's famous Thompson Trophy racer is one of the classic designs out of the Golden Era in aviation history. Now you can duplicate it in 2-inch R/C scale.

• Before we get started into our article, I'd just like to make one statement. I do not build, engineer, design, or fly miniature aircraft. All the models that I enjoy are Model Airplanes, and anyone with a few hand tools can duplicate the Roscoe Turner Special.

Now to get into the model, and Col. Turner. The 1930's was the Golden Age of Aviation, and the Thompson Trophy Race, which was held yearly at Cleveland, Ohio, was the premier air racing event in the world, without question. The all-time great was Col. Roscoe Turner. He is the only racing pilot ever to win this prestigious event three times. He climaxed his third win in the Turner Special that I am about to present to you. This particular airplane raced in 1937, 1938, and 1939. The first year it raced, it went under the heading of the "Ring Free Meteor." In 1938, the same airplane flew as the "Pesco Special," and in 1939, it raced as "Miss Champion." Roscoe Turner commissioned this aircraft to be designed and built specifically to his requirements. There were many people involved in this airplane, and it was initially engineered with a constant chord wing, and was very small. Turner decided that it would not support the 800 pounds that it grossed over what they initially programmed it to weigh, and therefore, he had Lawrence Brown, designer of the Miss Los Angeles, take a look at it. That didn't work out too well, and it finally ended up with another famous aircraft designer and engineer, Matty Laird. I believe that he had more to do with the final configuration of the aircraft than any other person. However, there was a slight misunderstanding between Roscoe Turner and Matty Laird, and for the rest of Turner's life, he called the aircraft the "Turner Special." However, if you look closely at the airplane, you will see many of Matty Laird's engineering achievements.

I usually do my diagrams and sketches as I build. The wing of the aircraft is the first thing. Usually, you have to fit the wing saddle in the fuselage, this and that and the other thing, and for this, a completed wing is necessary. Once I get the wing started, I feel as though I'll go ahead and finish the airplane. So let's talk about the wing first.

Actually, it is a conventional construction; foam covered with 1/16 sheet, with hard leading and trailing edges and all-balsa tips. The sticky that I used was Blue Goo. Six ounce fiberglass cloth is laid in the center for strength. The ailerons and aileron linkage might be just a bit different from what you have

tried before. I am using 1/4-inch aluminum tubing for torque rods. After you get your wing completely built and sheeted, go ahead and cut your ailerons out, face them, and put them back in. Now, we still don't have any of the aileron mechanical turners installed in the wing. Mark a line from the leading edge of the aileron right to the center of the wing on both sides. Make the line with a felt-tip pen. Put your 1/4-inch aluminum tubing just about where it would go, take your felt pen, and draw two lines, one on each side of the aluminum tubing. OK, now take a razor blade and cut on that line 45 degrees all the way on both sides so that you can lift that 1/16 balsa up and also lift a little of the foam. Clean out that foam to where the torque tube will drop into the foam just deep enough to clear the 1/16 sheeting. In other words, you are cutting a groove in the foam to clear the torque rod.

Now, on your torque tube, plug both ends with about a half-inch of dowel, because that is what you are going to put the pins in. The torque rod is bushed with ply. Just take a rat-tail file and make a nice tight fit only on each end; that is all the bushing you want. And don't bush it in the middle, just leave it clear. When you get all set up, and you have a nice working torque rod, go ahead and use Hot Stuff or Jet or some other quick adhesive to put the top piece of balsa back in and smooth it over, and you are all set. It is very simple and works beautifully.

Let's put on the covering and finish off the wing, now that we are talking about it. I'm not the world's greatest man with 3/4 ounce glass cloth and resin, but I'm learning, and that is the way the wing was finished, using K&B's usual procedure. I learned two things with the last wing I covered. Number one is that when you work with resin, and you've put the proper amount of catalyst in there, if you use a deep cup it will scum over, and if you keep using less and less catalyst it won't set up. Well, this is not quite right. Go to any hardware store or ten cent store and get some of those little aluminum dishes that they put pot pies in. If you use one of those, your problems are over. OK, go ahead and put the cloth on, and use the toilet paper routine. I put on one coat of resin, let that set up, and very lightly sand it. Then I put on another coat of resin and squeegee that off, and very lightly sand that. Try as I may, I usually get a few wrinkles on one panel. I talked to an old friend of mine and he said that the best

way to avoid wrinkles in the cloth is to attach a few clothespins to the drooped-over cloth. The clothespins have just enough weight to pull on the cloth, and you won't have those little puckers.

I don't mean to bore you with the problems I have, but maybe you people have had the same problems, and there is no need to talk about things that are successful. We all really should talk about the things we're not successful at. Another thing at which I am not really successful is applying a primer. I have always thought that if you sprayed everything, that was the best way to go. Well, I am absolutely convinced that spraying everything is not *always* the best way to go. When you spray primer, which I did the first time around on the wing, it does not fill those pinholes and all the other imperfections that you always end up with. So, I have decided that the first one or two coats of primer should be brushed on. There is something about stirring around with that brush that helps fill up those pinholes.

There's another thing I'd like to discuss: in this torque rod business, if you round off the ends, you can pull the rods completely out of the wing and cover, work, and finish your wing, and you won't have to fool with those doggone torque rods. I've been known to paint torque rods into the wing, and it doesn't work out too well. What I'm saying is, don't put that servo arm in until you are actually ready to put your ailerons and final hinge in.

OK, let's talk about the horizontal stabilizer for a minute. It is fairly straightforward. The only unusual part about it is that the whole thing starts out with a great big piece of 1/16 sheet, and everything is built up on top of and underneath it. The leading edges really end up as three pieces of 1/16 sheet. Go ahead and contour it to shape, and also contour the ribs so that you are ready to start putting the 1/16 sheet top and bottom on. The elevators are nothing more than just a piece of 1/16 sheet and 1/16 strips for ribs sanded to shape. You might run into difficulties at about this stage . . . I did, and that is making the concave and convex surfaces to form a blind hinge line. Well, the only thing I can say is you just make a concave or a convex surface and just make it fit and just keep using sandpaper and dowels and rat-tail files and everything you can get your hands on, and you'll finally end up with a nice, rounded surface. As we get a little bit further on with this, I will tell you how to cover that hinge line,

which is another little goodie that I have discovered while working on this project.

Now for those hinges. Williams Brothers used to make a rather unique hinge, using male and female parts, that allows you to use a blind hinge line. They haven't made them for quite some time, so have your hobby shop owner try to get you some. They come in large and small (get the small ones) and work out very nicely because you can put your surfaces on after the horizontal stabilizer and elevators are completely finished, and they go right on beautifully.

All right, let's take a look at the fuselage now, talk about some of the problems, and how we solved them. You old Cleveland model builders and Carl Goldberg Comet Zipper fliers are going to be happy, because we've used a few of these old but good ideas. What I want to talk about first is the bulkheads and formers. The bulkheads and formers are sandwiches of two pieces of 1/64 ply and with a 3/32 balsa core. Use Blue Goo to make the sandwich and go ahead and cut all those bulkheads out. There appears to be about ten thousand stringers. Well, there really aren't, but there are ten thousand slots you've got to cut. Now, here is the way I do it.

Using a Dremel saw, take the big Dremel saw blade, break off each end, and Scotch tape two or three blades together. That gives the thickness of the slots that we want to cut. Keep fooling around until you get a nice, tight fit. Then mark the formers for where you want those stringers to go, set up the depth and go around and saw all those ten thousand notches. Just Scotch tape two or three of those saw blades on your Dremel, and it'll cut slots just exactly the thickness you want.

OK, we've got a round fuselage, but we've got to have some flat areas someplace because your workbench is flat, right? Here's what to do: cut the bulkheads along the line that shows where the hatch on the forward part of the fuselage line is. Separate all the bulkheads, turn them upside down, line them up, and start putting the stringers on. Now, the forward part of your fuselage is covered with 1/8 flat sheet balsa. Use only every other stringer, but when you get back to where all the stringers start to show, then use every stringer. Remember that when you are fooling with the forward part of the fuselage. So, line up the bulkheads, and just go ahead and build the bottom of the fuselage. When putting the stringers in, glue one on one side and then go around on the other side of the fuselage and place the corresponding stringer in place so that you can keep the structure fairly equal.

When you get the stringers in, just hit each one with a little bit of instant glue, and pop the bottom off. Now you're sitting there with the fuselage from the firewall back, and you've got 3/4 of the fuselage finished. Go ahead and glue the

top of the bulkheads on and finish the top of your fuselage, and also put the fin and dovetail in the rudder. You'll want to watch a few places there because the plans call for pine and plywood and a few other things, so make sure you use the proper materials. If you don't, you are liable to wind up with a structure that is not too strong. Go ahead and put the 1/8-inch sheet on the forward part of the fuselage. You'll notice that there's a removable hatch there, over the wing, that you are going to have to make in order to put your aileron servo mechanism and things in. Make sure you put the proper sub-bulkheads in. Here's another place where I always have a problem; when I finish up covering these things, I've got material up into the hinge line, which gives me too much depth. So, after you pop the hatch off, put some 1/64 ply spacers in there, then put the hatch back on and finish it.

OK, we have the front end planked and we've got the hatch all cut out, and we're all set to go. But that's only back to the back firewall. You've got a great big nose cone that you are going to have to make some way. Now, you can either hog it out by hand, or you can get a ten-inch lathe and turn it in that fashion; however you want to do it, go ahead. When you get it hogged out, put one layer of 3/4-ounce glass cloth inside and outside for strength. You'll also notice that there is a big hole up front, and for you Comet Zippers fliers, everything... the radio, the tank, everything... goes in through the nose of this airplane. It's a little bit different than what I've handled before, but it works out real nice, and you'll like it because you can get all your weight well forward.

Now that you've got the nose cone on, go ahead and finish sanding the front part of the fuselage. Make the landing gear and axles. On that flat gear, you're going to have to get somebody to help you machine a tongue-and-groove axle, if you can't do it yourself. The landing gear fairing, which was balsa on the real airplane, is also balsa on this one. I put the landing gear fairing on with contact cement (Blue Goo), and it is also covered with 3/4-ounce cloth and resin. I hope there is enough give to that Blue Goo so the fairing won't pop off when it flexes, but we'll see.

Now for the cowl. The cowl can be made in several ways. I suggest you get a big hunk of polyurethane foam and put it in a wood lathe, and sand it to shape. Put about four or five layers of six-ounce cloth on it, and finish it that way, and when you get all through with it, go ahead and hog out the insides and you are all set with a nice cowl. Now, I didn't do that.

A so-called friend of mine, Eloy Marez, talked me into making a wood form out of pine, and then making a plaster of Paris mold out of that, and then setting up resin, and resin cups, scissors, brushes, dowels, boxes... we took up a two-car garage, about seven

evenings and almost a friendship. You never saw such an operation to make one little ten-inch cowl. Yes, we have a lovely cowl, beautifully made, and we can make a thousand more cowls, but I don't want to make any more cowls, I only wanted to make one. Actually, Eloy, I'm only fooling. Thanks a lot for a hell of a lot of good hard work, and the cowl is beautiful.

We used one layer of 3/4-ounce cloth to start with, and then six layers of six-ounce cloth. On a scale airplane, weight forward is no problem, so we ended up with a gorgeous (and strong!) fiberglass cowl. As long as we are talking about the cowl, let's go ahead and finish it off. Use K&B primer brushed on, sand it down, then go ahead and shoot it.

The dummy engine installation that I used is a little bit different than normal. Start with a Williams Brothers 1-1/2" = 1" Wasp scale engine and build only the front half, and glue it to a piece of 1/16 plywood (cut it out so you'll have some air passage, of course). Then epoxy the whole mess to the front end of the cowling. From the back, epoxy a 1/16 ply ring in place so it's flush around the cowl and with the back of the motor. It absolutely locks the motor in the cowl, and will never come loose. I've run three airplanes in this manner and it works out just great.

Let's see what we still have to do on the fuselage. We haven't attached the landing gear yet. Use three 6-32 bolts and make up a piece of 1/4-inch ply that will just snugly fit between the two bulkheads. Go ahead and cement that 1/4-inch ply through the nose. Cut a slot in the fuselage big enough to drop the gear in, bolt it in, and replace the cut. You can now finish the gear and put the fairings on. The fuselage won't roll all over the damn table now that you've got the gear on.

Now let's drop back to the empennage section of the airplane. You'll see that some 1/64 ply goes around where the horizontal stabilizer goes through. Now, the only way to get that 1/64 ply in there is this: you are going to have to take an Uber Skiver or razor blade and cut 1/64 of an inch off each one of the stringers. Use two pieces of ply, with the seam along the bottom of the fuselage. It goes on quite nicely, as there are no compound curves.

Along about now, you have to start thinking about what you are going to use for pushrods. Now, I opted for what I call, at least for me, a full cockpit. So there are no pushrods going through the center section. So what do we do? Well, here is what I did. I made my pushrods out of piano wire. Chuck a piece of long wire in your Dremel tool and drill holes on each side all the way along those bulkheads, all the way up to the forward firewall. One set of holes is for the elevator, the other set is for the rudder. You are going to have to cut and try until you get those things where you want them. Now, snake the piano wire

through those holes and then wrap each end of the piano wire with fine copper wire, and solder the copper wire. You'll have to experiment with the size of the copper wire to where a DuBro or any other clevis will screw on, and it works very nicely. I put my servos just inside the forward firewall on each side. The throttle servo goes right on the removable firewall motor mount. Then, of course, drop the tank in, stuff the receiver in, hook up the servos, bolt the motor mount firewall to the fuselage, and you're all set to go. Now, I attach my servos with, Heavens to Betsy, servo tape! I've used servo tape for many, many years, and I've never had a failure. Now I'll get all kinds of static from the radio people, but I know one servo manufacturer who does say that in particular instances he will use servo tape in his airplanes, so it can't be all bad. If you're absolutely against servo tape, go ahead and use individual servo trays.

As for the forward windscreen, you're just going to have to make a form for it and pull some acetate over it. If there is any demand, which I doubt, I will send my form to Hi Johnson, and if you really want a windscreen, write to Hi and he'll pull one for you. Likewise the cowl; I think I am going to send the whole blooming thing over to Bob Holman. If there is enough racket from the field, I'm sure he'll go ahead and make up some cowls for this airplane.

So where are we? Well, we've got the pushrods in, the rudder on, the front is made, the gear is on, but we haven't popped the hatch off. So, from the inside, find your seam and run pins all the way through so you'll get marks on the outside. Run the pins along where the hatch is going to pop off, and after you get fairly well marked with pinholes from the inside out, then you can take a razor blade and cut the hatch out. When you do, get yourself one of Carl Goldberg's new over-center grippers and put one right in the center of F-4.

OK, go ahead and fuelproof everything forward of the trailing edge of the wing on the inside. For fuelproofing, you might as well stick with resin, then you'll know what you're doing. When that's done, take a crack at finishing the fuselage. Put Coverite on the rudder and elevators, and put two or three coats of nitrate dope on the horizontal stabilizer and cover it with wet silkspan. One or two coats of K&B primer (brushed), sanded, and then one coat of primer like you did on the wings, and sand that off.

The open bays on the fuselage aft of the wings are covered with Coverite; two pieces, seamed at top and bottom. Instead of me going into a long dissertation on how to handle Coverite, Coverite has at last put out a good idiot sheet on how to use their material. If you get that, and use it, you will find that you will do a beautiful job. The only thing I will say is that, when I started using Coverite, I shoved that iron back and forth. This is the worse thing you can do, because Coverite will ravel on the edges. So

don't shove it around; you have to press it down, not shove it. The forward part of the fuselage where there is bare wood is handled the same way as the horizontal stab; two or three coats of nitrate dope, wet silkspan, and primer.

We're not really going to final finish this thing until we get the wing and horizontal stabilizer glued in place. Go ahead and put the horizontal stab in now. Cut the holes on either side and shove it in, and put the elevators on. Block up the fuselage straight and level on your workbench. Draw a line on each side, indicating the centerline of the root wing rib. Now, if you are going to cheat or make an error in one direction, err on giving yourself just a hair of positive incidence in the wing. I'm not going to talk about degrees because neither you nor I can understand degrees when we're working with a ruler on a table. Give yourself about 1/16 of an inch incidence when you draw the line on the side of the fuselage. Measure out from the centerline of the wing to the point where the fuselage is going to be, and make a template to fit the wing at that place. Draw the outline of that rib on each side of the fuselage. Go ahead and cut that big hole. Shove the wing in and keep cutting away at the hole until you get a nice fit . . . not a testing, grinding fit, but just a nice fit, and keep working to where you get that hole just about the size that you want. Then, on one side or the other, on the bottom edge of the hole, keep relieving it until you can shove the wing all the way through. But you say, you can't do that with a tapered wing. That's true; cut off the trailing edge of the wing at the same location where the wing goes into the fuselage. In other words, don't have a wing with more chord in the middle than you really need. Be sure to keep the material that you cut off the fuselage, because it is glued back on once the big fat center section of the wing gets by.

Now, the only other things we haven't made are the pants. I can assure you that I didn't go anywhere near Eloy Marez when I decided to make these pants. Get yourself some four-pound polyurethane foam and shape the pants to fit. I used two layers of six-ounce cloth on each side. If I was making the pants again, I would use three layers of six-ounce cloth. I put the cloth on one side, then on the other, etc., until finished.

Now we've got a solid pant. To make room for the wheel, take a piece of piano wire and put an L shape in it, chuck it in a Dremel tool, and hog out the foam. However, I would recommend that after you get all that foam hogged out, go back and reinforce the wheel cut-out with one more layer of six ounce cloth.

The last thing to fabricate is the scale prop. The plans show the profiles on the blades. Make them out of pine or redwood; I happened to make mine out of redwood. The prop hub was a bit of a problem; what to make it out of? Well, I

thought and I thought and I thought, and finally went down to the local plumbing shop and got some one-inch plastic pipe for the hub. The counter-balance weights are cut from plastic and dowels. The front forward spinner is turned on a lathe. You will notice that when you finish the prop blades, the shanks of the blades are a little bit smaller than the plastic pipe. So, bush up the inside of the hub with two or three layers of 1/64 ply. I finished the prop with K&B Superpoxy. To simulate the long bolts that actually hold the whole hub together on and the real prop, just use a piece of small brass tubing, cut a slot in the hub, and Hot Stuff them in place. On each end, put a small hex-head bolt that you can get either from Proctor or from your local train shop. It builds up quite nicely and really makes the nose of your aircraft stand out.

Now your airplane is completely together and you've wasted at least half a day or two days or maybe a whole week of evenings, sitting there admiring your handiwork and telling yourself what a great model builder you are. However, some parts are primed and some not primed, so go ahead and finish up your priming job and other things that are not really ready for final color. Use two or three coats of primer sanded nice and smooth, and get all the pinholes, bad nicks, and dings out with DAP spackling compound. I've used DAP for many years and it works great for me. The only thing you have to be careful about when using DAP to fill dings is that it is water soluble. If you start to sand with wet sandpaper, you are going to lose what you have. Use your sandpaper dry if you've used a lot of DAP.

Now for the fillets. On the leading and trailing edges of all the fillets, cut pieces of 1/64 ply, as an outline (when looking down from the top), and glue those on.

OK? Now take black vinyl tape and outline the area of the fillets. One layer of black tape. For the actual fillets, I used Hobbypoxy, the three or four-hour Hobbypoxy . . . No. 2, I think it is . . . and micro balloons. How much micro balloons? Until you get a consistency of about like pie dough. Almost as dry as pie dough, or after it has set up a while in the cup, to where it doesn't look real shiny. If it looks shiny in the cup, you don't have enough micro balloons. Roger? Use the old finger and water routine, putting those micro balloons right in there, but go easy. Don't put too much on, because you're going to have too much sanding to do, when you get through. So go sparingly on the micro balloons.

OK, you've let it set up overnight, and it's nice and hard. Use rat-tail files and dowels and sandpaper and fingers and everything else and smooth it down to that black tape. You have to be a little careful, and it does take a little bit of finesse. You want to get it to that black tape, but not below, so when you take

the tape off, you have a nice thin ridge which indicates the extremity of the alclad fillets that were put on the real airplane. I used this system throughout on this airplane, and it worked very nicely. By the way, you have to paint the fillets once or twice with some Hobby-poxy or K&B clear before taking the tape up. Don't let the epoxy set up, but put it on while the tape is still there, and then just before it sets up, take the tape off, and you'll have a nice line.

Well, as far as I'm concerned, we're ready to final finish and paint this thing. Continue right on with the K&B; use K&B aluminum epoxy. I mix one and one and one; one part of A, one part of B, and one part of thinner. And to help just a little, when you are shooting silver, don't get too close to your work. I use a Binks airbrush, and find that if I stand back a foot or a foot and a half, the silver goes on much better. I also found that if I stir the silver paint up good and get all that silver out of the bottom of the can, the silver also looks a little bit better. Put on a light coat, wait fifteen minutes, then shoot the rest of the color on. Be prepared to stop frequently to clean out your gun, because silver is nothing but aluminum filings in the paint and it is certainly prone to stop up the gun. It certainly stops up the airbrush that I use, so be forewarned.

Well, now, here we are. We've got a beautiful racer, and we are ready to put all the good dinglebobs on it. What are we going to use for dinglebobs? Well, for lettering, I used Super Monokote, and I just don't think you can beat it. Slip the Monokote underneath the big letters on the plan and use a pin to go around and hit all the areas all the way through the plans into the Monokote.

Take the Monokote out, connect the pinholes up with a razor, and plop, out falls a nice letter. Now to get that letter on without scratching. Make sure the epoxy surface is good and clean, put a baby sock over your iron, and just iron it on. If you try to put it on with just that metal iron, I can assure you, you will scratch the Monokote. All of the lettering with the exception of "Twin Row Wasp" was done with Super Monokote. The "Twin Row Wasp" is rub-off letters that you can buy at any stationary store. But how about those "Champion" and "Ethyl" signs?

There isn't any way that a mortal model builder like myself, who can't even draw a stick man, could be able to duplicate that. So I had the Ethyl Corporation made as a decal, and I prepared the background material for the Champion sign and got it all ready, and then had a commercial artist paint in on the airplane. And that is the only way it's going to get done. If you remember, up at the start of this article, we were going to talk about what to use for gap fillers on the control surfaces. Have you been thinking about it? Here's what you do: go down to the stationary store and buy some tape that goes into those Dymo Label Maker machines. Peel the backing

off and lay it on. But I must admit you're going to have to do this before you paint it, I forgot that. Go around underneath now, where your ailerons are, and with acetone, you can take the sticky off. I did that on the wing. If you use too much acetone, as I did, it is liable to warp the tape just a little. So on the tail surface, I got smart, or smarter. Just flip the tape over, where the paper backing is . . . which is white, incidentally (buy white!) . . . and take a razor blade and trim off a 1/8-inch wide strip of the backing paper; peel that 1/8-inch strip off and leave the rest of the backing on. The tail surface gaps have been completely covered and the covers are not warped in any manner. So that's the way I recommend that you do it.

Now, the other little goodie is, believe it or not, that this is my first time I've ever put on rivets. I used old Titebond with a No. 20 hypodermic needle, and cut the hypodermic needle off flush. In other words, I didn't have a taper on it, and I found that yes, you must have a very light pencil line to follow. I touched the working surfaces with the hypodermic needle. I don't see how you can get them on without touching, but once you get the sequence going and you get just a little bit of practice, you can turn out a very, very professional-looking job with actually no experience whatsoever. I worried about matching rivets. You see, there are two rows of the things. You don't have to worry; you'll be surprised how easily your eye will go right along to that other rivet as you sequence the whole thing. Don't stop your sequencing because that glue is just sort of oozing out of there, and as you go along it will give you just the right size drops. If the phone rings or something, just let it ring until you finish the end of that strip. You will find if you get out of line, and you go back after the rivets are dry, you can pop them right off with your fingernail, but it's very hard to get the same size drops again.

Now, what did I use for power? And so forth and so on, and what did my airplane actually turn out to be. I'm using a K&B .61 pumper, a Sullivan 16-ounce tank, and an 11x7 prop. The CG is as shown on the plans, about 24%. The model weighs 8-1/2 pounds, including 8 ounces of nose weight, which is a little bit more than I wanted, but is still well within reason. The 420 total square inches of wing area gives us a wing loading of somewhere in the neighborhood of 40 ounces per square foot. Not light, but reasonable. If anyone would like to go further into research on this airplane, I would strongly recommend getting a magazine by the names of *Wings*, Vol. 4, June 1974. It gives complete three-views, cockpit details, and a very good rundown on Roscoe Turner himself. If for any reason you are having trouble building the model, please drop me a line through this magazine with your phone number, and I will call you collect and will be most happy to discuss any problem you are having.

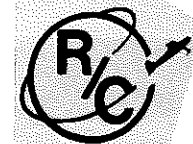
We can talk about engineering and designing and building and painting and everything else, but the real nitty gritty is . . . how does it fly! I'm as much concerned as anyone on a first flight of any airplane even if it is from a well-known kit. I would like to tell you how the model was set up for the first flight.

The CG was set at 24%, as shown on the plans. The wing incidence is not as shown on the plans. The plans have been corrected, and I will go into that a little bit later on. Now, the throws on the flight control surfaces are total throws from one extreme to the other. The elevator is 3/4 of an inch, the rudder 1-1/2 inches, and the ailerons 1/2 inch. That was for the first flight. Some of the concerns I had was how the airplane would handle on the ground with just a tail skid, and unmovable at that. Was the CG guessed at properly, and how would it handle with that rather excessively high wing loading?

Well, to tell the truth, I cranked it up and taxied out, and with a little bit of throttle, the airplane was easily controlled on the ground (the winds were very light). On my first takeoff, I held a little back stick until the airplane moved about fifteen or twenty feet, relaxed the back stick, fed in a little bit of right rudder, came up all the way on the power, a little bit of back stick, and off we went. My first thought was *My, the ailerons are extremely quick*, and they certainly were. The ailerons are much too quick, and therefore, I am going to cut their throw down. Do not use that 1/2 inch total travel on the ailerons. Much too quick.

After I got up and straightened away, I carried just a tinge of right aileron correction for trim and about 1/16 of an inch of up elevator. I rolled the airplane, I made many low passes, a few go-arounds, and landed with a wheelie, and the airplane just handled beautifully. It had no nasty traits of any kind, and I am extremely pleased that the airplane turned out as well as it did. It is true, it flew just like a bird, beautiful in the air, but with that unmovable tail skid, it really isn't the most graceful thing on the ground.

Give yourself time and follow the plans, which should indicate 1/16 of an inch of incidence. In the real airplane there was no washout in the tips, and evidently, when I set my wing up at zero-zero, with the washout in the tips, I ended up with a little bit of negative incidence. So, just a little bit of incidence, and you won't have to carry any up elevator. Good luck, and good flying!



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