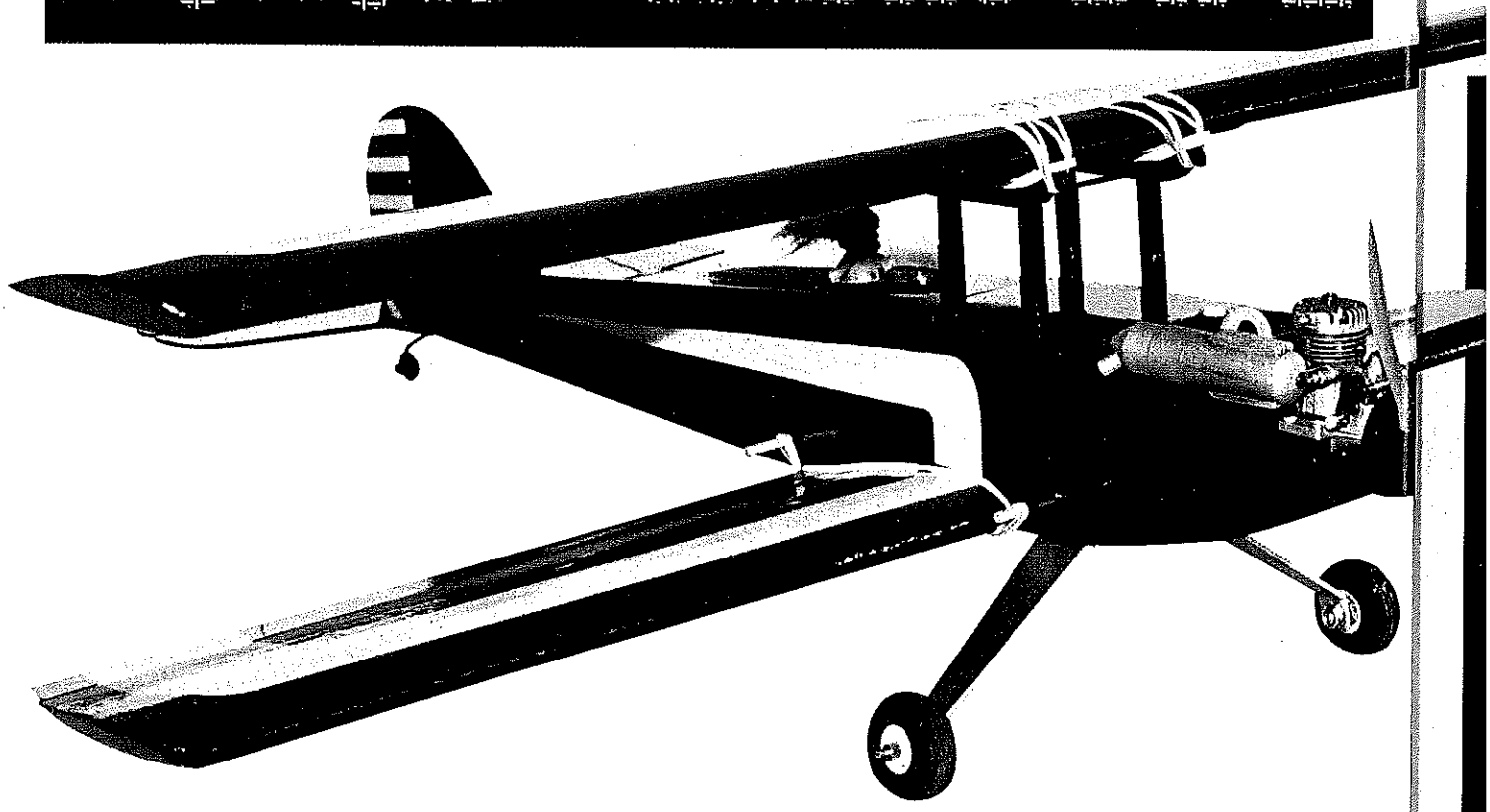
LUNCH BREAK DIP



David Richardson

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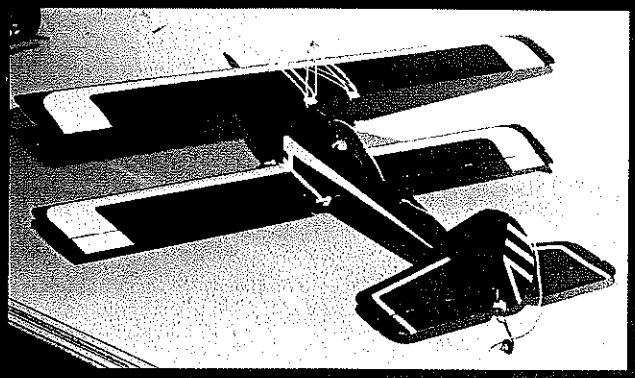
It's difficult for me to do nothing for more than 10 minutes at a time. I fight boredom at lunch every day. Working through lunch break is not an option; everyone needs to turn their attention away from work for a short time each day.

Suddenly it dawned on me to design a model. Being a welcome diversion from work, flying this model has become a daily ritual.

Lunch Break is not intimidating to build or fly for anyone who has progressed beyond the beginner stage. It's definitely not a trainer, but flight characteristics are smooth and predictable. The wing and tail moments are not too short, and the wing

Want to "sandwich" in some flying at lunch? Try this sport model for .15-.20 engines

Lunch Break's generous wing area provides for stable flight and low wing loading.



Ace R/C constant-chord foam wings simplify construction. Position canopy for Coolest Visual Effect!

loading is fairly low for this size airplane. Fuselage construction is simple, and the foam wings make wing construction a snap!

This airplane features a bulkhead-free fuselage, which eases equipment installation. This structure has proven to be extremely durable in many mishaps (thanks to my bumbling thumbs).

CONSTRUCTION

Cut the fuselage sides and lightly sand them while holding them together to ensure that both are identical. Pay particular attention to accuracy when shaping the wing saddle, as this will set the incidence of the lower wing.

Glue the 3/16 square balsa longerons in place. If they don't want to bend, just wet them in the problem area. In a minute or two they will fall obediently into place. Cut and sand the longerons at the tail so that the tail can be pulled together later. Use the plans as a guide.

Glue the wing-saddle doublers, tail doublers, and the 3/8 joiner in place. The joiner is necessary to prevent the fuselage sides from cracking when they are pulled together. *Do not glue the nose doublers in place at this time—they would make it difficult to drill the firewall.* Drill the holes for the wing dowels.

Use cyanoacrylate (CyA) glue to attach the firewall to the right fuselage side at 90°, using a guide like a draftsman's triangle. (The firewall will get plenty of epoxy and wood stuck to it later.) Use enough CyA to get through some pulling and bending. Repeat for the left fuselage side.

Align the fuselage by pulling the sides together at the tail. While holding the tail together, visually inspect the firewall to ensure that there is no right or left thrust.

Add the crossbraces (lower front, then top front, lower rear, and top rear) and check the fuselage alignment as you go. When you are satisfied that everything is aligned, thoroughly CyA the firewall in place.

Drill the nose securing block and epoxy in place. Use epoxy with at least a 15-minute cure time, and be sure to mix it properly—this block holds the upper wing onto the airplane!

If you haven't already done so, cut out the tail pieces while your epoxy is drying. Slide the horizontal stab into place. Sandwich a temporary ¼ x ⅛ spacer between the tail section sides where the rudder post will go. *Do not glue it in place!*

With the tail section held or clamped together against the temporary spacer, level the horizontal stabilizer and make a final check of fuselage alignment. When you are satisfied, glue the stab in place, using care not to get any glue on the temporary spacer. Remove the spacer when glue is dry; you should be left with a vertical slot for your rudder post.

Sheet the top side of the fuselage with one piece of balsa (grain lengthwise) and sand roughly to shape. Shape a piece of 1/16 plywood to fit in front of the balsa sheet (the rear nose block will butt into this piece) and glue in place.

Cut the rudder post with a little extra length (trimmed off after it is affixed to the fuselage) and glue to the vertical stabilizer. Place the vertical stabilizer on the fuselage with the rudder post extending down through the slot in the tail. Be sure the vertical stabilizer is straight up, and glue it in position.

Build and install the tailwheel assembly as shown on the plans. I'll leave you to your own pet method for doing this. I like to tack the Nyrod in place (wire bent and in place, of course), then epoxy a fiberglass cloth strap around it and to the fuselage sides.

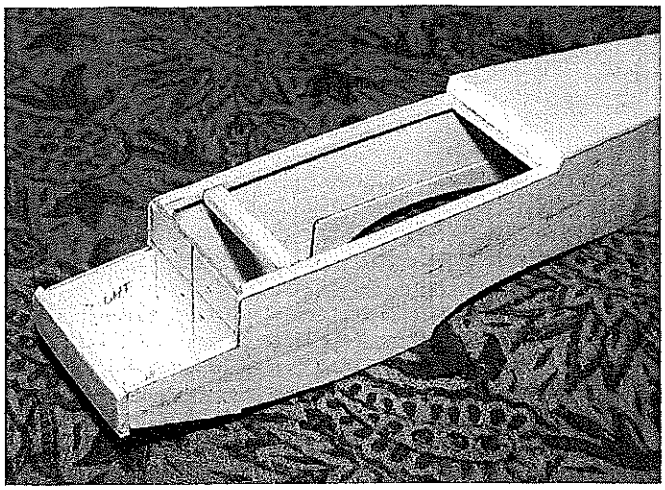
Fit your engine mount and drill the firewall. I sanded a little right thrust and downthrust in to the mount. If you prefer, use a washer or two behind your mount to provide the proper thrust angle (no more than one or two degrees, please). Be sure to leave room for the nose doublers.

Install the nose doublers, using plenty of epoxy where the doublers meet the firewall; while you're at it, epoxy the firewall fillets in place.

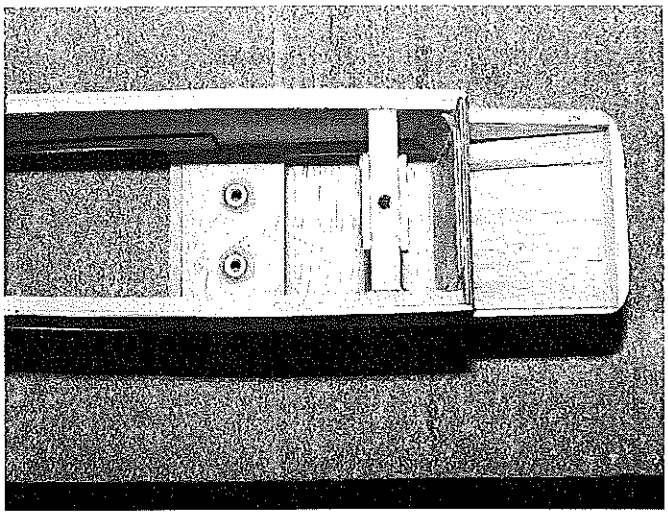
Add the 3/16 chin and corner fillets. Glue the 3/16 nose ring in place and sand the nose to shape.

Start thinking about equipment installation now. Be sure that your equipment mounting rails are not glued to bare balsa. Use thin plywood (the thinner the better) to double up areas where mounting rails may be attached.

Build the landing gear block by laminating three 1/16 plywood pieces with the grain of middle piece running lengthwise in relation to the fuselage and the outer pieces running crosswise. Drill the

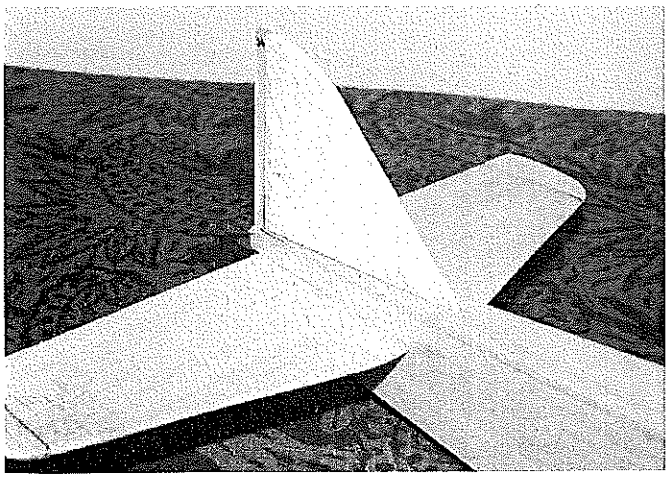


Fuselage shell prior to sanding. Note 1/16 plywood piece forward of the top rear sheeting.

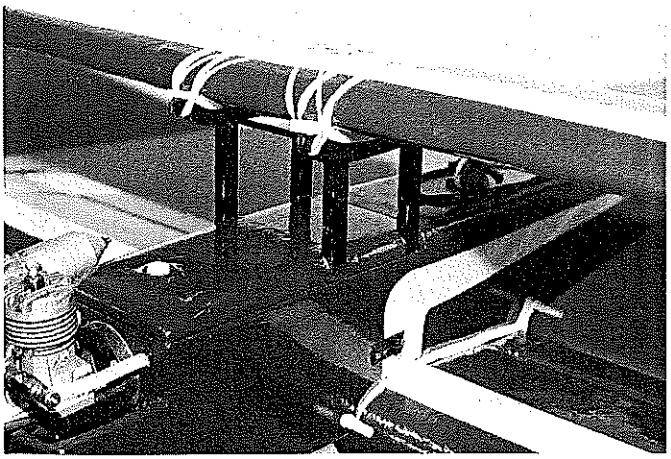


The landing gear plate is three laminations of 1/16 plywood with nuts for 10-32 nylon bolts epoxied in place.

Photos by the author Graphic Design by Carla Kunz



Tail surfaces are quickly formed from sheet balsa. Note sandwiched rudder post—text details installation procedure.



Early photo shows crisscrossed rubber bands on top wing; author now recommends that rubber bands go straight back.

block and aluminum landing gear for two 10-32 nylon bolts. This has proven to be quite sturdy, yet has broken away in a crash without damaging the landing gear block or fuselage.

Epoxy the nuts to the landing gear block and epoxy the plate in place between the longerons. Do not sheet the underside of the fuselage in front of the landing gear block at this time.

Tack the nose block in place and rough-sand to shape. Pop the nose block loose and cut the rear nose block from it. Glue the rear nose block in place and reinforce it with plywood as shown on the plans. Fit the nose block back on the fuselage and cut or sand to a good fit.

While holding the nose block carefully in place, turn the fuselage upside down and mark the location of the securing block hole on the nose block. Remove the nose block and drill it for the 10-32 nylon bolt. Soak the hole area with CyA or reinforce it with thin plywood. Glue the nylon washer in place.

Place the nose block in position and secure it with a bolt and nut. Be sure that the nose block is properly in place and carefully mark the location of the nut on the securing block. Remove the bolt and epoxy the nut in place, using care not to get any glue in the threads. You may now sheet the bottom of the fuselage.

The wing saddle must be made from three 1/16 pieces of plywood as shown on the plans. If you use one piece of wood for this, the saddles will probably fail under the stress from your rubber bands!

Epoxy the 1/4 x 3/8 struts to the wing saddles using the left and right view provided on the plans to ensure accuracy. Cut notches for the struts in the nose block in the locations shown on the plans. Drill the wing saddles for the dowels.

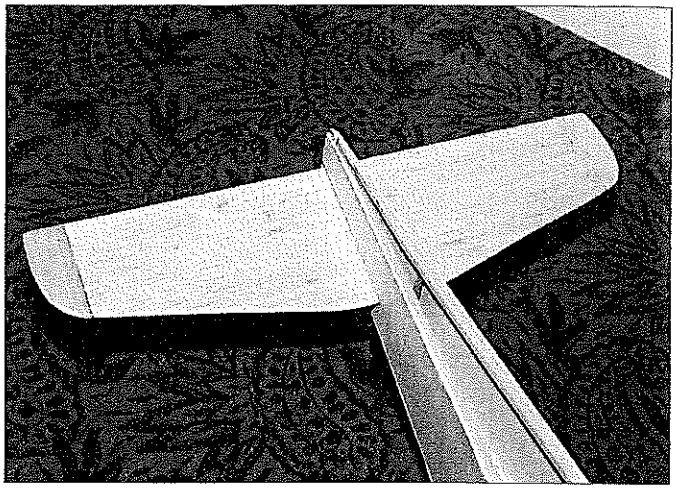
Set the nose block on a flat surface and put the whole assembly together, dowels and all. When you are sure that the whole assembly is accurately aligned and true, epoxy the struts in place. Again, a strong bond is critical here. Glue the dowels in place.

When dry, flip the assembly over and glue the 3/32 plywood in place. This piece should be wide enough to restrain the rear of the nose block from side-to-side slipping during violent flying maneuvers. I also glued a small screw through the piece of plywood into the bottom of the nose block—just to be sure! Cut the 1/32 nose block reinforcement so that it fits between the longerons and glue to the underside of the nose block.

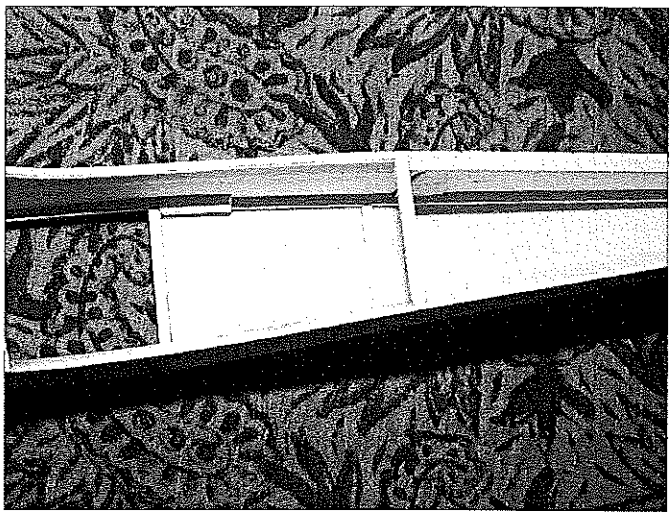
I coated my struts and saddles with several coats of Pactra AeroGloss Hot Fuel Proof Dope (flat black). This can be simply brushed right on, and works great for fuelproofing.

Position your canopy for what looks to you like the Coolest Visual Effect!

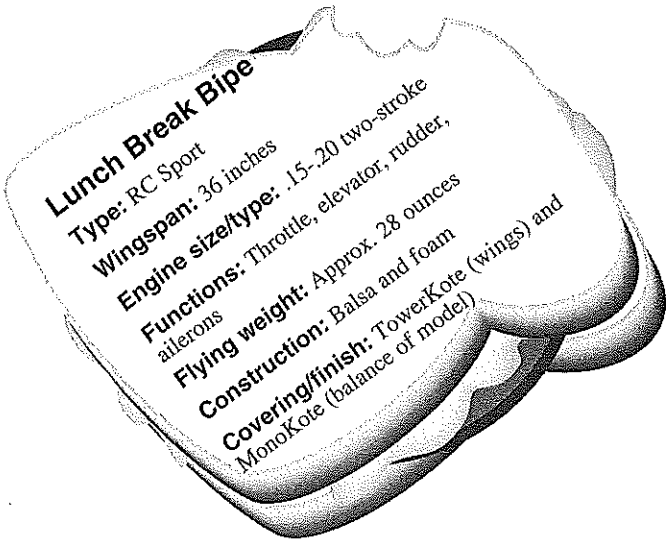
Wing: I have been very impressed with the performance of the Ace Foam Constant Chord Wing and I was not disappointed in my choice for this design. Instructions are included for basic

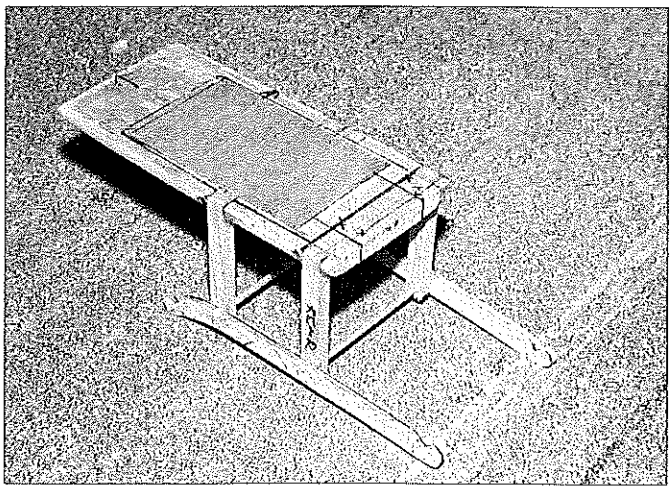


Underside of fuselage shows plywood doublers in front of stab. Balsa longerons allow rounding of corners.



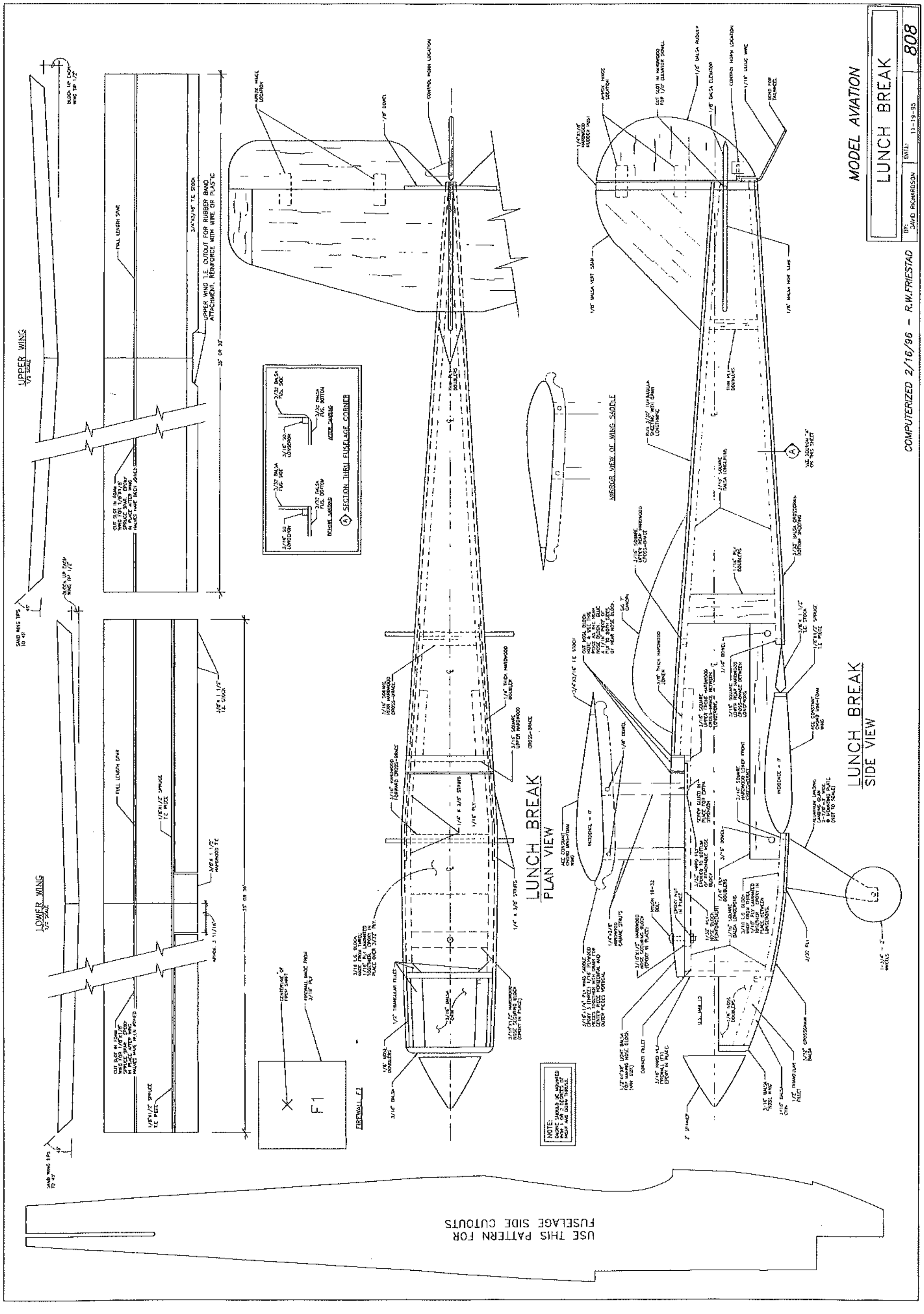
The bulkhead-free fuselage provides plenty of space for installation of your preferred radio equipment.





Wing saddle is laminated from 1/16 plywood for extra stress protection. Flat black AeroGloss dope finish.

Full-Size Plans Available—see page 165



construction, but some deviation is necessary, so here are a few notes:

I highly recommend using one of the odorless CyA glues for foam construction, but use epoxy for joining the wing at the center.

The spars may be full- or half-length, whatever you prefer.

The lower wing trailing edge must be sanded back to accommodate the ailerons. If you don't have much experience with biplanes, the ailerons may seem rather large. Don't sweat it. They are enlarged to compensate for the lack of ailerons on the top wing and to provide good control without being overly sensitive.

Since the wing is unsheeted, do not substitute balsa for the trailing edge of the bottom wing; spruce or hardwood should be used.

Use a wide band of fiberglass around the center of each wing. Epoxy is fine, but don't be afraid to use Elmer's white glue. It provides good strength and is inexpensive.

Cut the top wing trailing edge in the center as shown on the plans to accommodate your rubber bands. Remember, the wings are drawn at ½ scale.

Use six to eight rubber bands on each side to attach the top wing to the saddles. Do not crisscross the top-wing rubber bands—the saddles aren't designed to withstand the sideways stress. The lower wing bands may be crisscrossed.

Although a 5-6-ounce fuel tank could probably be crammed into this model, I really don't believe it's necessary. I was pleasantly surprised that the four-ounce tank proved to be quite adequate.

Finish: I used TowerKote low-temperature film on the wings, and MonoKote for the balance of the model.

Equipment: I highly recommend using microservos and a 270 mAh battery pack. The gain in performance is well worth it. You should get five or six flights out of this arrangement.

Flying: Lunch Break was designed with a

.15 in mind, and I believe this is the best power-to-weight ratio. If you like the performance of a light model, this is the only way to go.

Hold a little up in the elevator as you accelerate, just to be sure that the tail stays pinned to the ground until some speed is built up; then let it out just as the airplane hops off the ground.

With a little headwind, the takeoff roll is nearly nonexistent; however, you don't want to yank in full up after takeoff. Make a shallow ascent to build up plenty of speed before you go crazy with it.

Landing is a breeze, as the model does not have much tendency to tipstall. Deadstick landings are about as easy as can be imagined, so no special instruction is necessary here.

If authoritative power is your cup of tea, a .20 is the choice for you. Speed is much increased over the .15, and performance is very good. Lunch Break is still well behaved with this engine, but it will be necessary to use a little more "sky" for aerobatics.

The model is quite a bit heavier with this engine, so a typical takeoff roll can be expected. Again, use some up elevator as the airplane accelerates, so that positive steering can be maintained as you make your roll. The ascent may be fairly steep with this engine—but please, not on your first flight!

Though the airplane is quite lively with this engine, pulling indefinite vertical climbs is just not going to happen. However, very strong vertical performance can be expected.

The landing approach will be rather steep, so be prepared to abort on your first try or two. However, I see no problem for intermediate fliers. On deadstick landings, keep the speed up and get the nose into the wind. Don't mess around—just get to the business of bringing it down quickly and there should be no problem. ✈

David Richardson
1821 West Dr.
High Ridge MO 63049