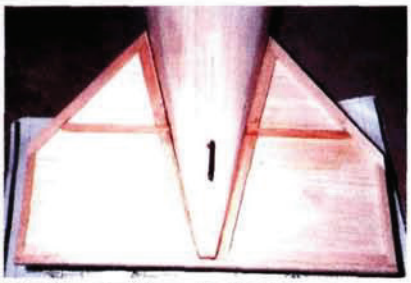
An unusual WW I fighter with award-winning performance

I have always wanted to build WW I aircraft other than the more commonly seen Fokkers, SE5s and Camels. When I discovered the Siemens Schuckert D-III, I knew I had found my next project. There are many color schemes available, and I highly recommend Bob Pearson, or the Windsocks Data Files, for ideas. The model is challenging to build but involves nothing that the average modeler can't tackle with a little patience and persistence. It has no bad flying habits and is accurate enough in outline to be competitive in scale competition. I have won the Westchester Radio Aero Modelers show WW I class, and I took first place at the Farmington, CT, scale meet and a first place in Expert class at the New England Scale Championships. Let's start building!



Start construction with the tail surfaces. Here, the horizontal stab has been attached to the fuselage. Note that the one-piece center spar goes through the fuselage.

TAIL CONSTRUCTION

Begin with the horizontal stab; it's fairly simple to build. Build the stab over the ¼-inch-square spruce center spar placed on the plan, but don't glue it to the spar until you have inserted it

by David Johnson

Siemens Sch

SPECIFICATIONS

NAME: Siemens Schuckert D-III

TYPE: ¼-scale WW I fighter biplane

WINGSPANS: 81.5 in. top, 74 in. bottom

LENGTH: 55 in.

WING AREA: 1,911.56 sq. in. (8.27 sq. ft.)

WEIGHT: 15 to 18 lb. (15.5 lb. prototype)

WING LOADING: 29.02 to 34.80 oz./sq. ft.

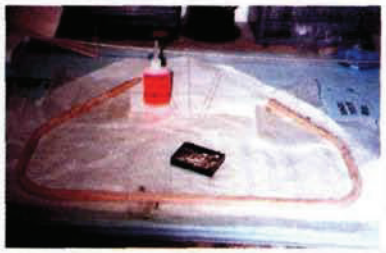
ENGINE RANGE: 25 to 40cc 2-stroke, or 1.20 to 1.50 4-stroke

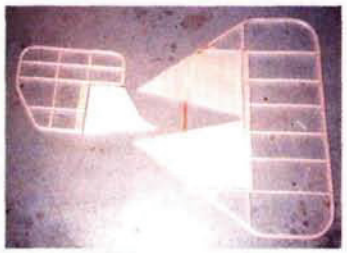
ENGINE USED: Brison 40cc

RADIO REQ'D: 4 channels (rudder, ailerons, throttle, elevator)

PROP USED: homemade 4-blade

COMMENTS: designed by David Johnson, the Siemens Schuckert D-III is a seldom modeled WW I fighter that is a dream to fly. Using traditional balsa and plywood construction, the model has an under-cambered airfoil, four ailerons and a fully sheeted circular fuselage that looks great stained. The model has won several scale contests and earned David an invitation to the 2002 Top Gun Scale invitational in Lakeland, FL.





Far left: the elevator outline is a balsa-sheet lamination. Use pins to hold the part in place while the glue dries. Left: the finished tail surfaces; the fin and stab are fully sheeted.

through the fuselage. Use ¼x⅜-inch-balsa to build the stab outline around the spar, taking great care to not glue it to the spar. Add the ¼-inch-square crosspieces, then sheet the top of the halves (joined by the trailing edge) with 3/32-inch balsa. Add the bottom sheeting after you have attached the stab to the fuselage.

• **Elevator.** Begin by stripping six pieces of 1/16x⅜x48-inch balsa to form the laminated outline. These strips should be soaked in water for about two hours. While they're soaking, stick pins every ¼ inch along the *inner* surface of the elevator's outline. Remove the strips from the water, coat them with carpenter's glue, and make a ⅜-inch-thick, 6-ply lamination. Beginning at one end,

FLYING THE D-III

Even though the control surfaces look huge, set the control throws to the maximum limits. On the elevator, I use 2 inches up and down (4 inches total), 40 degrees of travel in both directions on the rudder, and all the travel I can get without binding on the ailerons. Don't use less!

My first flight was on a cool spring day with about a 10mph breeze blowing at 45 degrees across the runway. I planned to do a couple of taxiing runs up and down the runway, but the plane broke ground in only 10 feet at ½ throttle. It tracked beautifully hands-off into the wind at a slight climb, but with my initial conservative control settings, I could barely make it turn. Also, with the highly under-cambered scale airfoil, it descended steeply when I cut the throttle; I ran out of elevator on the landing flare. I dialed in more control throw on the ailerons and the elevator, and the plane now flies like a dream!

You can do all the scale WW I maneuvers you like with the D-III. The Brison engine provides plenty of thrust, and you'll find the model very responsive. Videos of my first flights can be viewed at my club's website, www.ncrcc.org.

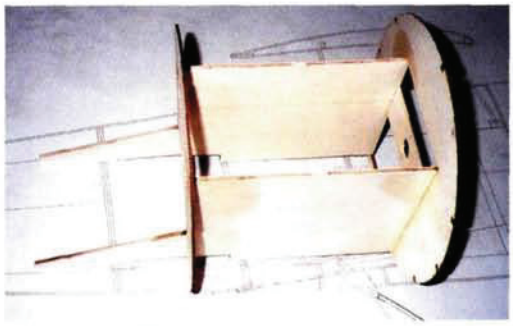
uckert D-III

place the lamination (on its edge) about 1 inch past the front of the elevator, and work it around the pins while you place more pins around the outside to hold it tightly in position. Once it's pinned, let the glue dry at least 24 hours. When it's dry, glue the ¼x⅜-inch crosspieces and front and rear supports into place. Add the ⅜-inch-square leading-edge reinforcements, and you have finished.

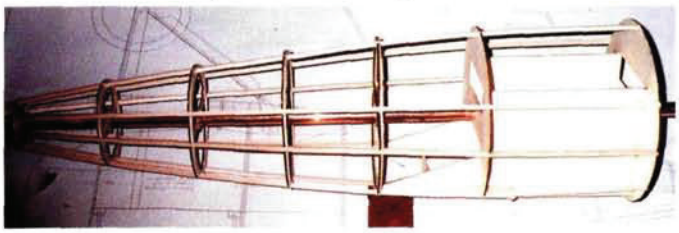
• **Fin and rudder.** Frame the vertical fin using ¼x⅜-inch balsa, then install the ¼-inch square crosspiece. Sheet both sides with 3/32-inch balsa, and sand the leading edge to shape. Begin the rudder by making six strips for the outline and soak them in water as you did before. Place the pins along the inner surface of the outline every ¼ inch (use ⅛-inch spacing on the tight radiuses). Glue the laminations together as you did for the elevator, work them around the rudder's outline, and pin them into place. Maintain a tight pressure around the corners. After the glue has dried, glue the ¼-inch-square balsa ribs and verticals into place, and then sand the rudder to shape.

FUSELAGE

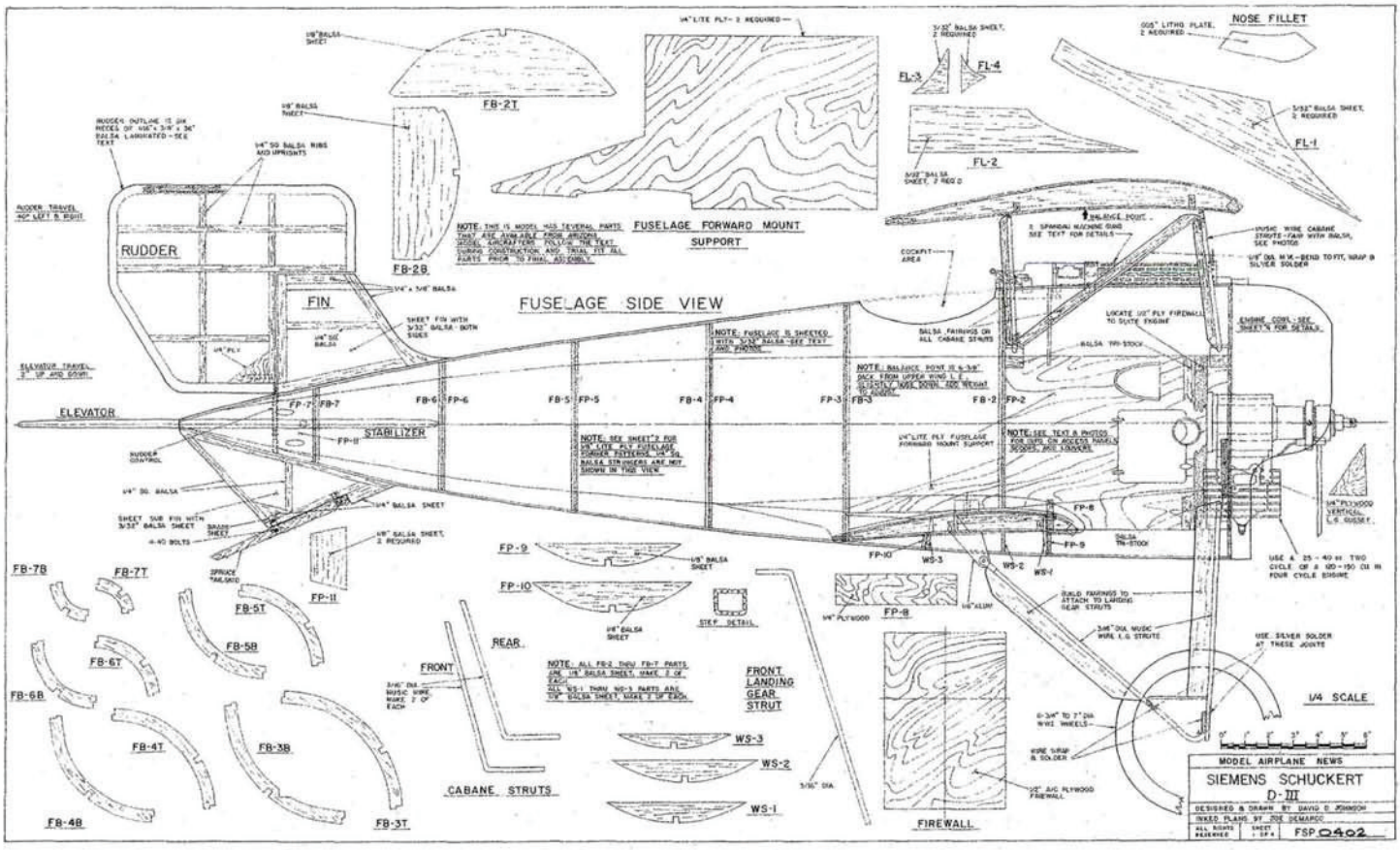
Begin the fuselage by constructing the forward fuselage box from parts FP1, FP2, the two ¼-inch lite-ply sides and two 2x5-inch balsa FXX temporary braces. Make sure that the temporary FXX braces are on the centerline as indicated on the plan. Inserted between the box sides at FP1 and FP2, the braces support the front of the fuselage. The circular fuselage formers and the braces have ⅞-inch holes in their centers and are



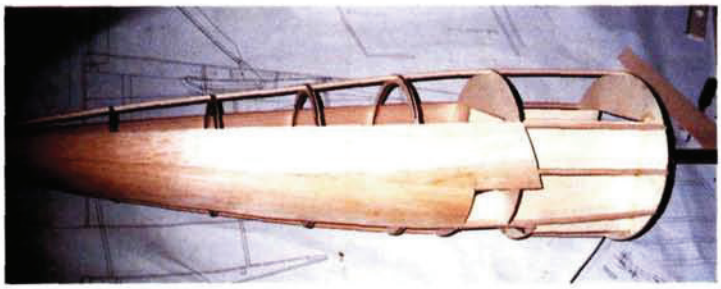
Left: start building the fuselage by assembling the main box structure. Note the temporary brace, FXX, tack-glued inside the box; it holds the structure in alignment on the jig tube. Right: the copper jig tube has been inserted through the circular formers. Below: after sliding the formers onto the tube, add the stringers. Alternate sides to keep the structure straight.



FSP0402 Siemens Schuckert D-III
Designed by award-winning scale designer and competitor David Johnson, the Siemens Schuckert D-III has traditional balsa and plywood construction. The model has an undercambered airfoil, four ailerons and a fully sheeted circular fuselage. Complete construction instructions included with plan. WS: 81.5 in.; L: 55 in.; power: 25 to 40cc 2-stroke, or 1.20 to 1.50 4-stroke; 4 sheets; LD 2. **$24.95**



To order the full-size plan, turn to "RC Store.com" on page 132



The sheeting is being glued to the formers. When all the sheeting except for the bottom is in place, remove the structure from the jig tube.

designed to be slid snugly onto a length of 7/8-inch copper jig tube. Glue the 1/8-inch thick balsa, quarter-round, semicircle formers to the appropriate plywood formers. Each plywood former has two upper and two lower balsa parts. Mark the former locations on the tube, then slide the formers into place. Install the eight 1/4-inch-square balsa stringers in their slots, alternating sides to equalize the stress. Constantly check to be sure that all the formers are perpendicular to the jig tube. Trim the stringers so they form an angled joint at the tail. Using 1/4-inch balsa, reinforce the areas where the horizontal stabilizer's spar will pass through, then cut the openings for the spar in the side stringers.

Sheet the wing saddle using 1/8-inch sheet balsa. The saddle uses FP2 to maintain its correct angle. Complete the saddle construction with scraps of 1/8-inch balsa to tie it into FP9 and FP10; do this on both sides. Cap the grooved-hardwood cabane mounting blocks with 1/8-inch plywood, and place them against formers FP1 and FP2. Mark the outer edges of the formers on the blocks and cut them to size. Epoxy them into place, reinforcing them with 1/2-inch triangle stock. Keep the trimmed-off ends; you will use them as front landing-gear leg-mounting blocks. Mark the positions of the front landing-gear mounts, then epoxy both blocks to the box and FP1 using 30-minute epoxy. Once this has set, epoxy the 1/4-inch-ply reinforcements into place (two per side).

Sheet the sides and fuselage top from the front of the cockpit to the tail, leaving the bottom open for now. A little water and ammonia helps to curl the sheeting to fit the formers. If you want to finish the sheeting with stain, avoid getting glue on the outside of it, as it will give you light spots. After the glue has dried, remove the fuselage from the jig tube. Check that the tail-spar openings are parallel with the wing seat. Do not install the spar at this time.

RUDDER TILLER

I installed the rudder tiller and linkage by holding the fin on the fuselage a little forward of its true location and then drilling a 5/32-inch hole vertically through the top sheeting and out through the bottom. Make sure that the holes are parallel to the fin's trailing edge. Insert short pieces of 1/8-inch-i.d. brass tube through the top and bottom of the fuselage, then slide in a piece of 1/8-inch music wire before you glue the tubes into place, as shown in the fuselage side view. Install the tiller wire from the top through the brass control arm, and solder the arm into place. Now install the rudder pushrod and the guide tubes for the elevator pull/pull controls. When the rudder works satisfactorily, glue 1/4-inch sheeting between the last two formers on both sides of the bottom stringer, and sand it to match the contour of the formers; this provides additional tailskid/fin support. Complete the bottom fuselage sheeting, sand it smooth and install the tail surfaces.

The top wing's center cutout area is also laminated balsa that has been sanded to match the wing's contour.

WING CONSTRUCTION

The wings are fairly easy to build, so I'll only describe those areas that require special attention. You can install the aileron servos directly in front of the ailerons, or you can use the scale torque-tube aileron controls shown on the plan. If you use the latter, handle the ribs carefully until you've capstripped the wing. Arizona Model Aircrafters offers laser-cut ribs.

Beginning with the bottom wing, make the 3/8x1/4-inch spruce spars. Block them up 3/8 inch above the plan and install the ribs. Glue the 3/8-inch-square balsa leading edge into place, then install the 1/8x1/4-inch balsa trailing edge and remove the wing from the plan. Cut a piece of 1/8-inch-thick balsa to fit, and glue it into place as the center-section leading edge. Cut to length and install the 9/16x7/16-inch center-section trailing edge, and sand its top edge until the wing fits snugly into the saddle.

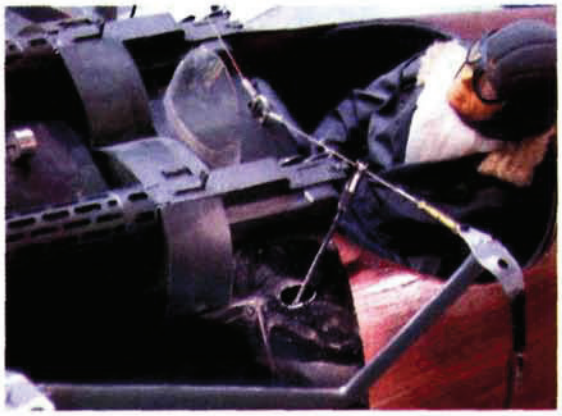
The wingtips are made of two 1/8-inch lite-ply pieces laminated together; I bent them to a curved airfoil shape as the glue dried. Now install the 1/4-inch-sheet trailing edge on the aileron cutout area. It should be cut 1/8 inch taller than the rib edge to allow for the capstripping. If you

The bottom wing center section. The small blocks support the wing-attachment bolts. Note the aileron torque tube outer sleeves.

The aileron's counterbalance tips are made of two layers of lite-ply glued together.

use the aileron torque tubes, install the aileron servo in the wing root area.

The top wing is very similar to the bottom. Note: do not install or drill the plywood cabane-strut mounting plates until after you have trial-fit the wing into place! Once you've built the wing, set it on top of the cabane struts with the lower wing installed. The top wing's leading edge should be parallel with the lower wing's. If everything lines up, install the cabane mounting plates above the bottom capstrips as shown on the plan. Mark the locations of the four bolts, install the blind nuts, and bolt the wing into place. Check the wing incidence; the wings should match (plus or minus 1/2 degree). Now use balsa to build up the cabane



Above: the pushrod just ahead of the cockpit connects the aileron servo to the top wing's torque tube. Left: this is the attachment bracket connecting the aileron pushrod and the torque tube.

mounting plates flush with the capstrips. If the wings have different incidences, shim the top wing until it matches the bottom one. When both wings have been set properly, fit the interplane struts into place, but don't drill any holes at this time.

AILERONS

The ailerons are pretty straightforward. Note: a curved gap next to the dog-eared counterbalance extension will need filling. I glued in a piece of ⅛-inch balsa slightly longer than the gap and sanded it flush. Use a piece of ¼-inch scrap to build up the leading edge at the hinge points and do the same where the torque rod enters. When you install the torque rod and the aileron, press the aileron firmly against the rod to leave an imprint; that's where you'll drill the aileron for the threaded rod. The servos for the top ailerons are installed in the fuselage and are connected to the inboard ends of the top torque rods with 2-56 pushrods and clevises.

FIREWALL INSTALLATION

The firewall position will vary according to your engine. Drill the engine-mount holes before you glue the firewall into place. Be sure that there is no interference between the carburetor and the landing-gear mounting blocks. Epoxy the firewall into place, and install triangle stock to strengthen it. Cut away material from F1 until the engine sits flush against the firewall, then use scrap balsa to box in the carb. If you build the later version shown on the plan (with the cut-away cowl), you will have access to the carb for priming and choking. I made my cowl out of fiberglass using blue Dow foamboard, but an aluminum cowl is available from Arizona Model Aircrafters. Use six evenly spaced mounting blocks and screws to install the cowl.

Landing-gear detail. Note the functional bungee shock cords.

FINAL ASSEMBLY AND RIGGING

Chances are really good that when you assemble the model, the wings will be warped; mine were! Brace the wings into their proper positions, and then install the interplane struts and mark the struts through the fittings. Remove the struts, drill the attachment holes and install the 4-40 bolts. When assembled, the wings should not be warped. If there is a bit of droop (anhedral) at the tips, you will be able to correct this with the rigging wires. I used 80-pound test, nylon-coated fishing leader and small-diameter aluminum tubes that I glued and swaged to the wires. Install the landing wires first (cabanes to strut bottoms). This will remove the droop. Once all four landing wires have been installed, add the flying wires (strut top to wing fillet base), and then attach the drag wires (cowl to lower strut).

Finish the model with your favorite products; I used Arizona Model Aircrafters' five-color "lozenge"-pattern printed fabric to cover the wings. Install your fuel tank and any remaining radio components, and attach the spinner (Arizona Model Aircrafters' Albatross spinner is just the right size). The model should balance slightly nose-down at a point 6⅜ inches back from the top wing's leading edge. Add lead ballast until the model balances correctly.

The aft landing gear strut is attached to this aluminum bracket; it's glued into place between two plywood ribs. Note that its angle is established when the gear is screwed into place.

The Siemens Schuckert is the very best flying WW I model I have ever flown, I hope you enjoy yours as much as I enjoy mine.

Arizona Model Aircrafters, 14715 N. 78th Way, Unit 600, Scottsdale, AZ 85260; (480) 348-3733; fax (480) 348-3773; www.arizonamodels.com.

Bob Pearson Documentation, 1332 Summit Ave., Prince Rupert, B.C. V8J3W7 Canada.

Brison Aircraft, 12075 Denton Dr., Ste. 11, Dallas, TX 75234; (972) 241-9152; fax (972) 241-5065.

WW I Documentation Services, Dan-San Abbott, 1800 Stone Cress Ct. Ceres, CA 95307.

Windsock Datafile Siemens Schuckert DIII/DIV, Albatross Publications Ltd.; 10 Long View, Berkhamsted, Herts, England, UK HP4 1B.

THE SIEMENS SCHUCKERT

The Siemens Schuckert was introduced in late spring 1918. The new fighter plane's climb rate and maneuverability were unparalleled, and it was described by many as the ultimate WW I fighter. So why have you never heard of it before? Its chief advantage was also its Achilles' heel. Powered by a revolutionary, 160hp, 11-cylinder Siemens Halske rotary engine, it could maintain high performance at extremely high altitudes owing to its engine's high compression ratio. Also, to minimize engine-torque effects, the engine rotated in a direction opposite that of the propeller. Engine development issues limited the D-III's use to the very end of the War. Even still, aces such as Ernst Udet and Georg von Hantelmann flew the aircraft to good advantage.