FM Tests the Svenson Schleicher K8B

Photos by the author

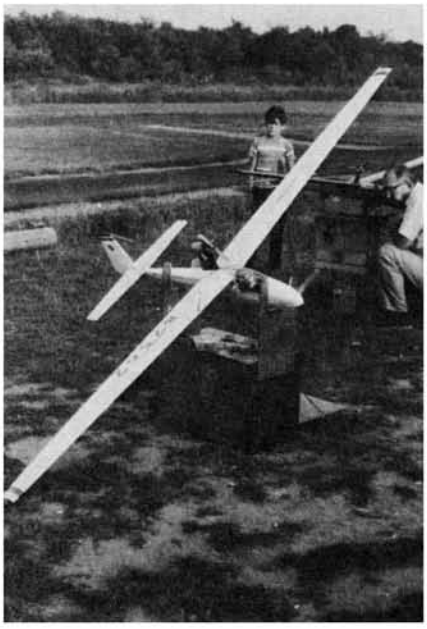
The K8B spans 9 ft., 1 in. The powerpod is locked between the wings by the steel V-braces and wooden dowel pins. The O.S. Max .10 and 1 oz. fuel tank take the ship to about 1500 feet.

This 9 foot thermal chaser along with the MRC F-700 digital system makes quite a combo for sport or competition soaring.

by Gene Fuller

The Svenson K8B is a magnificent sailplane, with its high fin and large rudder, and sweeping nine foot span. The K8B is scale, only the stabilizer and elevators have been increased in length for a better wing-stab ratio. The deviation is noted on the plans, should some purist want to build it exact scale. At the time of this writing, the best flight made with this model (Feb. 1970) was 4 hrs., 17 min. Wing area of the ship is 875 sq. in. and without a powerpod the wing loading is only 9.37 oz./sq. ft. Though not as lightly loaded as some of the currently available models, she seems to be able to hold her own with them. The airfoil is similar to, if not the same as, an R.A.F. 32. Prior to covering, the model weighed 3 lbs., 6-1/2 oz. After covering with Super MonoKote (3 rolls) the glider weighed 3 lbs., 15.75 oz. The powerpod adds an additional 9 oz. The pod was built of 1/8" plywood and fits between the wings where they butt together, held in by the steel V-braces and dowel pins.

Here the K8B sits atop the field box awaiting another flight. Landing on paved runways is a real pleasure when you have a wheel!



The balsa in the kit is contest grade; it is also rather fragile in areas such as the wing leading edge planking. If you're not careful, you'll stick your finger through it. Balsa spars for the stab and rudder are of very hard balsa—so hard that it's hard to stick a pin into it. The wood appears to have been selected to its intended purpose. The wing ribs, fuselage formers and wing saddles are die-cut, everything else is sheet and strip stock. A packing list tells what part is to be cut from each of the various pieces, so don't throw it away.

Some of the goodies included in the kit are a wheel, Schweizer canopy, steel rod V-braces, brass tubing, Kavan hinges, control horns and a camlock for holding on the stab so rubberbands won't be necessary except to hold on the wings. A small bottle of Titebond glue is included. Svenson recommends using this glue for the entire construction except for gluing in the brass key-tubes, for which they specify epoxy. Titebond is a very good, flexible glue, which will not dry out and become brittle. A glue like this is especially needed when gluing up the wings, for with these long glider wings there is quite a bit of flexing during flight and if a joint will not "work" a little, it may break. The glue is not so soft that it would allow the wing to warp.

The two plan sheets must be joined together with tape and they give full size layouts of both wings (which are built side by side), the tail surfaces, and side and top views of the fuselage. A sheet of instructions accompanies the plans, both of which have photos of the assembly proceedure. The photos help in getting the builder around spots he doesn't understand, as the instructions are vague in some places. Svenson recommends the use of an iron-on covering material. It is not only faster to cover the model this way, but also makes it easier to get rid of warps, should they creep in. Removing warps from silked wings is not easy.

Construction

Assembly begins with the fuselage, which is built right on the top view of the plans. Practically all the fuselage is built over this view, upside down, and it is helpful to have a square or right triangle to align the formers properly. Build as much of the fuse as possible, before removing it, to help prevent it from getting warped. The R/C box in the nose helps in this respect and also adds strength to the nose. The camlock must be glued and bolted to former #9 before assembly.

Additional notes to the fuselage instructions that I've made are to paint a heavy coat of Hobbypoxy glue on the inside of the bottom planking to help prevent it from getting punched in by a stone or other object when landing. If MonoKote is not going to be used, an additional coat on the outside will make it even stronger. I also sealed off the wheel well from the inside of the fuse to prevent sand, grass, etc. from entering inside.

During the fuselage construction, while waiting for the first 11 steps to dry, the empennage is built on the plans. No instructions for this are included in the kit as it is rather self-explanatory from the drawings that are given. There is not enough balsa supplied to make all the ribs in the manner shown. When building these structures, do not waste even the smallest piece of balsa that could be used for a rib or gusset. Even if the balsa is misered, the three 1000mm x 8mm x 3mm pieces won't be enough for all the ribs. If you wish to put in all the ribs into the stab and elevators (which are excessive anyway) that the plans show, it will be necessary to obtain a 36"x5/16"x3/32" strip. I didn't choose this route on mine; instead I just glued in 6 parallel ribs in each elevator rather than the 12 diagonal V-ribs shown on the plans. By doing this, I had enough balsa, saved weight in the tail, and since the elevators were plenty strong, I doubt that any strength or warp resistance was sacrificed.

The control surfaces should be notched and hinged together, but I'd suggest that you don't glue the hinges in until after covering. This will make the covering job a lot easier. Four of the hinges can be used for the rudder and the other 6 for the elevators. I used MonoKote hinges as they are very strong and I've never had one break.

The stab should be fastened to the fuselage and checked for proper alignment before gluing on the fin. Aim for a good 90° fit, then align and glue on the fin 90° to the stab. I always use a 5-minute epoxy for this because there is less time for things to get out of alignment while they're drying.

It is handy to have a 5'x2'x3/4" thick piece of plywood which is warp free and with a padded surface (ceiling tile) to build the wings upon. They may both be built together, side by side, if the board is large enough, and it will certainly save some time.

The wings are built by first pinning down

the leading and trailing edges, just as with the empennage, and then gluing in the parts between them. The leading and trailing edges are laminated during construction. The hard spruce spars are full length (that's why the box is so long). These two spars in each wing are webbed for more rigidity, warp resistance and to keep the wing ribs from cracking. Make sure the grain of these webbing pieces is *vertical* or their purpose is defeated. Ten millimeters of washout are automatically built into each wingtip from rib W-16 to rib W-26 by use of a tapered spar under the trailing edge. The brass key-tubes are glued between the main spars with *epoxy* before cutting them, in order to keep them parallel. Join the wings together with the tubes installed, holding the wings with the trailing edges up, and pour Formula II into the "boxes" formed by the webs. Don't forget to plug the ends of the tubes first. When the epoxy has cured, the brass tubes are sawn in half between the wings so that they'll come apart. There is supposed to be 100mm (4") dihedral under each tip.

When the plane is assembled, the wings are held together in the middle by criss-crossed rubberbands, which will go over the central W-O ribs, preventing the wings from pulling apart.

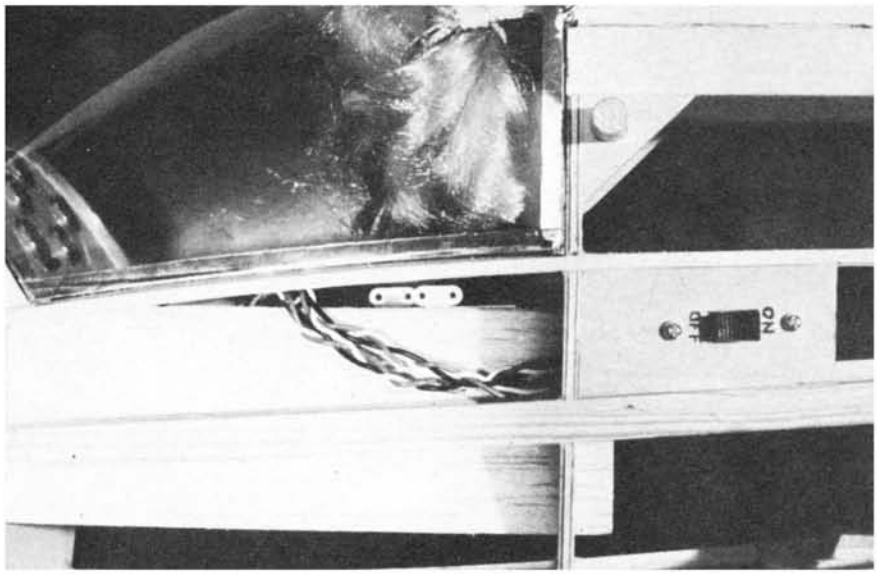
After step 17 in the instructions, you should add "install the lower cap strips on the wing ribs," as this was overlooked. Also, there weren't any wing tip blocks in the kit; neither were they on the packing list. Perhaps they will be included in later runs.

Radio Installation

The MRC F-700 was an ideal choice of system for installation in the K8B. I don't think that a radio system could ever be *too* small to go into the radio equipment box, and the F-700 was a perfect fit. I cut down the MRC servo mount tray from three to two servos wide, then installed the two servos on spruce rails in the rear of the box. I glued in a 1/2" layer of G-Pad in the front of the box, then placed the battery just behind it. After gluing in another 1/2" layer of G-Pad for a partition behind the battery, I wrapped the Rx in foam rubber and placed it in the middle of the box. The extra lengths of wiring laid on top of the Rx. Everything was neat and compact. With an MRC F-700 system (mode II) the left servo is elevator and the right one, rudder. A notch can be cut in former #3, between the box and the former, to allow the switch wiring to pass where it won't interfere with the servos.

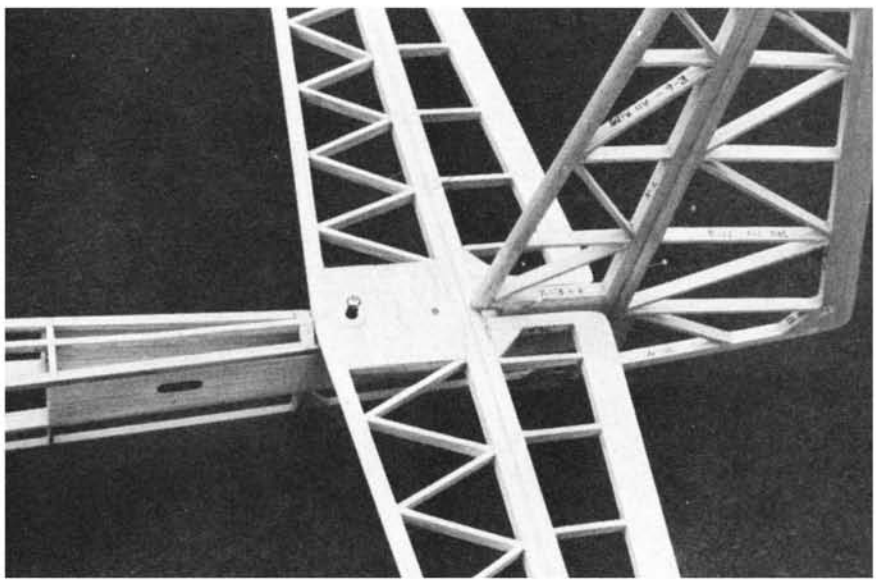
Cockpit Details

If you wish to detail the cockpit/canopy, and close up the bottom of the cockpit for a floor, make sure that you install the servos well down into the radio box so that the outputs of the servos will not interfere with the floor. I made a foam-padded seat back to cover the hole in the rear of the cockpit, and used flat black art paper glued onto 1/32" plywood for the floor. The instrument panel and other wood parts in the cockpit were just clear doped to keep the natural wood effect. The dummy pilot is a small doll that was cut off below the shoulders and glued to the floor. Tatone gauges were used on the instrument panel. The result was a decent, though not scale, looking cockpit, which is easier on the eye

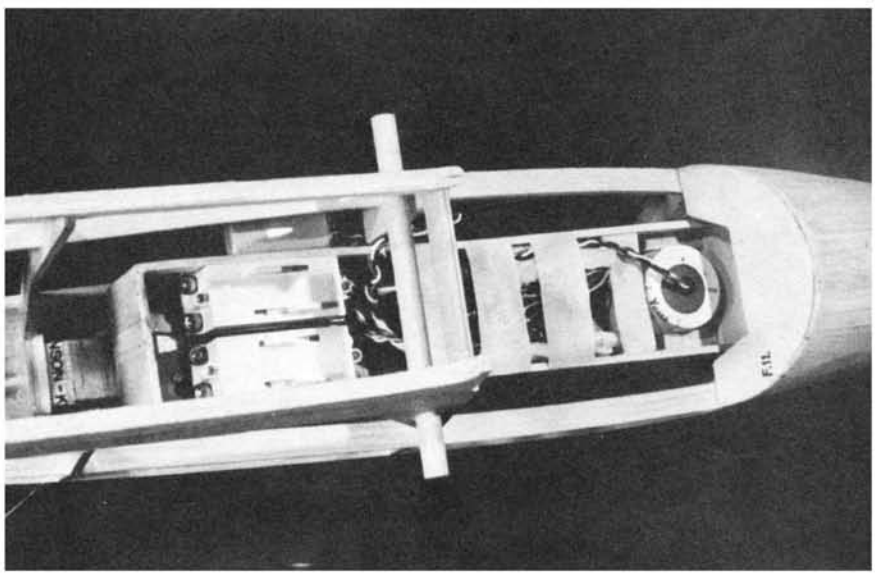


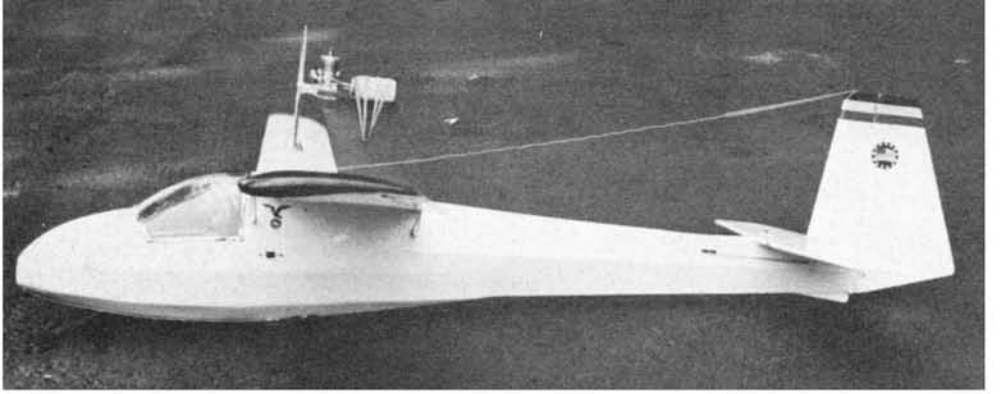
Note that only the linear outputs stick up above the radio box, clearing the canopy floor by only 1/2". 1/8" plywood former in the foreground is notched for switch wires.

Not enough wood was supplied to make the diagonal ribs in the elevator, but the ribs shown are the way the full scale ship is made. A camlock holds the stab onto the fuselage.



R/C box pulled back to show the radio installation. Former F-11 is notched to clear the battery. Box was later made of plywood.





This side view shows the washout at the wingtip, also the powerpod installation. The ship sits on the wheel and tailskid, but when she lands, she rolls down the runway on the wheel and skidplate.

Russ Glasgow brings the K8B overhead for the camera. This ship is a floater with light wing loading. Add weight for slope soaring.

On her way home, the K8B soars by on her downwind leg. The bird looks impressive overhead, just like the full scale ship.

than the plane's innards. Additional scale features were the outlines of the air brakes and ailerons on the wings.

Trimming and Flying

Prior to covering, I assembled the bird and checked for balance, just to see if the CG was drastically off. I was surprised to find that the model balanced just a little nose heavy, but by the time it was all covered (with the majority of the MonoKote being behind the CG), the model balanced out tail heavy and needed a few ounces of lead. Out came the balsa R/C gear box and I re-installed one made of 3/16" plywood. If you have to add weight, it might as well have some function—in this case, more protection for the radio gear.

A few trial glides were made into tall grass, and the bird seemed to be in good shape in the trim dep't. with all surfaces set at neutral. We made an attempt to hand tow the model but this resulted in a stall—which gave us a broken-off wing tip for our efforts. Hand tows seem, therefore, to be a no-no as enough speed could not be maintained by the runner.

If the wheel is installed, an adjustable tow hook will be impossible to rig up behind the CG, since that is where the wheel is. I affixed a 1/2"x1/16" aluminum skid plate from the wheel to the nose. Since tow hooks hanging down would interfere with the glider's wheel on landing, I installed brass tubes with epoxy inside the fuselage and used "drop out" type tow hooks. The K8B can now be landed on a paved runway just like the full scale ships, landing on the runway and rolling about 75 feet to a stop. The wingtips don't drop until she is almost completely stopped, but if you're worried about scraping them you can install wire skids out at the tips.

Russ Glasgow, a good friend and glider guider for many years, was summoned to take the first flights. We used the powerpod with an O.S. Max .10 engine and a 7x3.5 prop fed by a one oz. tank, instead of a towline for these test flights. On the first flight, the wind was calm; we could not tell from which direction it was coming from—the windsock was limp. As the elevator trim was eased back, further and further, the K8B flew slower and slower. Finally she was just hanging in the sky, hovering. She took about 5 minutes to fly 100 yards at an altitude of about 500 feet. On the next flight we used a special fuel mix and an 8 minute engine run took her almost out of sight and we got in a good 20 minute flight. No thermals were around that late in the evening.

Conclusions

The ship is very responsive to elevator control. We used the outside hole in the horn but even so it is entirely possible to fly the K8B just by using the elevator trim knob. We trimmed her to fly thermal with the elevator at neutral. When ready to land, just feed in a little down trim, and start the approach; the ship will go into a smooth glide with a good rate of descent. When almost to the runway on final glide, start the flare just as if flying a power plane but don't drop the tail too far. She touches down right on the wheel and rolls to a stop.

We found that the 8" of dihedral (under one tip) wasn't enough to get quick, tight turns, so we increased the dihedral to 11". Just bend the steel rods the required amount. The ship turns much better now but it does require lots of rudder throw. About 45° is enough throw, so you'll need a shorter control horn than the one supplied. Since the K8B has so much side area, she has a little tendency to weathervane. When turning into the wind, judicious amounts of rudder are needed.

We were glad that the MRC F-700 servos were so fast in a number of instances. When doing a stall-turn, the rudder kicks over so fast it actually throws the ship around. In one instance where we came off the winch towline just after release, while going straight up, quick full up elevator saved the ship by pulling it out of its dive only a foot off the concrete deck. Instant down elevator prevented another stall and subsequent dive.

Another advantage with the MRC system is that the battery in the transmitter can be quickly removed and changed (even while in flight, if someone is available to help) because it *plugs* into the system instead of being permanently wired in. The two thumb screws in the bottom of the case can be easily removed and then it is relatively easy to unplug and change batteries. This could be a definite advantage during a duration type flight.

The Svenson K8B will be handled by 3 distributors in the U.S.A., Midwest Model Supply Co., 6929 W. 59th St., Chicago, Ill. 60638, Royal Products Corp., 6190 East Evans Ave., Denver, Colo. 80222, and Technisales, 125 N. San Gabriel Blvd., San Gabriel, Calif. 91775. The price has been tentatively set at $37.50 retail, but subject to the actual cost of shipment.

The framework, ready for MonoKoting, at this point weighs only 3 lbs., 6-1/2 oz. Three rolls of white MonoKote were needed to cover the bird.