

Configurator III

A direct descendant of the A-6 Intruder, this model perpetuates the exacting standards of excellence in pattern design which the late Jim Kirkland held so highly. / by George Buso

One direct and extremely influential ancestor of the Configurator is the late Jim Kirkland's Intruder design. After two years of modification and experiments, the Configurator still strongly resembles the Intruder, especially in the top or planform view. However, the Configurator employs many important changes that make it an even more forgiving and stable aircraft, with no negative tendencies whatsoever.

A new name was most certainly warranted after several modifications gradually evolved for the airfoil, thrust line, rudder and fin shape, fuselage width, and the wing and fuselage construction. The airplane has been changed considerably over a two-year period, hence, the new name—Configurator III (it performs a prescribed configuration of maneuvers). This third generation model has now been endowed with more desirable flying features, which make it perform with confidence at full throttle and also at lower approach and stall speeds.

In March, 1973, the airplane placed first in the Pattern Aircraft category at the Eastern WRAMS Show where the entries were judged for original design, as well as for overall construction and finish. By the end of April, in windy, blustery weather, the Webra 61 in the Configurator had gulped down only one gallon of fuel. The only trim adjustment needed for 15 flights of various lengths (including one dead stick after about 18 minutes of air time) was a "tweak" of left aileron.

If you are interested in a fast, steady contest flying machine that grooves as if on rails, then consider building the Configurator. Make certain that everything is square and true during construction for maximum flying enjoyment.

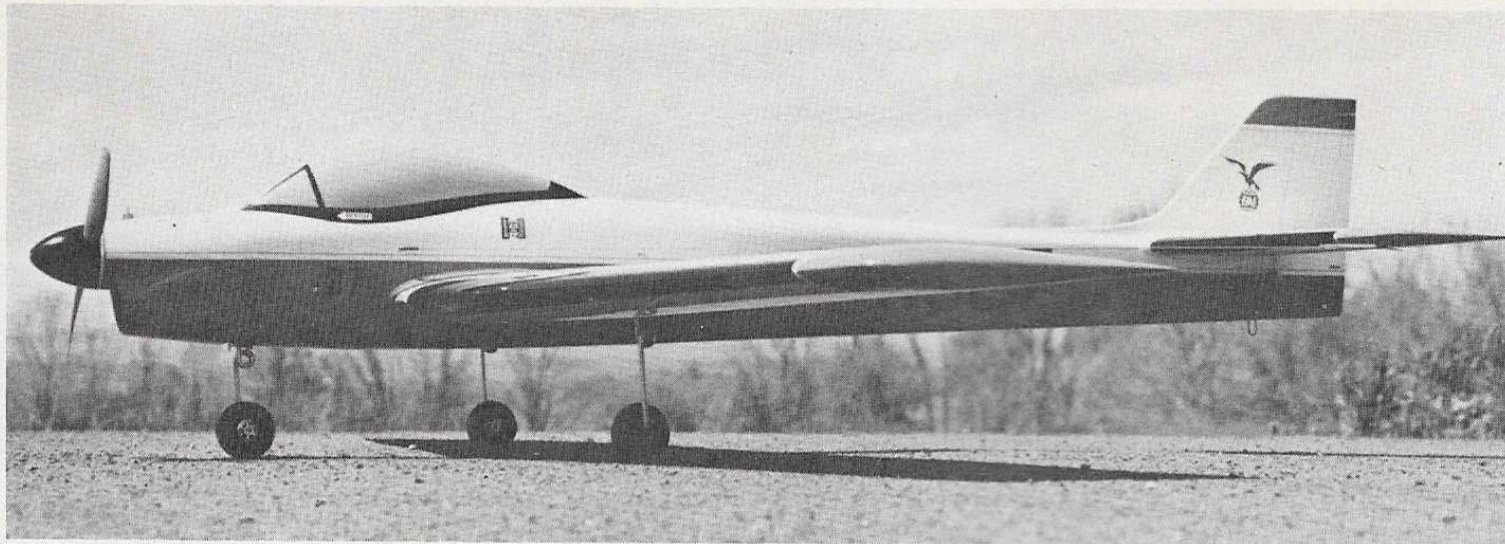
CONSTRUCTION: Only specific construction points will be highlighted here. Anyone building this aircraft will probably be familiar enough with building techniques to complete a Configurator without a great deal of detailed explanation.

Begin the wing construction by cutting out the foam wing cores, using the root and tip templates shown on the plans. A solid balsa leading edge is utilized, which makes the foam cutting somewhat easier. Only a top and bottom outline cut is required, without the necessity of cutting around the critical leading edge airfoil shape. The 1/16" balsa wing skins are also easier to make, because the skins do not wrap completely around the leading edge. The rearward sweep would make a one-piece wing skin much more difficult to construct and to fit correctly.

(Continued)







A no-nonsense design, with complete emphasis on functional geometry, the Configurator rates high as a pattern ship.

After cutting the core and making four separate wing skins—slightly over-size because the excess can be sanded off—glue the $1/4 \times 3/8$ " trailing edge to the core with epoxy or white glue. Sand in the taper when dry. The $3/16$ " plywood landing gear plates are attached with epoxy, after gouging out a $3/16$ " deep impression in the foam with a hot wire installed in a 40-watt soldering iron.

Attach the wing skins with your favorite water-based contact cement, making sure that a warp is not induced into the wing halves. Sand the leading edge sheeting overlap flush with the foam core LE and sand the overlap at the wing tips flush with the core. Attach the $3/8 \times 3/4$ " medium balsa leading edge with epoxy, and follow with the tip blocks.

After carefully sanding the two wing halves to shape, glue them together using Hobbypoxy Formula II. The top of the wing is perfectly flat, thus the bottom only has dihedral. Fiberglass cloth is applied to the center section, as shown on the plans, again using Hobbypoxy Formula II. The ailerons are made from $1/2$ " medium balsa, sanded to shape as indicated on the plan.

The servo cutout and the wheel wells were not cut out on the original until the covering and a base coat of dope were applied. This procedure makes the initial alignment of the two wing halves easier. It permits a "more square" lineup of the retract servo by performing the cutting-out operation at a later time.

Note that the wheel wells are offset rearward to accept a rearward set of the struts. After a few "harder" landings,

the Pro-Line gear struts used on the original tend to set rearward slightly (never forward) and could cause a servo bind if the rear of the wheel could not easily retract into the well. A simple offset of the wheel well eases one's mind about a clean retraction every flight.

The stab is started by gluing the $1/16 \times 5/16$ " balsa strips to the leading edge and trailing edge pieces. Note that $1/16$ " plywood is used on part of the trailing edge for added strength. Block up the leading edge over the plans with $5/16$ " balsa pieces. The trailing edge piece is blocked up $1/4$ " and pinned over the plan. At this point, add all the parts, including S1, all the ribs, and the $3/16$ " square spar. Carefully cover with $1/16$ " balsa, with the joint line on the spar. Thus, four pieces of $1/16$ " sheet are used to cover one side of the stab.

After drying, flip this construction over, carefully blocking up the LE and

TE as before to make sure the final assembly is true. Add the spar and sheeting as before. Note that a slot must be left in the top sheeting for the $1/4$ " sheet fin to slip in above S1. Glue on the tips and sand to shape. The elevators are carved and sanded to the cross section shown on the plan.

The fin and rudder are assembled from $1/4$ " sheet balsa. Sig C-Grain balsa was used for these parts in the original Configurators to minimize warping. Careful finishing, and checking often to prevent warps in the fin and rudder, pay off with a steady, true-flying aircraft, eliminating the more time-consuming task of assembling a built-up fin.

A good rule to follow in constructing the fuselage is to attach as many parts as possible to each $3/32$ " sheet side before assembling to the bulkheads. It is possible to have the $1/32$ " doublers, all longerons, triangles, etc.,

Author checks retract system, which installs easily in thick wing and deep frontal area of fuse.

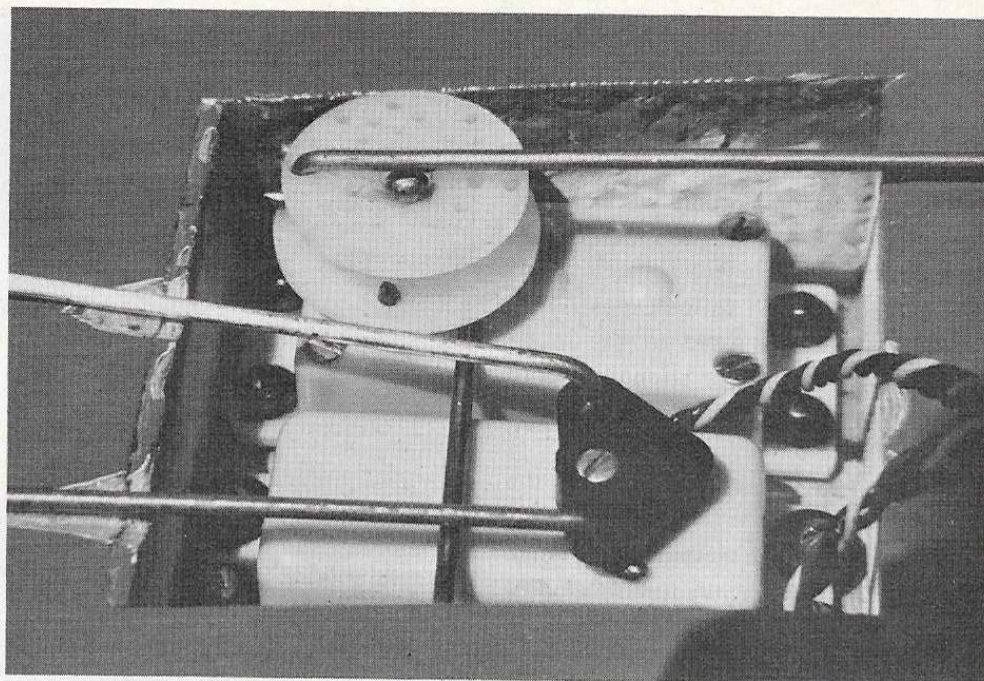


attached, with only the bulkheads and the fuel tank floor to add to the assembly for initial lineup. These are followed by the bottom sheeting, the balsa top block and the 3/8" sheet for the cowl.

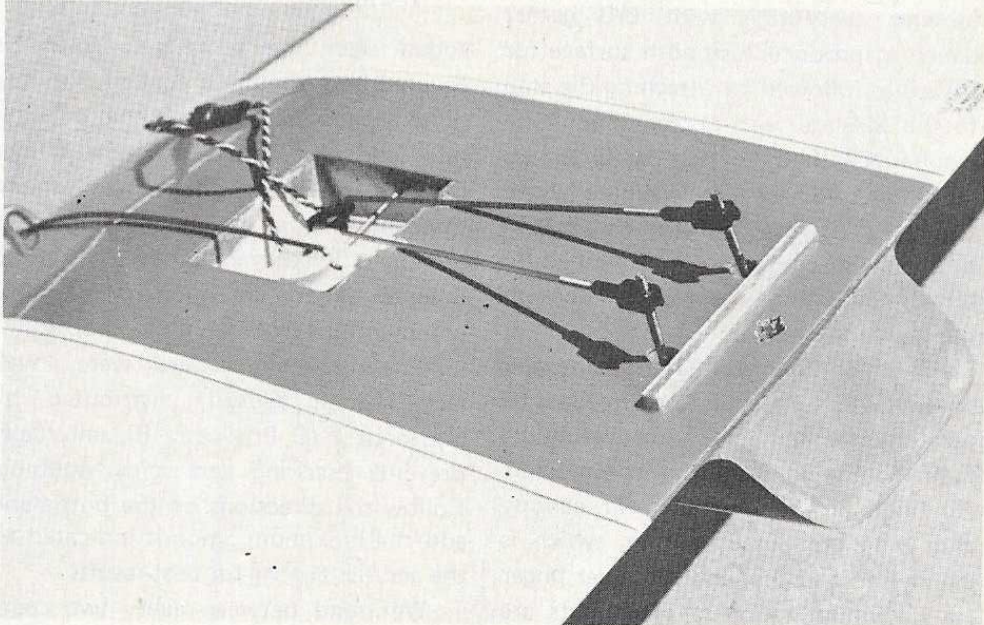
The fuselage sides are assembled to the bulkheads, upside down, with the 1/8 x 3/8" spruce longerons lying on a flat surface. The bulkheads must be vertical. Pin the whole assembly down and make sure F2 is not offset, as this will affect the engine thrust line. The engine thrust line must be zero. After the tank floor is installed, the 3/8" balsa nose filler pieces and 1/2" square pieces are glued in place. These are followed by the bottom nose sheet which will be cut out later to the pattern shown in the photographs, to form the nose wheel retract well.

Du-Bro Kwik-Rod Assembly No. KR30 was used to provide straight servo-to-control horn thrust. The nylon tubing can be epoxied in place before the 1/4" sheet bottom is installed. Measure this accurately to eliminate bind in the steel pushrods after assembly.

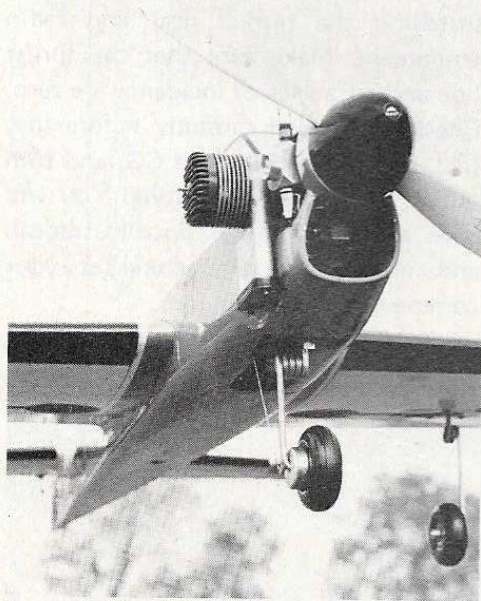
The top block is tack glued in place and shaped, and then is carefully re-



One retract servo drives all three gears. The nose gear linkage is driven from the top output on this tandem setup. The other servo is, of course, for the ailerons.



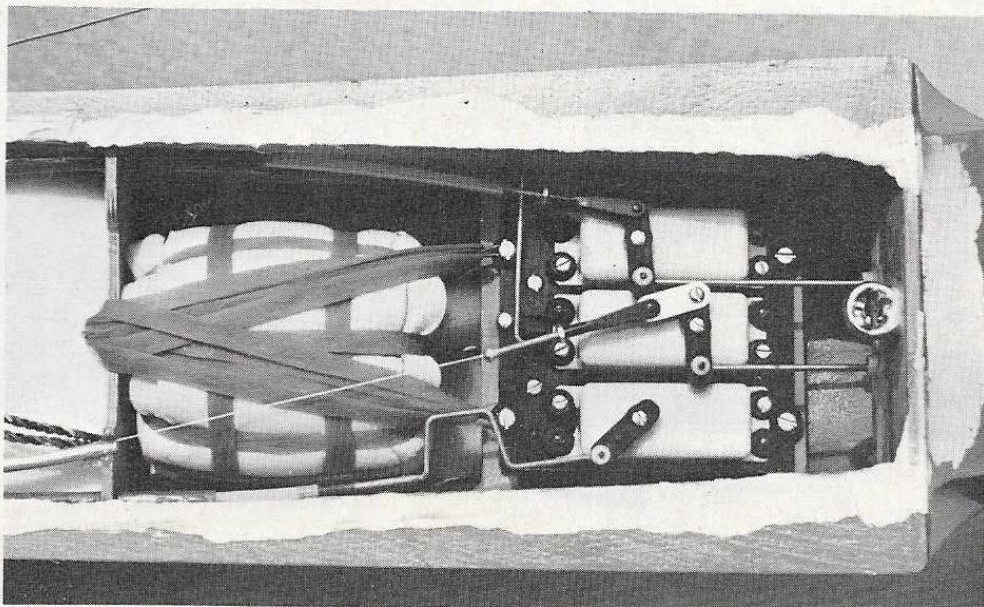
ABOVE: Another view of the wing center section. The hardwood "key" for wing alignment is epoxied in place after the model is completed. BELOW: Batteries are held in place by rubber bands. Note the adjustable brake linkage on the down elevator output of the servo. The throttle override is a simple bend in the wire linkage.



Du-Bro muffler keeps front end streamlined. Note nose wheel brake—an important accessory for paved runway operation.

moved and gouged out to about 1/4" wall thickness, as shown on the plan. At this point the top is glued on permanently.

The cowl construction could take hours to explain in detail. But it is quite easy to construct and shape into the rather unique nose appearance of the Configurator. It will suffice to explain that the 3/8" medium balsa sheets are



glued to approximate shape, hollowed out enough to clear a 60 engine (while the engine is mounted), and shaped with the cut-and-try method to conform to the planform shown. Some prudent sanding around the needle valve and exhaust will result in a good-looking, efficient cowl, which will help carry off the exhaust as well as look great. 1/2" triangle stock was used in the inside corners of the cowl for strength and to provide material for rounding the corners of the cowl.

Accurately line up the wing on the fuselage and glue the bottom balsa filler sheets and triangle pieces to the wing. Sand to shape to blend in from F3 to F5C. The Camlok assembly should be installed at this time as indicated on the plan.

The final procedures consist of fine sanding everything with 6/0 garnet paper to produce a smooth surface for covering, followed by attaching the stab to the fuselage with epoxy. It must be emphasized that the stab has 0 degrees incidence, and must be "square" horizontally. The fin is affixed and all 1/4" balsa fin pieces glued and sanded to blend nicely from the fuselage deck to the top of the fin.

The Configurator III is totally covered with Silk-Spun Coverite. Just be careful with the heat while covering the foam core wing. Keep the iron moving. All fillets around the stab, fin, canopy and wing are Sig Epoxolite, which is blended in and shaped with a wet finger for minimum sanding. The fillets are

Pattern planes must really move out if they are to be competitive. A minimal amount of drag is vital for those extended vertical maneuvers.



The trim decor is classically simple, with a flair for straight lines over flowing curves.

added *after* the complete airplane is covered and given one coat of butyrate dope. Following the single coat of butyrate and the fillets, Ditzler Primer DZL-32 is sprayed on and dry sanded smooth, followed by six coats of a base color of sprayed Ditzler Acrylic Lacquer. There are hundreds of color combinations from which to choose.

The acrylic lacquers were "well laced" with Flexall, distributed by Southern R/C Products. Flexall really prevents cracking and spider-webbing. Follow the directions on the bottle and add the maximum amount indicated to the acrylic lacquer for best results.

Wet sand between every two coats

(you may want to finish the final coat with polishing compound, rubbed out to produce the depth of gloss desired). This procedure requires some old-fashioned "elbow grease," but the final results appear to be worth the effort.

Follow the manufacturer's instructions and your own best experience in installing the retract gear and radio equipment. Make sure that the thrust line and all angles of incidence are zero. Check everything carefully before that first flight, especially the CG, and trim out to suit your flying style. You will have about 7½ lb. of a really smooth and precise flying machine at your command.

