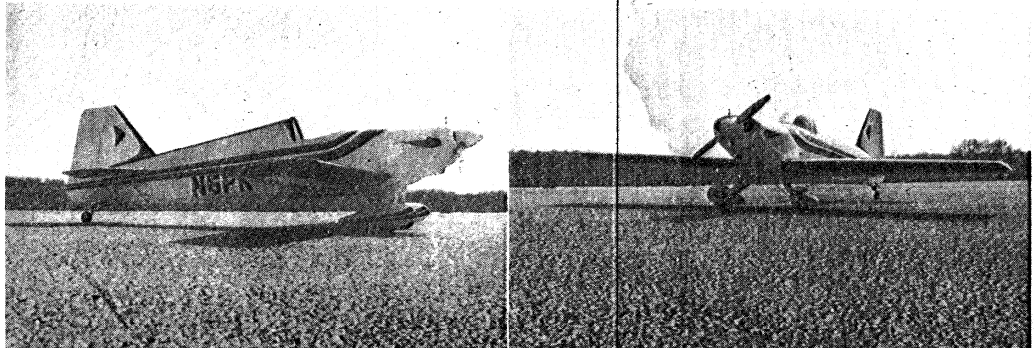


KRAFT SUPER-FLI



by Jerry Nelson & Jim Simpson

The full size version was designed, built and flown by Phil Kraft in what to most of us would be considered the ultimate event.

The plans as presented were drawn by Jerry Nelson and reflect his superior ability which results from countless years of experience with both full size and model airplanes.

The model described in this article was designed by Gerry Nelson and built by Jim Simpson. A completely assembled but unfinished kit is available from NAME, Inc., P.O. Box 1473, Hurst, TX 76053. (Ed.)

This version of the famous Kraft Super Fli is intended for a side mounted 40 size engine, a good 40 size engine.

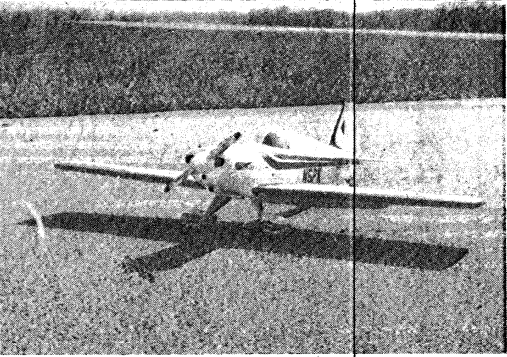
The wing span is 55 inches and the fuselage from spinner to rudder is 47 inches. The wing is of foam construction and the fuselage is of lightweight built-up construction. There is ample room for any kind of four channel radio. The generous rudder and elevator surfaces make the model easy to spin and snap maneuvers are quick and predictable. The construction of the model makes it a good prospect for stand-off scale and the excellent aerobatic qualities will assure you of a trophy.

A lot of pictures are available of the full size version and the fact that the Super Fli can be often seen at local California air shows and model events where full size aircraft can land affords the scale buff plenty of opportunity to get his own required scale pictures.

The model was originally published in the German model magazine *Flug Model-Technik* and the plans as presented here are the originals from that article.

Study the plans carefully and notice the following:

1. The wing plan as presented is for a foam core; however, the tip pattern, and the alternate root rib pattern suggest the alternate "built up" structure.
2. The aileron bellerank mount plates are installed at an angle to permit



the short aileron pushrods to be straight. This is necessary to prevent aileron flutter in flight.

3. The main landing gear support structure is a unique combination of balsa and plywood. Do not substitute for either! You will find that as shown it is the lightest and strongest, whereas substituting would only make it weaker or heavier.
4. The bottom of the fuselage aft of the wing is an open structure and only the covering material encloses it. Remember to be careful when handling.

WING

Foam Core: Make your root and tip rib templates from the outline shown on the plans (omit spar notches on tip rib template). Cut the foam wing blanks to shape (top view) but do not notch for landing gear. Draw centerlines on each end, attach rib templates and cut the airfoil to shape. Cut out the servo well. Assemble and install the aileron linkage as shown on the plans. It is not necessary to trim ends of pushrod wires for servo or horn at this time. Do not cut aileron free just yet! Next, sand the cores lightly and cover top and bottom with 1/16-in. sheet balsa. Dress off the front of the wing and the tip, then install leading edge and tip block. Sand wing roots to conform to dihedral angle

shown on plan. Join wing panels at center section, then carve and sand to shape. Now, carefully mark and cut out both ailerons and landing gear notch.

Install two pieces of 1/4-in. ply (laminated) along leading edge centerline which will act as wing hold-down bolt reinforcement. Line the landing gear notch with balsa as shown. Install 1/4 x 3/8 in. balsa under top wing skins on each side of aileron hinge line to receive hinges. Line the aileron cut-outs with balsa sheet, then fit aileron to wing. Embed the aileron horn in epoxy, then cover front and inboard end of aileron with balsa sheet. Notice the angle hinges will be installed. Always use at least three per surface. Feather the edges of the plywood wing bolt plate and epoxy in place.

TAIL

Cut all tail surfaces from hard straight grained 1/4-in. sheet balsa. If you intend to use the flying wire braces as shown on the plans, then drill holes and install 1/4-in. dowels at those locations where wires connect to surfaces. Sand to shape, which means round all edges and smooth down the flat surfaces. These surfaces do not have airfoils.

FUSELAGE

Begin by cutting all parts to shape. Laminate fuselage sides with plywood

Photos by Jim Simpson

using epoxy. Install stringers. Mark bulkhead locations on insides of both sides. Mark centerlines on front and back of each bulkhead. Assemble bulkheads and sides. Secure with masking tape and pins. Before glue sets, double check to be sure alignment is true and assembly is square. When dry remove tape and pins, then cut top sheeting to size. To bend it simply wet outside surface only and water will swell balsa grain and make it pliable enough to conform to the contour. Glue it in place and secure with tape. When dry remove tape, sand top edge of turtle back and at the balsa cap. Trim canopy cut-out and install canopy floor. You may also finish all canopy detail at this time, then install canopy. (To protect canopy from scratches cover with tape.) Add bottom stringers and provision for tail wheel mount. If you don't plan to use the scale tailwheel as shown on the plan you may substitute any of several commercial types.

Fit tail surfaces in place and carve and sand fillet blocks to shape. With tail surfaces pinned in place, trial fit the wing. Be careful not to alter angles while trimming wing saddle to conform to wing surface. When pleased with fit and alignment, drill hold-down bolt holes and tap hold-down blocks to receive the hold-down screws. Build up the belly pan wing fairing to conform with wing curve and bottom of fuselage. Be sure to cut access holes for wing bolts before gluing in place. Remove wing and tail surfaces before next step.

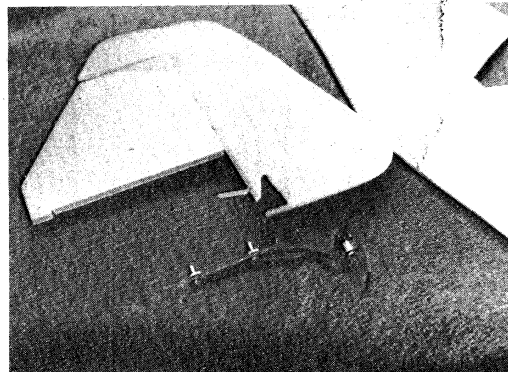
Final step in fuselage assembly is to install engine, tank and landing gear assembly. As you work remember to think out the detail of carburetor linkage, fuel line routes, muffler and exhaust pipe location, etc. How you mount each of these is dependent on the other. When you are happy with their locations, the fuselage structure may be completed by carving and sanding the nose and bottom cowl blocks to shape and fit. Access to the engine and tank must be considered when you cut the access hatch.

The landing gear may be formed with a combination of dural and music wire or a commercial type may be substituted. The wheel pants may be carved of balsa, formed with fiberglass or a commercial type may be used.

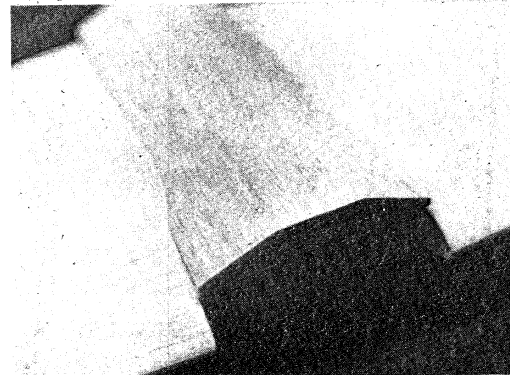
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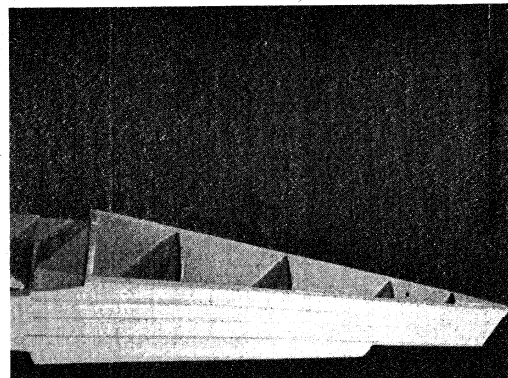
MORE SUPER-FLI



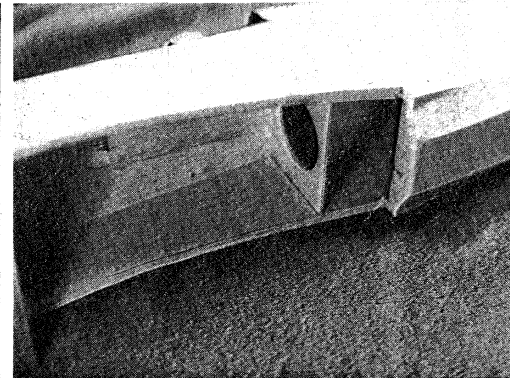
Rudder hinged to vertical fin. Don't forget the lower rudder hinge, it adds support to that large rudder. Tail wheel bracket is the DB Asso. scale-like leaf spring unit.



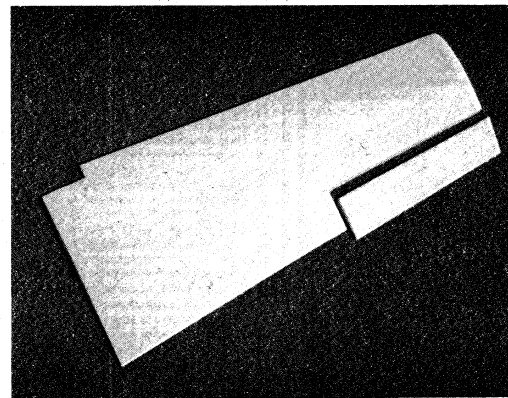
Belly pan mounted to the wing. Drill the bolt holes from the top of wing and enlarge for the bolt head.



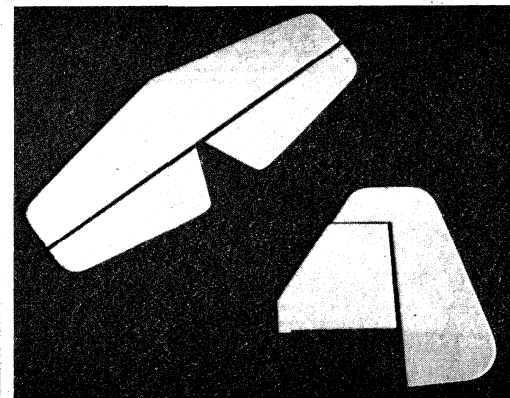
For 'scale' effect side stringers are glued on outside of fuselage aft of cabin.



The fuselage covered over the stringer give a nice scale effect.

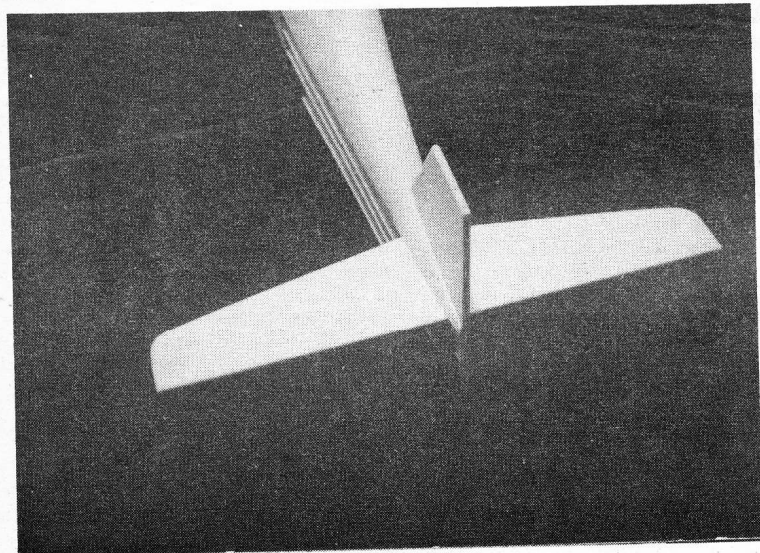


The aileron must be refitted to wing after hinge line and end work is complete (see text) to insure smooth airflow.

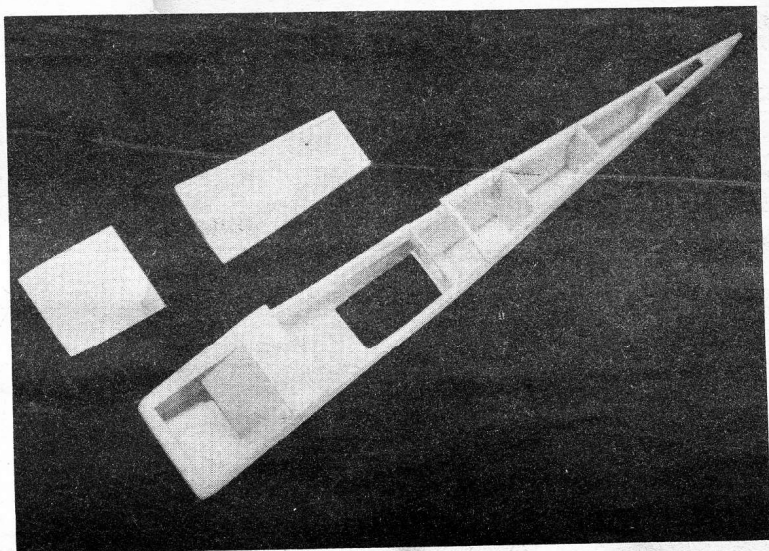


Always build tail first so you're 1/3 done in no time at all! These are cut from 1/4 straight grain balsa—simply round off the edges.

(continued on page 32)



Tail fairing blocks are shaped using 1/4 sheet balsa scrap for spacing. Then fitting in place the flying fin and stab.



Bottom view of fuselage shows former locations. Note bottom cowl, belly pan and aft fuselage stringers are not installed.

Before proceeding further, it would be wise to determine which finishing method you will use.

If you choose Monokote or similar iron-on material, you would be wise to cover all components before final assembly. You would also want to do this if you choose conventional primer then paint finish.

For those of you who prefer to do all final assembly—then finish—please reverse order of the next two processes. Of course, your choice of finish technique may be influenced by your choice of engine size. For example, a Monokote finish and a .40 size engine will render a happy result. A heavy glass cloth, primer, paint finish with a .60 size engine will make you the Snap Roll on Takeoff King of your flying patch (SRTOKEFP).

For a Monokote finish, the wing center section may be reinforced with pinked linen cloth wherever glue is applied to wing, then cloth pressed in place such that no glue is on outside of cloth, thus allowing Monokote to stick to cloth. All of the iron-on finishing techniques may be used on this model, including full span Monokote hinges if you

prefer. Otherwise, conventional hinges may be epoxied in place after covering is complete and tail surfaces are glued in place. All bare balsa in and around engine compartment may be sealed with epoxy glue thinned with alcohol to brushing consistency.

If you prefer glass cloth or Coverite it

Also check prop angles which may be from 0-2 degrees down thrust and 0-3 degrees right thrust.

FLYING

This is not a beginner's airplane! If you have any reservations at all then

"Touch and Go landings are challenging and snap roll maneuvers are spectacular."

may not be necessary to add reinforcement to center section of wing. After primer and sanding phase is complete install hinges, horns, pushrods, etc., then paint. Be careful to keep hinges and hinge lines free of paint.

When installing radio, try to adjust location of components to balance the plane right on point shown on plans. After installation and assembly is complete, be sure it balances where shown on plans. Block up tail until wing is level. Then check angle of wing and tail to be sure they are as shown on plans.

you might consider having your instructor or resident expert test it. In any case it takes some getting used to but when you are familiar with it the fun begins. Touch and Go landings are challenging and snap roll maneuvers are spectacular.

Good Luck and Happy Landings!
RCS

Kraft Super-Fli Material Specification List

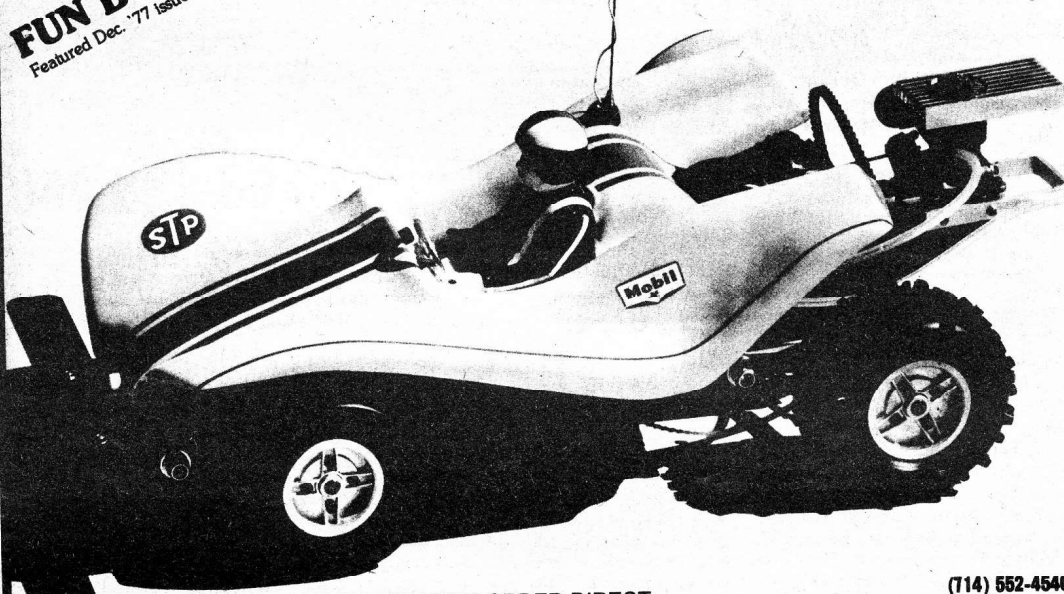
1. Styrofoam Wing Core
2. 1/16-in. Sheet Balsa Wing Skin
3. Balsa Block Wing Tips
4. 1/16-in. Sheet Balsa Edging

5. 3/16-in. or 1/4x1/2-in. Balsa Leading Edge (1/4-in. sq. optional)
6. Optional 1/8x3/16-in. Hardwood Trim Strip
7. 1/4-in. Ply Wing Bolt Hole Reinforcement
8. 1/16-in. Ply Wing Hold-Down Screw Reinforcement
9. 1/16-in. Ply Bellcrank Mount
10. 90° Bellcrank
11. 1/16-in. Music Wire Pushrods
12. Small Control Horn (Embed with Epoxy)
13. Hinge Locations and Angles
14. Lite Fiberglass or Linen Reinforcement
15. 1/4-in. Sheet Balsa Elevators
16. 1/4-in. Sheet Balsa Horizontal Stab
17. Scale Location Tail Reinforcement Wires
18. 1/8-in. Wire Elevator Connector
19. Elevator Horn
20. 1/4-in. Sheet Balsa Rudder
21. 1/4-in. Square Hardwood Stiffener
22. 1/8-in. Sheet Balsa Sides
23. 1/32-in. Ply Doubler
24. 1/4-in. Ply Firewall
25. 1/8-in. Balsa Former
26. 1/4-in. Sheet Balsa
27. Balsa Block Nose Cowl
28. Spinner (2 1/2 in.)
29. Hardwood Triangle Braces
30. Balsa Block Airscoop
31. 1/16-in. Ply
32. 1/16-in. Ply Tank Compartment Floor
33. 1/4x1/2-in. Balsa Brace
34. 1/8-in. Sq. Balsa Tank Floor Doubler
35. Balsa Block Bottom Cowl
36. Balsa Block Corners
37. 1/8-in. Sheet Balsa Top Planking
38. Dural Landing Gear
39. 1/16-in. Ply Doubler
40. Hardwood Wing Hold-Down Brace
41. Balsa Block Fairing
42. Landing Gear Brace
43. Landing Gear Mount Bolt Locations
44. Sheet Balsa Landing Gear Fairing
45. 3/16-in. Sheet Balsa Doubler
46. 2 3/4-in. Wheels
47. 1/16-in. Ply Doubler
48. Hardwood Wing Hold-Down Block
49. 1/4-in. Sheet Balsa Former
50. 1/8-in. Sheet Balsa Instrument Panel
51. 1/8-in. Sheet Balsa Cabin Floor
52. Moulded Canopy
53. 1/4-in. Sheet Top Keel Block
54. 1/8-in. Sheet Balsa Skin
55. 1/8x3/16-in. Stringer
56. 1/8x1/4-in. Stringer
57. 1/8-in. Sheet Balsa Planking
58. 1/8-in. Sheet Balsa Planking
59. 1/8-in. Sheet Balsa Former
60. 1/4-in. Ply Landing Gear Mount Plate
61. 1/8-in. Sheet Balsa Former
62. 1/8-in. Sheet Balsa Former
63. 1/8-in. Sheet Balsa Former
64. 1/8-in. Sheet Balsa Former
65. Balsa Block Fairing
66. 1/8-in. Sheet Balsa Stab Mount
67. 1/8-in. Ply Tail Wheel Mount
68. 1/8-in. Ply Tail Wheel Mount
69. Sheet Balsa Filler
70. 3/16x1/4-in. Filler Posts (Balsa)
71. Fanciest Tail Wheel Ass'y I Ever Saw
72. Rudder Horn
73. Scale Tail Brace Wires
74. Tail Wheel Mount Bolt Location
75. 1/4-in. Sheet Balsa Former (2 Required)
76. 1/8-in. Sheet Balsa Planking
77. 5/32-in. Music Wire Landing Gear
78. Cotter Pin Wheel Retainer
79. Wheel Axle
80. Wheel Collar
81. Wheel Pant Mount Bolt Locations
82. Wheel Pants
83. Wheel Pants Seam Tape
84. Aileron Push Rod Wire Tube
85. Wing Hold Down Bolt

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