

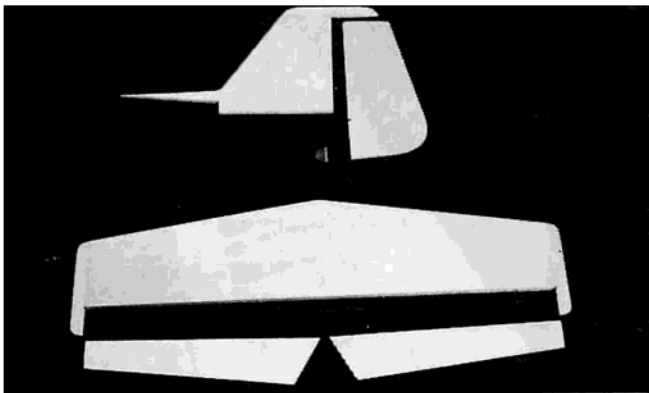


ULTRA-SPORT 60

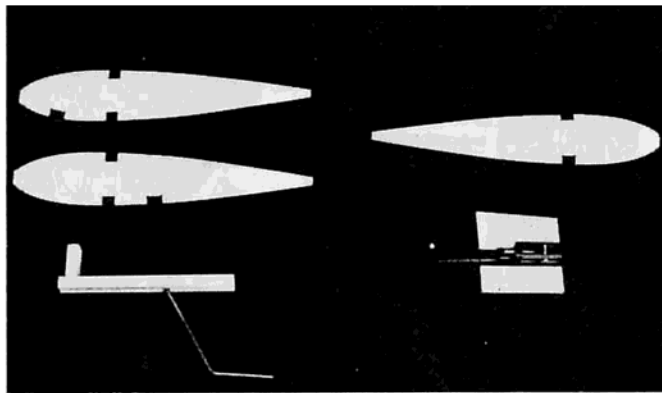
**All Balsa Thoroughbred
for the Advanced
Sport Flier**

By Jim Feldmann





Sheet balsa tail feathers build quickly. Laminated rudder is very stiff.



The basic parts for three optional gear configurations; fixed tail dragger and tricycle on left, retract tail dragger on right.

Advanced Sport Flier = R/C Flier who is comfortable with a low wing but is not interested in (or not ready for) competition.

I consider myself an advanced sport flier. I mastered (and loved) a Super Sportster 4 or 5 years ago, yet I will never be a competitive pattern flier. (Not enough precision in my fingers and not enough time to practice.) What I enjoy most is "freestyle" aerobatics, although sometimes I just like to putt-putt around as slow as the airplane will fly.

I don't think that I'm unusual; in fact, among our local fliers most fall into this category. Why is it that there are so few kits designed specifically for the advanced sport flier? Think about it. The Ugly Stik was designed in the 60's. Radio and engine technology has progressed in leaps and bounds in the past 20 years, yet most of us are still flying Stiks of one type or another. There must be a better way.

What about sport/pattern designs, you say?

Have you ever flown a Kaos? If you have, I'll bet you just smiled a little at the memory. If you haven't, you've missed out on one of the best flying sport/pattern planes ever designed. Oh, it isn't perfect. It doesn't snap or knife-edge very well, and it doesn't like wind, but nothing else in recent memory gives the same smooth and easy high speed aerobatics combined with truly gentle low speed characteristics. Unfortunately, the Kaos has never looked as good as it flies.

Beauty, of course, is in the eye of the beholder (to coin a phrase), and the Kaos is not ugly, it's just . . . well . . . kind of unfinished. Besides, even the Super Kaos is a 15 year old design.

The Ultra-Sport began as an attempt to create an advanced sport plane with the superb basic flight characteristics of the Kaos, yet more modern construction and appearance. As it turned out, only the Kaos airfoil remains unchanged. The Ultra-Sport

Bill Of Materials

Balsa Sheet & Strip

- 1 — 1/16 x 3 x 36 Rudder core, wheel well sides
- 4 — 3/32 x 3/8 x 36 Cap strips
- 12 — 3/32 x 4 x 36 Wing sheeting, ribs, spar webs
- 2 — 1/8 x 3 x 36 Rudder sides, cockpit floor, fuse bottom
- 1 — 3/16 x 3 x 36 Upper turtledeck sheeting
- 1 — 3/16 x 4 x 36 Lower turtledeck sheeting
- 2 — 3/16 x 4 x 48 Fuselage sides
- 1 — 1/4 x 1/4 x 36 Fuse spreaders, cockpit rails
- 1 — 1/4 x 1 x 36 Building support
- 1 — 5/16 x 3 x 36 Trailing edges, vertical stab
- 1 — 3/8 x 3 x 36 Leading edges, horizontal stab
- 1 — 3/8 x 4 x 36 Horizontal stab, elevators
- 1 — 1/2 x 3 x 36 Cowl sides, rear top block
- 1 — 5/8 x 4 x 36 Chin block, top block, wing tips

Shaped Balsa

- 1 — 1/4 x 1/4 x 36 Triangle stock
- 3 — 3/8 x 3/8 x 36 Triangle stock
- 2 — 3/8 x 1 1/2 x 36 Aileron stock

Spruce or Bass

- 6 — 1/8 x 1/2 x 36 Spars, spar doublers

Birch (Aircraft) Plywood

- 1 — 1/64 x 6 x 12 Wing fairing seating
- 1 — 1/16 x 6 x 12 Dihedral braces, spinner ring
- 1 — 1/8 x 6 x 12 Formers, servo trays
- 1 — 1/4 x 6 x 12 Firewall, wing mount, retract mounts

Poplar (Light) Plywood

- 1 — 1/8 x 6 x 48 Fuselage doublers, formers

Other Wood

- 1 — 1/4 x 36 Birch dowel
- 2 — 3/4 x 3/8 x 12 Grooved landing gear blocks (5/32) for final gear only

Hardware/Accessories

- 1 — Great Planes #CANPY-040 Canopy; smoke tint or clear
- 1 — C.B. Assoc. 3" Spinner; red, white, or black
- 17 — Sig #SH543 Hinges; 2 piece hinges not recommended
- 6" 1/8 Music wire; elevator joiner
- 1 set — Goldberg #403 Aileron torque rods; heavy duty
- 1/2 ft.² — 6 oz. fiberglass cloth; wing center reinforcement
- 2 — Sullivan #511 pushrods; solid wire pushrods for elev. & rudd.
- 2 — 6" 4-40 threaded rods and clevises; aileron pushrods
- 1 — 5/32 x 36 Music wire; for fixed gear only
- 1 — Du-Bro #154 Nose gear strut; for tricycle gear only
- 2 — Du-Bro #155 Steering arm; for tricycle gear only
- 1 — Great Planes #WBNT-009 Tail wheel asm.; for tail dragger gear only
- 1 set — B & D, MK or Supra (Hobby Shack) mechanical main gear retracts; for retracts only

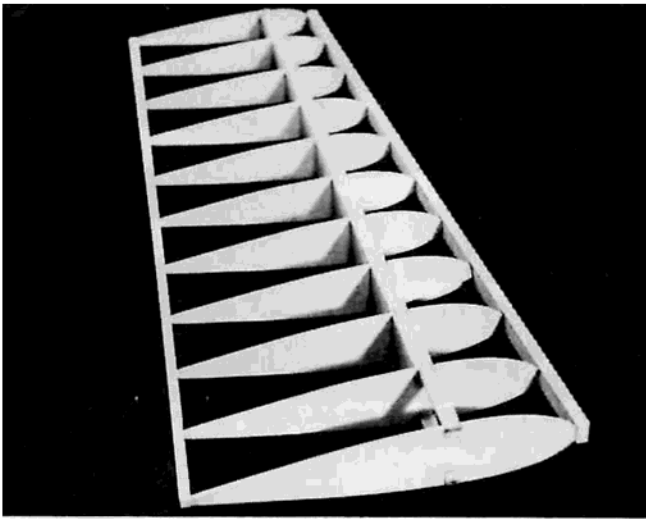
Throttle and nose gear pushrods, control horns, clevises, wheels and wheel collars, engine mount, screws and nuts, covering and finishing materials are left up to the builder.

is 10% larger to handle the greater weight and power of today's engines, the moments and areas have been juggled in order to improve snap/spin and maneuverability, and that big canopy and turtledeck do wonders for the knife-edge. The structure is sturdier and easier to build, but the wing loading remains the same.

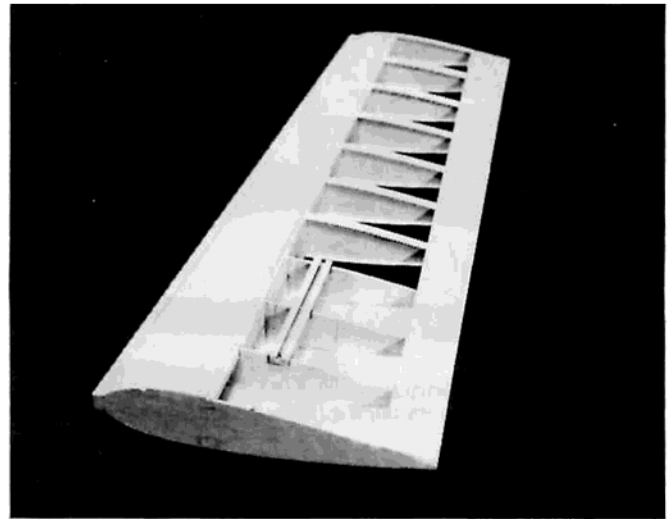
Does it work? I have to tell you, designing model airplanes is always a bit of a gamble. You do everything by the book and sometimes it all works together and sometimes it doesn't. Things interact and sometimes the total is less than the sum of the parts . . . and sometimes it's more. The Ultra-Sport exceeded every design objective. Off the board, the first prototype flew better than I had any right to expect. It's more responsive than a Kaos and much smoother than a Stik. I expected that, but it's also faster than a Kaos and it seems to ignore the wind. There are four Ultra-Sports flying now, and they all display the same characteristics. I almost changed the name to Synergy.

The Ultra-Sport offers pattern-like performance without the need for a pipe, or even retracts. If you prefer retracts, bulletproof 2-wheel mechanical retracts are designed in. Like 4-strokes? The third prototype flies beautifully (and over 100 mph) on a 91 Surpass. Yet, unlike a pattern ship, the Ultra-Sport lands at a walk. It will maintain level flight at 30 mph air speed.

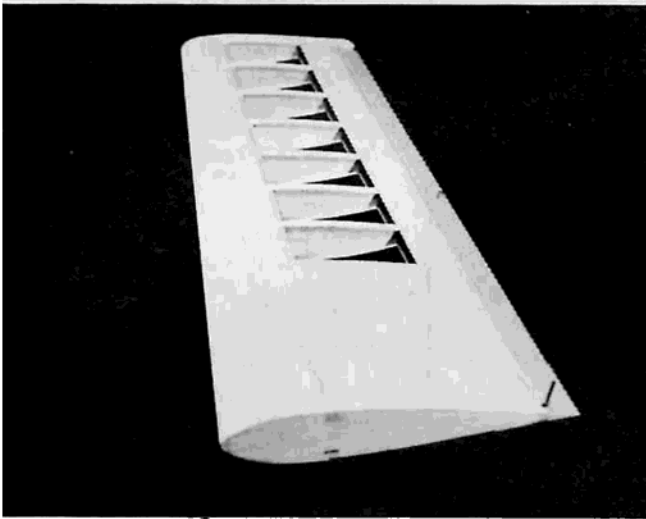
The Ultra-Sport's best characteristic though, is its complete lack of vices. There is no adverse yaw, no roll couple with rudder, no trim change with throttle, not even a fishtail in the wind. It won't snap roll unless you ask and the tail dragger won't ground loop (unless you hit a rock or something). You don't have to compensate for anything in order to make your flying smooth and precise. What this means to you and I is that with practice the Ultra-Sport will make you a better flier, but, more importantly, it will make your flying look better from



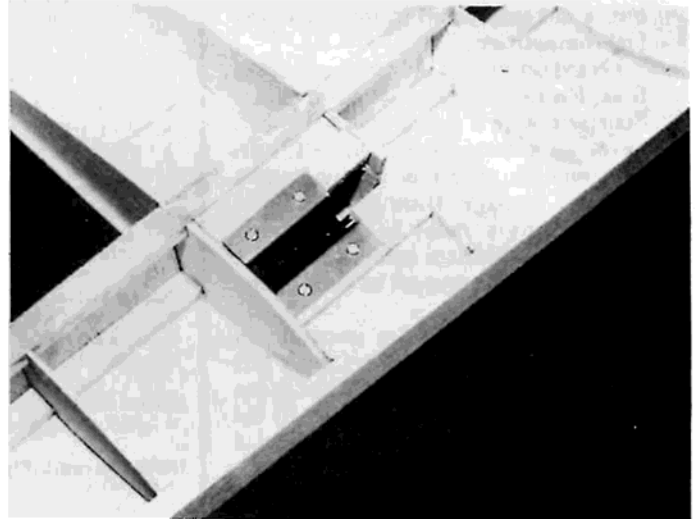
The wing assembles on a simple trailing edge support. This shot shows the simple internal structure before sheeting.



Sheeting and cap strips make the wing strong and rigid. Center sheeting is left off the bottom until after joining the wing halves.



A completed wing panel shows the full span aileron with heavy duty 1/8" torque rods. Leading edge and tip have been rough sanded.



Optional tail dragger retracts are mechanically operated. Simpler, lighter, and more reliable than pneumatics, and in this application, easy to install.



Retract mechanism can be sheeted over or left accessible. Wheel well is cut after gear is installed to insure proper alignment.



Wings are joined upside down on a flat surface, then the dihedral brace and dowels are added.

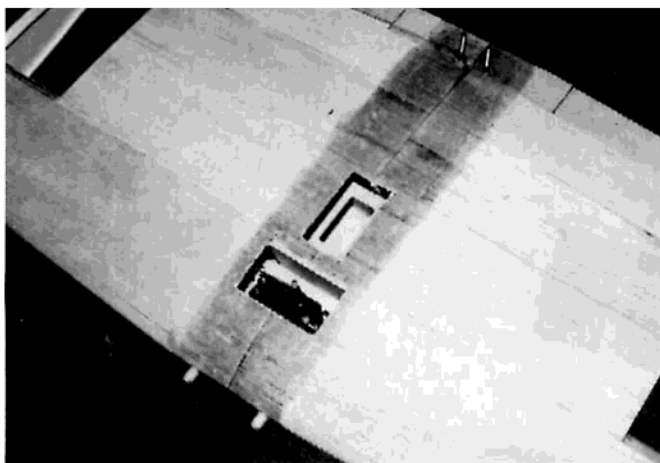
your very first flight. Incredible! If you're an advanced sport flier, or soon to become one, this is your airplane. "Oh sure, sure," you're saying,

"sounds like a bunch of hype." Well, all I can say is, if you get a chance to fly one, don't do it --- unless you're ready to build your own. The Ultra-Sport

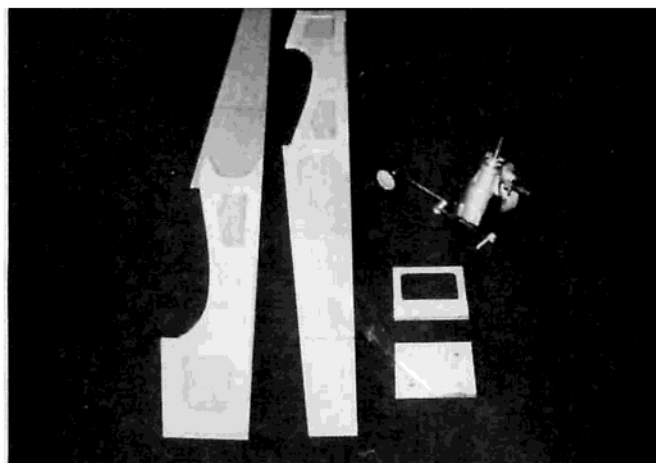
will spoil you.

CONSTRUCTION

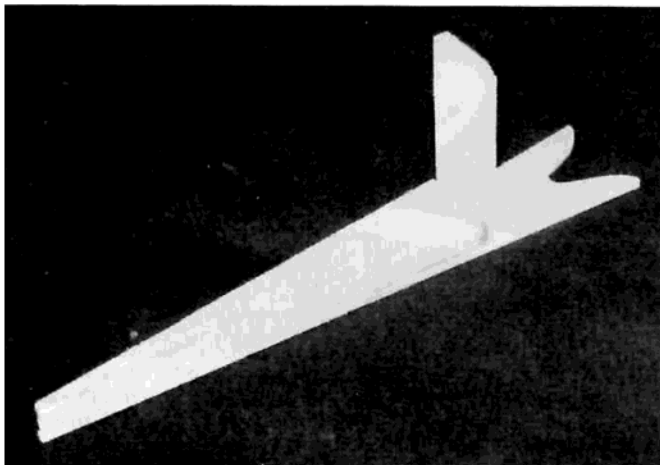
The complete construction article is furnished with the plans.



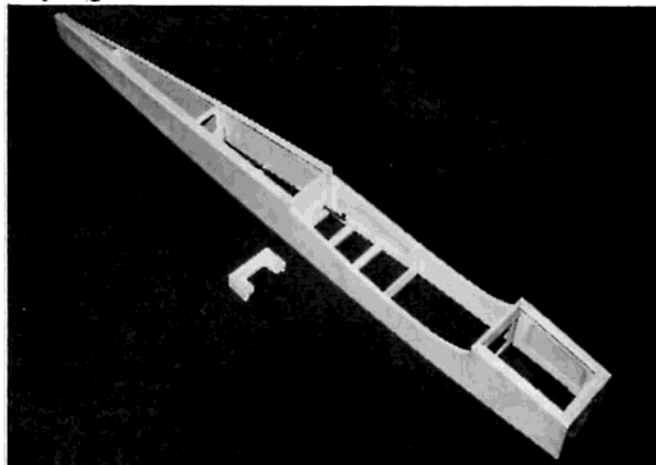
Fiberglass cloth keeps the wing together during those high "G" maneuvers so near and dear to the sport flier's heart. Front dihedral brace is added when retracts are used.



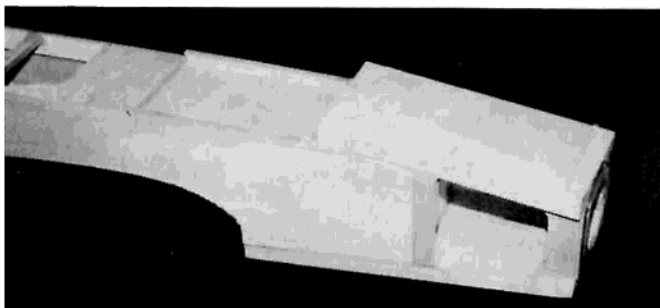
Fuselage construction starts with the fuse sides and doublers, firewall, and F2 former. Nose wheel is mounted in engine mount if tricycle gear is used.



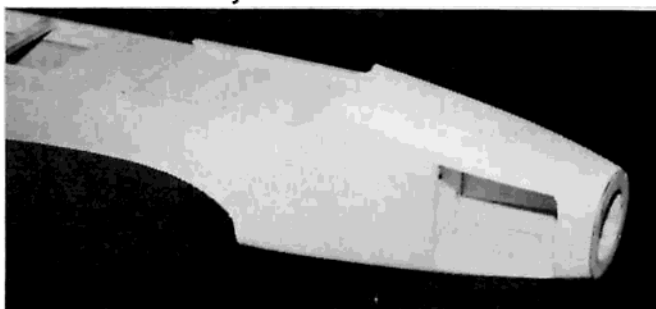
This is the little goody which holds the back half of the airplane together. It's just a light ply stab mount with F6 former and triangle reinforcements added.



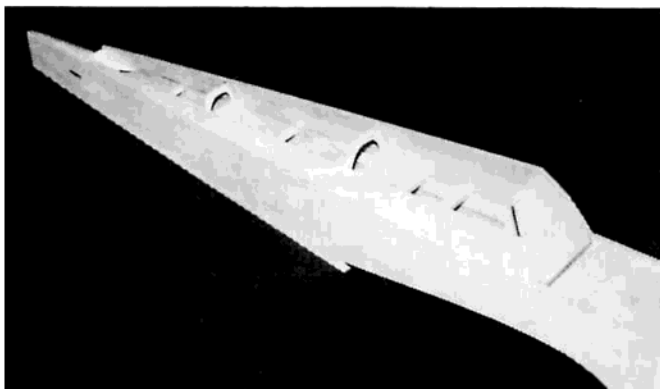
The framed up fuselage. Note the triangle stock along the bottom. One side has already been tapered at the tail, the other has not. Small piece beside fuse is wing mount with triangle reinforcements already attached.



This is the nose of the fuselage before shaping. Note cross-grain cockpit floor and tapered fuselage side filler blocks under rear of top block.



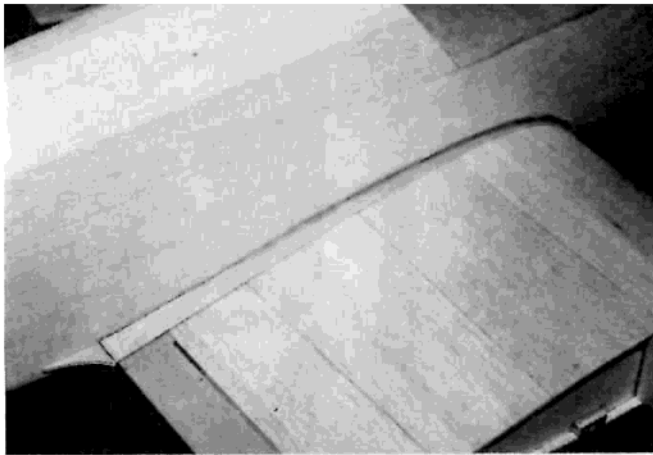
After rough sanding, the nose presents a very clean profile. Large engine opening allows easy access to .91 4-stroke engine.



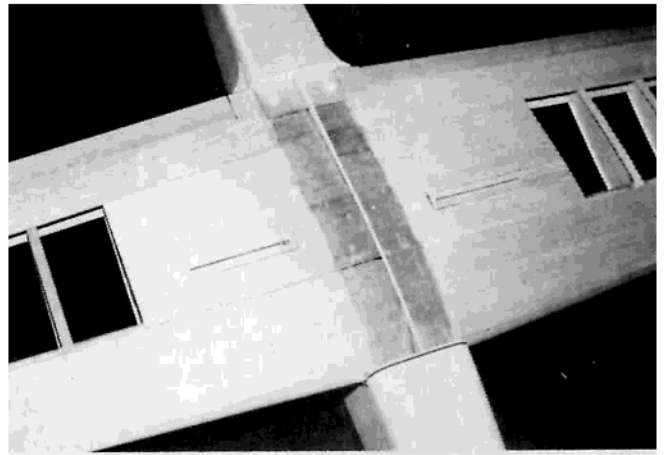
Turtledeck formers and three of the four 3/16" balsa sheets that form the shape. No bending is required, just glue on flat sheets, then sand to contour.



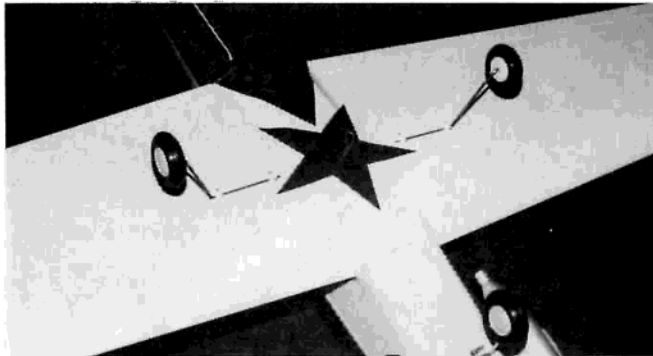
The finished turtledeck. You won't believe how easily you can achieve fiberglass-like shapes with this technique.



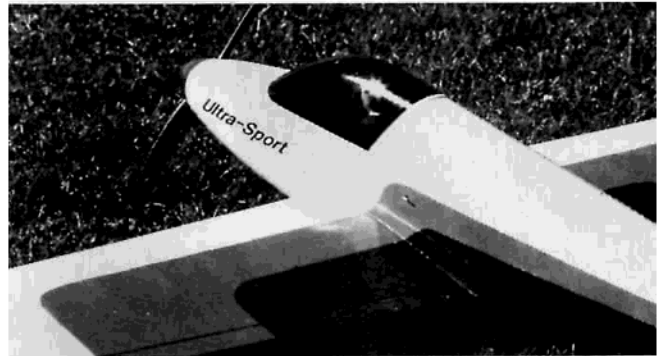
The wing fairing base is made up of two layers of 1/64" plywood. Protect the wing with plastic wrap while doing this, lest you accidentally wind up with a one piece airplane.



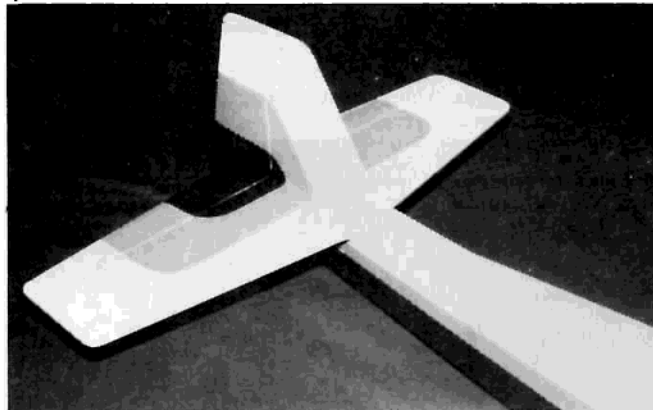
Light ply formers and "spine" provide a shaping guide for the belly fairing. The author prefers to form the fairings with light spackle, but balsa blocks work fine.



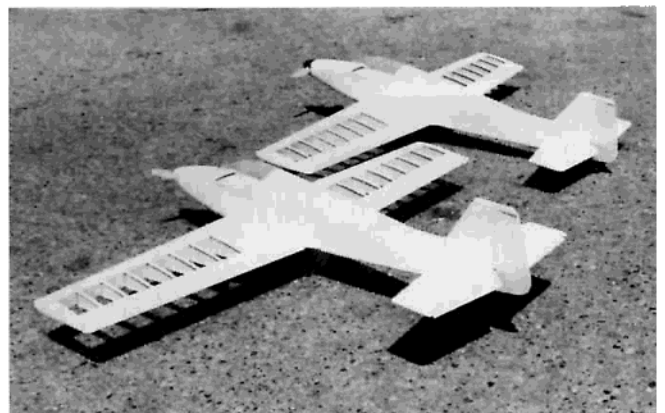
Completed belly fairing is marred only by the wing mounting bolts. Angled main gear legs were changed to straight on the plans.



Wing fairings improve both performance and appearance. Definitely worth the extra effort. 1/5 scale pilot is just right, and the stick-on name is available from Vinylwrite whose ad appears in this issue.



The tail group is also faired in with spackle. Balsarite makes the covering stick to the spackle. Finish is polyurethane over FliteKote.



A pair of Ultra-Sport 60's ready for covering and painting.

ULTRA-SPORT 60

Designed By:
Jim Feldmann
TYPE AIRCRAFT
Advanced Sport
WINGSPAN
62 Inches
WING CHORD
11½ Inches (Avg.)
TOTAL WING AREA
710 Sq. In.
WING LOCATION
Low Wing
AIRFOIL
Symmetrical
WING PLANFORM
Double Tapered

DIHEDRAL EACH TIP
1/2 Inch
O.A. FUSELAGE LENGTH
55½ Inches
RADIO COMPARTMENT SIZE
(L) 13¼" x (W) 3½" x (H) 2½"
STABILIZER SPAN
24 Inches
STABILIZER CHORD (incl. elev.)
6¾ Inches (Avg.)
STABILIZER AREA
152 Sq. In.
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top of Fuselage
VERTICAL FIN HEIGHT
7 Inches

VERTICAL FIN WIDTH (incl. rud.)
8 Inches (Avg.)
REC. ENGINE SIZE
.60-.65 2-stroke; .65-.91 4-stroke
FUEL TANK SIZE
11-14 Oz.
LANDING GEAR
Conventional/Tricycle/Retracts
REC. NO. OF CHANNELS
4-5

CONTROL FUNCTIONS
Rud., Elev., Ail., Throt., Retracts
BASIC MATERIALS USED IN CONSTRUCTION
Fuselage Balsa, & Ply
Wing Balsa, Ply & Spruce
Empennage Balsa
Wt. Ready To Fly .. 112-120 Oz. (7-7½ Lbs.)
Wing Loading 22.7-24.3 Oz./Sq. Ft.