

Try this CL aerobatic all-sheet-balsa warbird

Skyraider



Dick Sarpolus is known for his many outstanding ½A CL Profile designs. His latest is well proportioned for Stunt training.

he Douglas Skyraider is an easily recognizable aircraft, with its long fuselage, high fin and rudder, forward canopy location, and large, powerful radial engine.

Flown by the Navy, Air Force, and Marine Corps, the design began in 1944 as a dive bomber for the Navy.

First identified as the XBT2D-1 Dauntless II, Douglas's design won a Navy production contract against aircraft built by Martin, Curtiss, Kaiser, and Boeing. The name and identification were quickly changed to Skyraider and AD-1.

The airplane remained in production until 1957 and proved its ruggedness in the Korean and Vietnam conflicts; more than 3,000 Skyraiders had been produced.

Control Line (CL) enthusiasts know that almost any aircraft design can be adapted for their use. Profile models—called that because of their "slab" fuselages—are quick and easy to build, and they can fly very well.

As modelers, we forgive their less-thanrealistic appearance in favor of building ease; scale authenticity is given up to get the aircraft proportions needed for good CL Stunt performance.

The nose length is usually stretched for balance, the tail length is shortened for performance, and the wing and stabilizer areas are "fudged" to get the proportions for our aerobatic flying.

Military warbirds have always been in favor with most modelers, and I thought the Skyraider would be a good, not-often-seen subject for a small sport project.

½A-powered all-sheet-balsa Profiles, which have been popular for years, are a

Skyraider

Type: CL ¹/₂A Profile
Wingspan: 29 inches
Engine: Norvel BigMig .061
Flying weight: 7 ounces

Construction: Sheet balsa and plywood

Covering/finish: Brodak butyrate airplane do

bargain way to enjoy CL flying. They're low cost, easy to build, and have plenty of aerobatic capability.

Often underestimated, a properly designed all-wood airframe with a good engine, flown on 42-foot or longer wire lines, can be navigated through just about all of the aerobatic pattern well enough for plenty of flying fun and/or actually learning the pattern maneuvers.

These things are light and strong enough to bounce back from most crashes when flown over grass fields, so they're suitable for beginners. Good fliers can use their flying ability for relaxed fun-flying.

There are new small engines on the market today; the Norvel BigMig .061 CL engine is a pleasure to operate and is ideal for this type of aircraft. It features plenty of power; easy starting; and steady, reliable running.

The .061 displacement pushes the $\frac{1}{2}A$ size designation—not that it matters—and rather

than the 35-foot control lines I had been using for years, it handles 42-foot lines with ease.

CONSTRUCTION

The Skyraider's construction is standard and easy; it can be framed up in a few evenings' work. A jigsaw or band saw makes cutting the parts simple.

Cut the plans to use as templates or trace the part outlines if you want to save the plans.

The fuselage is ¼ sheet balsa, with ⅓2 plywood doublers over the nose section and ⅓ square hardwood engine mounts inserted into the fuselage. Wing and tail surfaces are ⅓ sheet balsa.

Edge-glue the balsa from whatever widths you have available to get the sizes needed.

Don't worry too much about wood selection; try for medium weight and firmness. Really hard balsa is rugged,



Notice the Skyraider's externally mounted control system. Its components are easily mounted after all finishing is complete.



Does it fly? You bet it does! This little aircraft can perform all the maneuvers in the AMA Stunt pattern.

but too heavy, and soft, light balsa breaks too easily.

As mentioned before, models like this bounce back from most crashes when flown over a soft grass field. When they do break, five-minute epoxy or CyA quick glue can get them back in the air quickly.

The hardware is the usual stuff: molded nylon two-inch bellcrank, bolton small nylon control horn, 1/16 wire pushrod, .025 wire leadouts, and a small metal fuel tank.

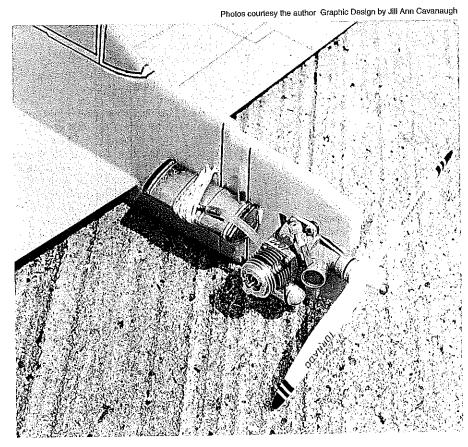
If you have trouble locating CL supplies, get a product catalog from Brodak or Sig—strong companies that fully support this phase of the hobby.

Fuselage: Work on the fuselage first. Glue the engine mounts in place at the proper spacing to suit the engine you're using. I recommend the Norvel line of small engines.

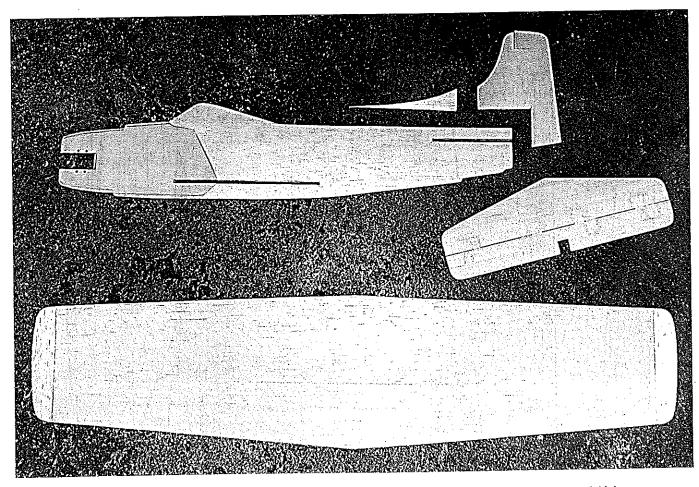
I prefer epoxy for gluing the plywood doublers in place on the fuselage. Mark and drill the engine-mounting holes through the plywood and hardwood engine mounts.

For the wire hook that retains the fuel tank, cut a slot in the outboard side of the fuselage and epoxy the hook into the fuselage with a small plywood filler piece in the slot.

Wing: The separate tip sections glued in place will help it resist warps. These thin-



A Norvel BigMig .061 engine fed from a Perfect one-ounce wedge tank provides plenty of power for the Skyraider. This installation is nice and clean.



There are only a few sheet-balsa parts and a couple of 1/32 plywood doublers to fabricate. This model builds up quickly!

sheet-balsa wings can occasionally twist and warp after the model is completed.

I don't know how to get rid of a twist in a finished model, but the warps don't usually bother the airplane's flying qualities because the wings are so flexible.

Round the edges of the wing and tail surfaces.

The traditional over-and-under cloth hinges are easy to put on, they provide free movement, and they last. I use a few coats of old-fashioned model-airplane glue to attach the hinges.

Final Assembly: Slide the wing through the fuselage slot and align it at right angles to the fuselage. I use a few pins to hold the wing in place, tack it with CyA glue, then use epoxy for a strong joint.

Glue the tail surfaces to the fuselage, aligning them with the wing. Be sure to check from the side that the engine thrustline, wing, and stabilizer are parallel.

I form small fillets with my finger for strength and appearance at the fuselage and surface joints, using epoxy mixed with microballoons.

Add the plywood bellcrank mount, leadout guide, and outboard tip weight. Mount the nylon bellérank with a small screw.

Bolt the nylon control horn to the elevator and link it to the bellcrank with a 1/16 wire pushrod. It should be the length for the elevator and bellcrank to be lined up in neutral so equal elevator movement is obtained in both directions.

With everything checked out, the engine, bellcrank, and control horn are removed, to be reinstalled later with the leadouts and fuel tank after the model is painted.

Finish: I still use the traditional butyrate dope to finish all-balsa projects such as this; it's been working for me for roughly 50 years.

Don't try for a perfect finish with all signs of the wood grain hidden; it would take too much paint and add too much weight. I use just enough paint to get a reasonable finish and protect the wood from spilled fuel and exhaust oil.

After thoroughly final-sanding the bare balsa, apply one coat of sanding sealer, sand it well, then add five or six coats of clear dope, sanding between coats. This goes on quickly and seals the wood enough to accept two or three sprayed-on coats of color.

I sprayed the entire airplane with gray dope, masked off the canopy areas and painted them light blue, then masked and painted a red stripe around the rear fuselage. Using a #3 drafting pen, I inked on a few panel lines to add to the scale effect.

Spraying a few coats of clear dope over the whole airplane protects the inked lines and adds a good-looking gloss. A few stars-andbars insignia add to the scale appearance.

Preflight: Add the control-system hardware, engine, and fuel tank, and check for proper balance.

Use a washer or two under the front of each engine-mounting lug for several degrees of out-thrust, to assist in keeping the lines tight while flying.

If nose or tail weight is needed for balance, drill a 1/8-inch hole in the fuselage and glue in a length of heavy solder or a large steel nail.

Those things usually balance close enough without adding weight, but don't hesitate to add the weight to get good handling. A tail-heavy model will be too sensitive to the controls for smooth flying.

I used to fly models this size on 35foot lines. Now, with the added power of the Norvel engines, I use 42 feet of .008 stranded cable, and I like the larger flying circle.

Flight: Adjust the engine before launch, with the airplane held pointing up at an angle.

When flying from the necessary hand launch, have the launcher keep the lines tight and point the airplane slightly toward the outside of the flying circle as he or she takes a few steps forward and releases the airplane in a level position with a forward arm motion.

Fly this model for fun; try every maneuver you can think of, relax, and enjoy the "direct connection" way to fly. MA

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4 INCH	36"	48"	1/2 x 1/2 (nom.) .43
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Bargain Grade Balsa

Bargain Balsa may have pin holes, odd grain &/or irregular sizes. Take 25% discount from reg. sheet & stick prices.

NHP - EPOXY - 8 oz. 5.95 5min, 12min, 30min, 3 hr or 20min finish coat Epoxy brushes 3/8 wide (6) - 0.95 3/4 wide (3) - 1.00 Epoxy brush (3/8) special \$15.00 a gross

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7	Aircraft Grade Birch Plywood								arry out only
Ì	Size	6x12	1	2x12	12x24	1	2x48	4	8x46
1	1/84	1.53	3	3.07	5,58	1	0,82	3	8.00
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	3/32	1.48	2	2.87	5.50	1	0.88	3	9.90*
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