



The Kingfisher makes an attractive 1/2A model. The Kingfisher is basically the same airplane as the Cobra, except that the nose has been sawed off and replaced with engine and landing gear, and the rudder has been cut and offset to the right.

COBRA / KINGFISHER WHIP / U-CONTROL

By DAVE KINGMAN . . . An excellent project for the young beginner in modeling, the Cobra is quiet and takes very little space to fly. The Kingfisher is the very logical second step. All very basic. A 2-for-1 plan.

• It's no disgrace to crack up a gas model, but repairs cost time and money. Unsatisfactory first flights discourage many from pursuing control line model training to a successful end. Understanding why some novices fly models into the ground should help others avoid doing the same.

Nervousness, due to fear of breaking the model, is a villain. Some newcomers to control line flying say engine noise contributes to nervousness. When they have completed several laps without a crash, most want to end first flights because they are dizzy, or just want to quit while they are ahead. Practice will change that, but we are concerned with the very first flight attempts now.

Is there a simple, quiet control line model that can be landed safely whenever the operator is ready? Consider the Cobra. Instead of having an engine, it is whip-flown by muscle power. A typical U-Control system is installed. Eighteen-foot control lines leave the handle, run through an "eye" loop at the tip of a nine-foot bamboo pole, then attach to leadouts at the model's left wing tip.

When the flier raises the pole with one hand, the model is pulled off the ground. His other hand holds the control handle in the neutral position as he turns counterclockwise to start the flight. The Cobra follows the pole and assumes flight attitudes regulated by the control handle. Wrist movements bringing the top of the handle back towards the flier (up-elevator control) will cause the Cobra to zoom upwards; pushing the top of the handle towards the model (down-elevator control) will produce a dive. The first goal of whip-powered flying is level flight.

Nervousness should be reduced, because returning the pole to the launch position will prevent the model from hitting the ground. No engine noise means calmer nerves for the flier and his neighbors. A dizziness problem? Not when a flight can be safely ended any time the pilot stops turning! With increased proficiency, longer control lines can be used, and a friend can hand launch the Cobra into level flight. Whip flights are started with the control handle towards the bottom of the pole. When the plane is flying level, the handle can be

moved towards the tip to allow a larger diameter flying circle. Lowering the tip of the pole also provides a larger circle, as the Cobra moves farther from the flier . . . and closer to the ground!

At first, we used No. 8 cotton thread for control lines. They worked OK, until one flight when the wind started jerking the model around. The lines broke first, followed by the model. Heavy thread is probably strong enough for slow, smooth flying. Sig brand dacron flying lines, or lines supplied with ready-to-fly plastic gas models, are recommended for flying both whip models and .049-powered sport gas models. Your control handle can be as simple as a toothbrush (minus bristles), cut to a 5-inch length. Tie a control line through a hole in each end, and you're in business. If you buy a handle, choose a light one for these small models.

Want to build a Cobra? Start by tracing the long nose pattern on transparent paper. Align your tracing over the Kingfisher fuselage plane by matching the windshields and openings for wings and bellcranks; that gives you a Cobra fuselage pattern. Make the fuselage

from one piece of 3-inch wide sheet balsa. As with all balsa parts, the fuselage is best sanded before other parts are attached to it.

Loop 13-inch leadout wires to the bellcrank, but don't loop the other ends of them yet. Mount the bellcrank with a finishing nail pushed down through the fuselage top. A 1/16-inch diameter nail about 1-5/8 inches long is good.

The rudder for Cobra doesn't need to be turned to the right, since whip flying in windy weather isn't a good idea anyway. Cut out the fin/rudder in one piece. Cut the stabilizer/elevator in one piece; then trim the elevator from the stabilizer. Glue the elevator horn mounting plate on top of the elevator, and attach the horn. The horn is on top of the elevator because, if it was on the underside, it might snag on the grass during belly landings. Cloth hinges or hinge thread, available at hobby shops, come with instructions for hinging the elevator to the stabilizer. Try for a hinge job that has no slop, but allows free elevator movement.

Temporarily secure the stabilizer in its fuselage slot with straight pins. Bend the pushrod so that "Z" bends at each end fit through holes in the bellcrank holes. When the pushrod shape allows the bellcrank and the elevator to be in their neutral positions at the same time, cement the stabilizer to the fuselage. We limit our Cobras to about 1/8 inch of elevator down movement for the first flights. Just stick a pin through the fuselage so that the elevator hits the pin head and stops moving down, just below the neutral position. Remove the pin after a dozen or so flights.

Cement the fin to the fuselage, then set the fuselage aside while you build the wing. The wing is cut from one piece of 1/4-inch balsa 6 inches wide. The right wing panel is not shown on the plan, but is the same shape as the left. Narrower sheets can be used to make front and rear wing sections, if 6-inch sheets aren't available. Sand the wing to a streamlined airfoil cross-section; use the wing opening that you cut in the fuselage for a template. Cut through the wing at the center, front to rear, to produce separate left and right wings. Bevel the cut ends so they butt together when each wing tip is raised 3/4 of an inch off the work bench. Rejoin the wings with epoxy, leaving the tips raised until the joint is set.

Three or four nails, such as those used for the bellcrank pivot, should be inserted full-length into the right wing tip, for tip weight. Make two small notches on the left wing tip, in

the positions shown, for the leadout guides. Secure the tubular guides in the grooves with epoxy. Carefully glue the wing into its opening in the fuselage. Place each leadout through its guide, then bend a loop in the end. The loops should align when the elevator is neutral. Make sure that the control system works smoothly; no hang-ups or sticking can be tolerated.

Models used only for whip flying don't need to be painted. If your Cobra will later be converted to the gas-powered Kingfisher configuration, finish it with hot fuel-proof dope. Engine fuel would soak into unfinished wood and ruin the model.

Stick a lump of clay on the end of that long nose. Place one finger under each wingtip, about 1-1/2 inches back from the leading edge, and add or remove clay until the model balances level. This is only a starting point; add or remove small amounts of clay, according to how the model flies. A tail-heavy model will be very hard to stabilize in flight and will want to flop around. A nose-heavy model will want to dive all the time. Your Cobra will probably be just right, but refer to the last sentences if you should have problems learning to control it.

When you have "whipped" the problems of whip flying, read and heed the rest of this article. You'll learn how to transform your trusty Cobra into a 1/2A control line trainer, the Kingfisher.

The Vought-Sikorsky OS2U-3 Kingfisher was a WW II U.S. Navy scout plane. Usually seen with floats, a wheel-type landing gear could replace the floats when duties called for dry land operation. One of the few surviving OS2U-3 Kingfishers served with wheels in the Mexican Naval Air Force. U.S. Civil Service employees restored that airplane to a float configuration, typical of Kingfishers catapulted from battle-

ships and cruisers. It is on the deck of the battleship "Alabama", on permanent display in Mobile.

Items needed to change the Cobra to a Kingfisher are a Midwest Quik-Mount engine mount and landing gear set, wheels, and an .049 that will fit the mount. The engine must have an integral fuel tank; we used an inexpensive Cox Babe Bee engine. The entire nose can be removed with a vertical cut at the windshield, or a section representing the lower cowl area can be left, as shown on the plans. Dope the bare wood exposed by cutting, then attach the Quik-Mount and engine per manufacturer's instructions. Nothing to it!

Add a 6-3 prop and a wire tail skid. If you use light wheels, the model will probably balance level when supported by fingertips at the leading (front) edge of the wing. If it balances nose down, wrap a bit of solder around the tailskid to bring the nose level. Cut a rudder section from the fin. Cement it back on with about a 1/2 inch of offset towards the right. Don't be concerned if the rudder inhibits elevator-up movement; the 1/2 inch of up available should be plenty for this little ship. It's enough for mine, as experience has shown. No limit on down control should be needed, due to previous training with your Cobra.

Go fishing with your old whip pole; you don't need it for gas models. You do need some good 1/2A flying lines, about 25 feet long. Always make takeoffs with the wind blowing from behind the model. Expect fast acceleration and a short takeoff run! Hold full up control during the roll, but be prepared to change that to prevent the well-known 4/5 of a loop on takeoff. Start to level off as soon as the Kingfisher is airborne. You will enjoy engine-powered control line model flying, but don't try to land this one until it runs out of fuel!

