
OMEGA
KRAFT

BY GEORGE E. CALDWELL

OMEGA

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If you want to fly a Twin, or have your eyes on a scale 310 Cessna, P-38 Lightning, Shrike Commander, or the like, you are going to need an advanced multi-trainer to learn those multi-engine skills so necessary with the bigger, heavier ships. If so, this is your next project! If you have already started (or finished) your dream multi-scale ship, push it aside for awhile. The cost and effort put into one of these is worth more than one or two short flights. Believe me, I know! The Omega is the end result of years of designing, building, and re-building twins. It is easy to fly twins, once you know how.

The main problem of the single-gone-multi pilot is thinking airspeed. When your single quits, what do you do? Hopefully you drop the nose and keep up the airspeed, steepen the approach angle and land. With a twin, you have almost the same situation (without the landing), airspeed is critical. The Omega is sleek enough to allow for a low critical airspeed. Even with one engine operating you can stay above this speed in a shallow climb. In fact, the Omega will easily take-off from a paved runway and climb to altitude on one engine. Stop and think about that - - - take-off on only one engine. Although it is not recommended for your first flight, the average pilot can safely do this after about 30 flights. More about that in the flying section. The Omega is capable of flying any pattern routine and, in general, has been loved by all those who have flown it. Go ahead . . . get started!

OMEGA
Designed By: George E. Caldwell

TYPE AIRCRAFT
Twin Advanced Trainer
WINGSPAN
51 Inches
WING CHORD
9¼" root — 7¾" tip
TOTAL WING AREA
417.5 Square Inches
WING LOCATION
Low Wing
AIRFOIL
Semi-Symmetrical
WING PLANFORM
Double Taper
DIHEDRAL, EACH TIP
3/4 Inches
O.A. FUSELAGE LENGTH
39½ Inches
RADIO COMPARTMENT AREA
(L) 8¼" X (W) 2" X (H) 1¾"
STABILIZER SPAN
18 Inches
STABILIZER CHORD (incl. elev.)
4⅛" Average
STABILIZER AREA
72 Square Inches
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Mid-Fuselage
VERTICAL FIN HEIGHT
5¾ Inches
VERTICAL FIN WIDTH (incl. rudder)
4¼" Average
REC. ENGINE SIZE
.15-.19 Cu. In.
FUEL TANK SIZE
(2) 4 Ounce
LANDING GEAR
Tricycle
REC. NO. OF CHANNELS
3 to 4
CONTROL FUNCTIONS
(3) Throt., Elev., & Coup. Ail.
& Rud. (4) Throt, Elev, Rud, Ail.
BASIC MATERIALS USED IN CONSTRUCTION
Fuselage ..... Balsa and Ply
Wing ..... Balsa, Spruce and Ply
Empennage ..... Balsa, Spruce and Ply
Weight Ready-To-Fly ..... 72 Oz.
Wing Loading ..... 24.8 Oz./Sq. Ft.

Construction

The construction of the Omega is simple and very strong. Use medium balsa for all balsa call outs to minimize the weight. Good wood is a must. As for glue, I recommend Wilhold Aliphatic Resin, available at most good hobby shops. It is super strong, but doesn't become brittle like cements. Most experienced builders at this stage of the game have developed their own construction style, so I'll be brief.

Fuselage:

Affix the plywood doublers to the inside of both sides. Add 3/16" square balsa to the tail and F6 through F10. Glue the deck spar in place prior to the glue drying on the deck bulkheads. When dry, add, or, should I say, glue in F4 and F1. Rough carve the nose block before attachment. Add the nose gear mount and 1/2" block to the bottom. If you are making the wing removable, which I do not recommend, start thinking about it at this point. Add the top deck sheeting, starting from the fuselage middle and working toward the top. I used two pieces, right and left.

Add the cross grain bottom sheeting. Glue F2 and forward, F3 and forward, and the 1/2" balsa "hatch continuation" block. Make the hatch by gluing the 1/8" deck floor to F5 and then to the 1/2" balsa block fitted with the rear F3. Glue the 1/8" dowel to F5 and cut a hole in F6 to accommodate it. Counter drill the hatch and tap F2 for the hold-down as shown. (I used a nylon 10-32.) Next, glue the previously sanded horizontal stab to the fuselage sides. Sand the deck sheeting to the desired shape and glue on the vertical stab, dorsal fin, and both fillet blocks.

Wing:

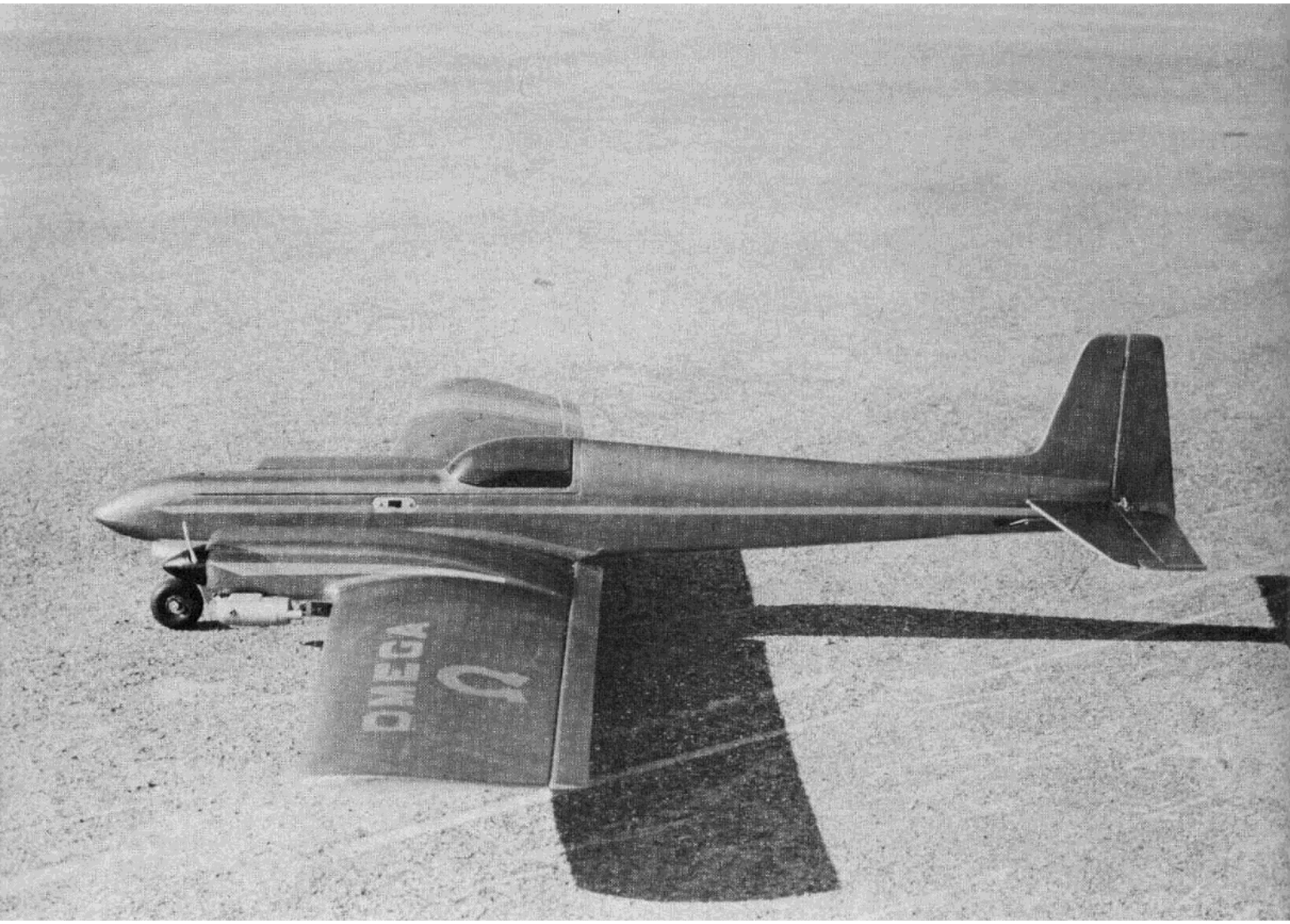
Before starting the wing construction, decide if you want to use upright or inverted engines. Inverted engines keep the oil and gunk off the aircraft, but get pretty fouled-up on dirt fields. I think inverted engines look more realistic and I have yet to have any problems with them. Match the thin wire/plastic NyRod location to your carb set-up and servo size. Draw it on the plans so nothing gets reversed. Other than the engine geometry, the wing construction is normal for a fully sheeted wing. Build it straight and don't leave anything out!

Nacelles:

After the wing has been sanded, glue the nacelle sides to the wing. Glue, not epoxy, the firewalls in place with the noted thrust angles, NyRod, and fuel tubing holes. Cut the wing leading edge and sheeting to accommodate the fuel tanks. Do not cut into the spar! Seal the entire set-up with silicone sealer. Add the nacelle front piece and sheet the top and bottom with 1/4" balsa.

Finishing:

Sand well and build up good fillets with



resin and filler. Tint the canopy with Rit dye before installing, if desired (Use the powdered type only!) Hinge and pin all surfaces before painting. Add the landing gear doors and reinforce with fiberglass, especially on the main gear doors to the landing gear wires. I used torque wires for the aileron linkage installation and it worked very well. Finish with your favorite material, but keep it light.

Flying

Here's the fun part! Set up your engines so that they are turning the same rpm at idle, 1/2 throttle, and at full throttle. Set the idle low, but reliable. Check your radio for proper range, and that all surfaces move in the proper direction. If you have coupled ailerons and rudder, keep the rudder movement about 1'' and the ailerons 1/4'' up and 1/4'' down. Check for the proper Center of Gravity. It should be about 30% back, or 2¼'' back on the leading edge measured at the wing tip. (That's where the spar is.)

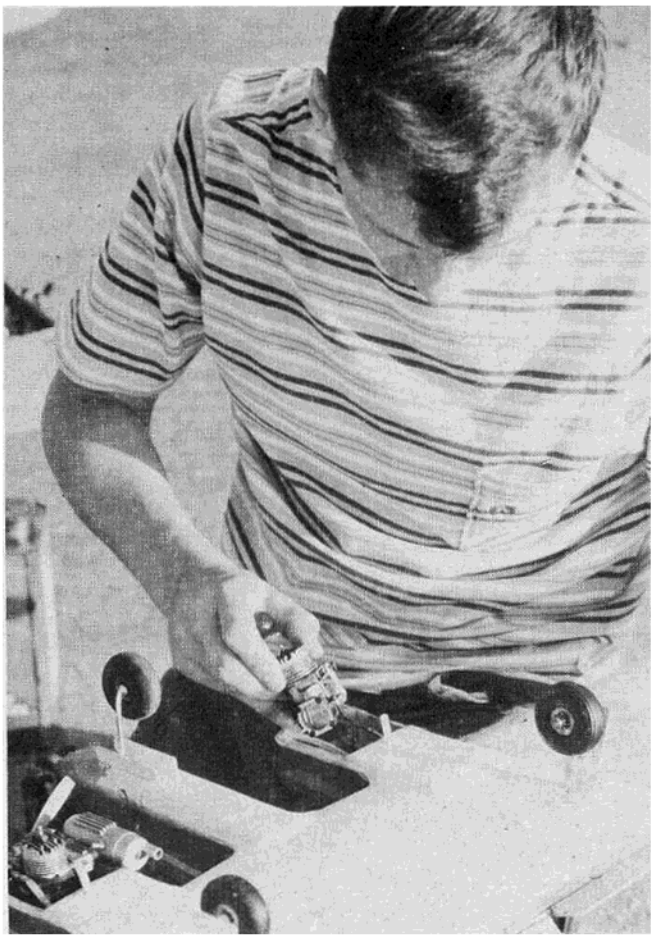
Pick a day when there are no gale warnings for your taxi tests and maiden flights. After starting the engines, calm yourself down while taxiing around. Notice the rapid acceleration. Taxi to the end of the runway and turn into the wind, centering on the runway. Now, goose the throttles. Keep it on the ground as long as your nerves will allow, or about 4 seconds, whichever comes first. Now you are above critical speed and well into vertical climb speed! This bugger is fast! Keep it climbing out straight and quickly trim for level flight. Keep it fast. Should you lose an engine on your first few flights, don't panic, that's why this thing has two engines, it will fly on one!

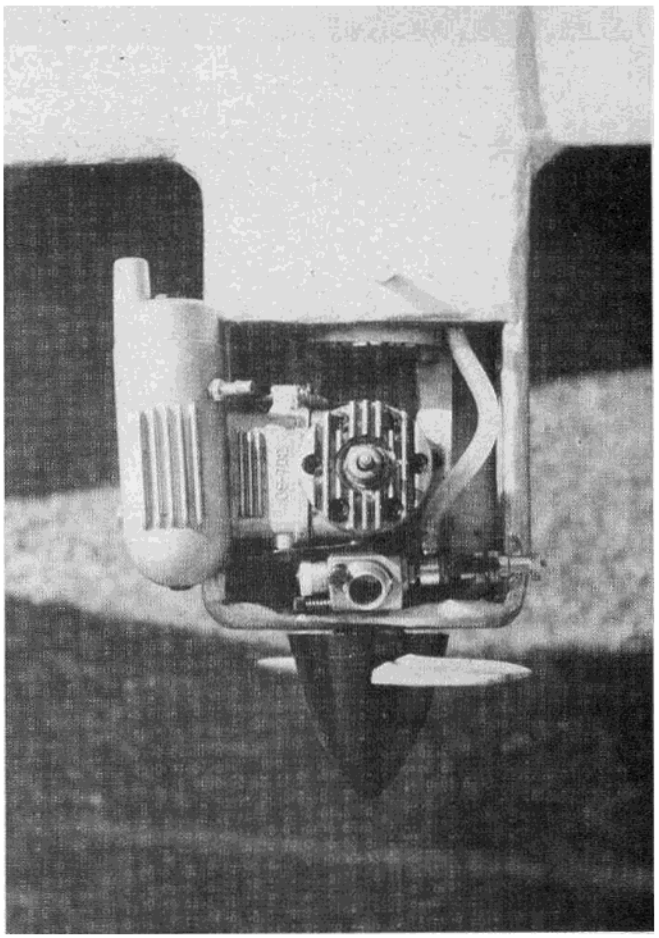
"The Omega is fast. Keep it climbing out straight and quickly trim for level flight. Keep it fast. Should you lose an engine on your first few flights, don't panic, that's why this thing has two engines - - - it will fly on one!"

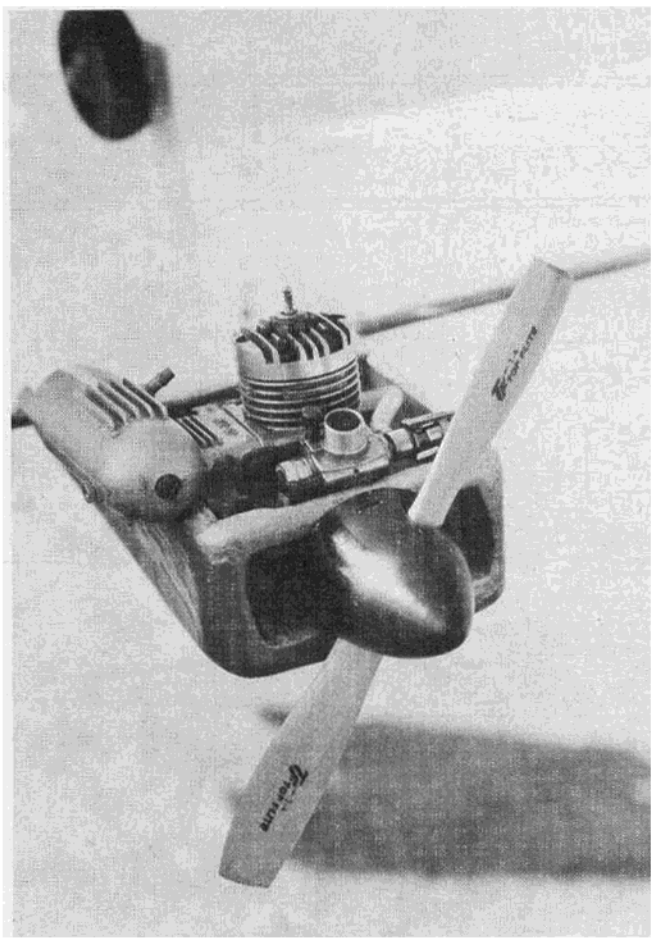
Remember the airspeed and keep it as fast as possible. If you are low and slow, accelerate with full power. Fly it around for awhile on one engine before attempting that first single engine landing. Feel the turns — not too slow and not too fast. Keep full power until you are on final approach and keep it fast by descending. Don't dive it and don't play with the power — it will make it turn at slower speeds. Plan on a low angle flare - - - none of this minimum speed stuff. If you have to go around, decide early! Full power and absolutely flat altitude until you have that airspeed. Climb slowly and carefully in those turns, you're not a pylon racer.

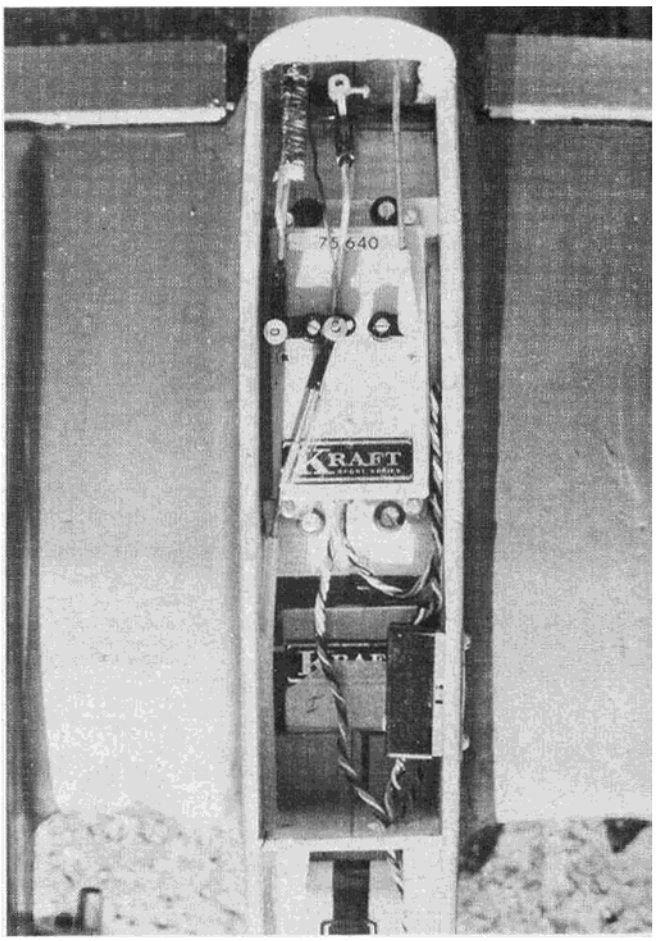
Now for those single engine take-offs. Taxi around for awhile, noting the acceleration. Position the aircraft at the extreme end of the runway. Goose the power, keeping it straight with full rudder. The required rudder will decrease with airspeed. Lift off after using up three quarters of the runway length. Climb very slowly at first, while the aircraft is accelerating. Take it easy on the turns and keep them wide.

You will love flying the Omega and your next twin will have 10 times the chance of survival. Have fun! □









From RCModeler Nov. 1976