

# Corben Super Ace



**One of the cleanest of the home births, this 1934 light plane makes fine F/F or U control by Warner Frakes.**

When it comes to free flight scale models, the Corben Super-Ace turns in about the finest performance that can be hoped for. The rigidly mounted high wing and pylon type of fuselage profile coupled with a long landing gear, simple construction and a neat appearance make this job hard for any model builder to resist. The Corben has been a favorite with scale free fliers since 1934, but now it should be more popular than ever with the half A engines here to stay.

Our Super-Ace is built to a scale of one inch equals one foot, which gives it a projected wing area of 118 square inches, perfect for engines like the O.K. Cub .049. The Eiffel 400 airfoil was used to obtain a good glide with realistic climb and to insure good weight carrying characteristics should the model turn out overweight. Our job weighed 4 1/2 ounces.

Before we begin constructing this free flight "natural," we must not overlook those who prefer to do all their flying from the end of a line. The plans and article insert describe the minor revisions required to build a control line copy of this famous light plane.

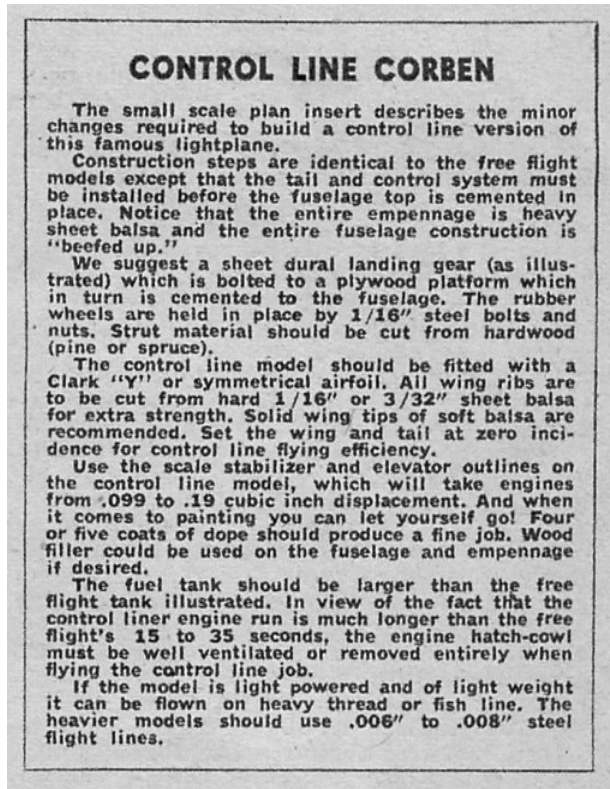
The outstanding feature of the full-size Corben single seat light plane was not the steel tube fuselage, nor the wooden wing structure nor fabric covering but rather the Corben engine. This four cylinder liquid cooled power plant actually was a rebuilt Ford Model A automobile engine. It developed 52 hp at 1925 rpm and weighed 217 lbs. dry. This was one of the first



success full applications of auto engines for aircraft use.

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Begin construction by cutting the fuselage sides and bulkheads from hard 1/32" sheet balsa. Note that bulkhead B is cut from plywood. Join the fuselage at the rear and install the bulkheads in the locations shown. Install the nuts and bolts on the plywood bulkhead (nuts on the after side) and apply plenty of cement over the nuts to hold them to the bulkhead.



Bend the landing gear to shape and bind and solder the two pieces together. The completed gear is attached to bulkhead C and the sheet balsa landing gear support. Crinoline and plenty of cement must be used. The entire fuselage bottom is covered with 1/32" sheet balsa. Install fuel tank.

This can be purchased at your hobby shop or fabricated from very light shim brass. Our tank measured 3/4" square and seemed an efficient size.

Add the fuselage top and cowl and turtle-deck sides. Select two soft balsa blocks for the nose. Cement these in place (pulling in the fuselage sides as the top view indicates), and when dry, carve and sand carefully to shape. The entire fuselage should be thoroughly sanded. Add the soft balsa headrest and wire tailskid. Clear-dope the entire fuselage once, sand lightly.

The empennage is the picture of simplicity. Cut the fin and rudder from 1/32" hard sheet balsa. The stabilizer and elevator are made from a simple framework of 3/32" square and 3/32" sheet balsa. This is constructed by pinning the wood directly over the plan on the work table and cementing all joints well. Cover both sides of the framework with Japanese tissue or Sky-Sail. We used Sky-Sail with excellent results. Pin to the workbench and water and clear dope one side at a time to prevent warping. Two coats of clear dope proved satisfactory. Cement the empennage components to the fuselage parallel with the center line.

Medium hard balsa should be selected for the wing ribs. We made our wing in one panel and cut the upper spars and leading and trailing edges to produce the required dihedral. If you desire, two panels can be constructed and jointed at the center line.

Pin the rock hard 1/16" square balsa lower spar to the work table directly over the plan. Cement all the ribs to it. The rock-hard upper spars can now be cemented to ribs in the notches provided for them. Add the leading edge. When dry, remove from the table and cement the trailing edge to the ribs at an angle to follow the airfoil contours.

Cement the sheet balsa wing tips in place and add the 1/16" square stiffeners. Sandpaper the entire wing framework lightly and re cement all joints. Care should be exercised when covering the bottom of the wing, to make certain that the covering adheres to every rib in order that the true under-camber is maintained. Here again we used Sky-Sail.

Water the wing, then clear-dope three times when dry. The wing on the prototype model was cemented to the fuselage and this method proved successful; however, rubber bands can be used to hold the wing in place. Note the proper incidence.

Fill in the space between the wire landing gear struts with 1/16" sheet balsa.

Cement the balsa wing struts in place other than the removable vertical strut. This strut must be removed when flying the model in order to permit the landing

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gear to flex on landing and not transmit the load to the wing struts, possibly breaking them. Although the landing gear is quite flexible, lightweight air wheels were used effectively.

The upper nose block can now be removed (careful!) from the fuselage. Install the engine with slight down and right thrust. This is accomplished by inserting one brass washer behind the top right engine lug and two brass washers behind the top left engine lug. Hollow the upper nose block so it will clear the engine by at least 1/16". This block is now the engine hatch and can be held in place with dress snaps, or hinged.

Although the prototype Corben Super-Ace model was flown with the hatch in place, it is suggested that ventilating holes be cut in the front and rear of the hatch, or that the hatch be removed when flying in order to avoid the danger of fire.

The general Corben color scheme was all yellow with cowl and upper portion of the fuselage forward of the cockpit black; however, in view of the fact that this is a personal type craft any color scheme that you have in mind can be used. Our model was colored all dark blue with white lettering and trim. Fuel-proof the entire plane once, including cowl interior.

Before flying be sure the model balances at the point indicated. The prototype required slight ballast in the tail. Test-glide in tall grass until a good glide has been obtained; this should be very flat and slightly to the left. The model should climb to the right. When launching, it is advisable to have the wind blowing on the front right quarter of the model in order to achieve maximum performance.

## Bill of Materials

**Fuselage.** 3 pcs 1/32" x 3" x 18" medium hard balsa, sides, top, bottom and bulkheads. 1 pc .025" music wire, 18" long, landing gear. 1 pc 2" x 2" x 2" very soft balsa, nose block. 1 pc 1/16" x 3" x 2" plywood, engine bulkhead. 1 pc 1/16" x 2" x 2 1/2" soft balsa, L. G. fill-ins. 1 pc 3/4" x 3/4" x 7" very soft balsa, headrest.

**Wing.** 1 pc 1/32" x 18" x 3" medium balsa, ribs. 8 pcs 1/16" x 1/16" x 15" hard balsa, spars. 2 pcs 3/32" x 3/32" x 15" hard balsa, leading edge. 2 pcs 3/32" x 1/2" x 15" medium balsa, trailing edge. 1 pc 1/16" x 1" x 4 1/2" soft balsa, wing tip. 2 pcs 1/16" x 3/16" x 24" soft balsa, struts.

**Empennage.** 1 pc 1/32" x 2" x 8" soft balsa, fin and rudder. 1 pc 3/32" x 3/32" x 28" medium balsa, stabilizer structure. 1 pc 3/32" x 2" x 9" medium balsa, stabilizer outline.

**Miscellaneous.** Sky-Sail tissue, cement, celluloid sheet, wheels, nuts, bolts, Trim-Film, thread, 4 oz. clear dope, Comet Fuel Proofer, 3/0 sandpaper, shim brass, soda straw.