

PULL-OUT PLANS FOR . . .

BELL P-39 AIRACOBRA

Clive Smalley's latest design for
.10 to .15 motors and two function
R/C equipment



THE BELL P-39 'AIRACOBRA' was not one of the most successful WW2 fighters, although it was built in substantial numbers. Its unusual mid-mounted engine was developed to enable an automatic cannon to be mounted in the nose on the aircraft centre-line. By having the engine mass near to the centre of gravity a spin-off of increased manoeuvrability was also achieved. The engine installation proved surprisingly trouble-free in service, but many a pilot complained of prop-shaft whine, not surprisingly as this ran beneath his bottom!

The main users of the type were the USAAF in the Pacific and the Russians in Europe. The armament arrangement was especially liked by the Russians, who used the aircraft in a low level ground attack/'tank-busting' role with some success. Several pilots also achieved a reasonable score of victories in air-to-air combat, some excellent photos and colour details appearing in the books 'Red Stars in the Sky' (Available from Albion Scott Ltd. Price £5.50).

Besides being a very rugged aircraft, capable of absorbing a good deal of punishment, one other notable feature of the type was the tricycle undercarriage arrangement. This was unusual, to say the least, on even multi-engined types of the period and was unheard of on a single-engined fighter. No undercarriage is fitted to the model, as unless a retractable system is used, I feel the flying appearance of any WW2 fighter is decidedly improved without one and in any case is impractical on a model of this size.

Construction

The sequence of construction is relatively important with any one-piece model of this nature. Little else can be built until the wing is basically complete.

Wing

This can be built in the hand up to the stage of fitting the upper skin when it must be jigged to build in the correct amount of washout, which is absolutely VITAL!

Cut the lower wing skin to shape. Glue on the mainspar and ribs R1-R8. Add the $\frac{1}{8}$ in. sheet sub-LE and trim to match the rib curvature. Glue on the $\frac{3}{16}$ in. sheet aileron spars allowing a small gap. Fit the torque rod and bearings and all hinge scrap blocks. Bevel the TE and sand overall ready for the upper skin. make this slightly oversize on chord to allow for the camber. Over the plan, pin down or spot cement the wing jig strips. The TE jig fits along the TE position from R1-R7 and the LE jig under the sub LE position. Make sure this jig is secured firmly. Using PVA to allow adjusting time, fit the top skin and pin the whole wing panel to the jigs on the building board. Allow to dry for at least 24 hours before removing. Reverse the jig pieces and repeat for the second panel. Remove, clean up the centre ribs and join the panels. Carefully measure the ailerons above and below the wing and cut out. Sand the LE to allow movement and hinge in position at the same time glueing the torque rods into each aileron with epoxy. Add the leading-edge and tip blocks. Carve and sand, finally making cut-outs to clear the aileron and elevator servos. This completes the basic wing structure.

Tailplane

Build this from light but firm sheet stock.

Fuselage

The basis of the fuselage is the horizontal crutch built from $\frac{1}{2} \times \frac{1}{8}$ in. strip over the plan. Remove from the board and fit formers F2-F3 to the crutch adding the upper and lower keels. Spot glue $\frac{1}{4} \times \frac{1}{8}$ in. hatch side pieces to the crutch and glue formers H1-H7 to these. Add in the hatch upper keel. This basic fuselage assembly can now be epoxied to the wing, checking for 'squareness' in all views.

Decide on the servo locations and fit the elevator cable down the fuselage drilling through the formers to suit.

Now plank, or sheet, the fuselage with pre-formed pieces, and note the hatch position as each piece is added. Mark with a soft pencil

as you work around the fuselage then you will know where to cut the hatch away! Fit the cockpit floor. When dry, sand smooth overall, cut away the hatch, spot glue joints and remove. Lightly fibre-glass inside the nose bottom to give rigidity to this area. You can cut away most of the formers, as this is done to give more clearance for your gear. Similarly the hatch can be treated in the same way if desired. Do not overdo the resin as this quickly adds a lot of weight. Now cut away the rear post and F12 as necessary, to clear the elevator horn. Trial fit the servo and make up the cable. The tailplane can now be epoxied in position. Make the fin and rudder from light but firm stock and trim out the rudder bottom to clear the elevator horn. Blend the outside profile blocks to the fuselage contour and smooth into the upper rudder. Glue the fin and rudder in position and add the upper fillet blocks.

Bolt the engine mount to F1 and drill any fuel line holes. Epoxy F1 to F2 (Not to H1) and follow through. Build the cowl from scrap sheet or fibreglass and cut away to suit the engine used. The spinner can be purpose-made from balsa rings or a commercial one can be modified to include the cannon blast tube. The canopy can either be moulded or built up from sheet and painted. Refer to photos and three-view drawings for other details. Finally build the wing fillets from $\frac{1}{16}$ in. sheet and notepaper. This completes the basic airframe.

Finishing

The sanding sealer/tissue/dope/paint system is the best for this type of model, giving a more realistic finish than plastic film.

R/C Installation

This is straightforward enough with modern R/C gear. Use a 225mAh Ni-Cad for preference, unless you need the battery weight for balance purposes. The fuel tank should be fitted as close behind the engine as possible.

Engines

The model is suitable for any 0.10-.15cu.in. motor or a 1.5cc diesel. The latter may seem unusual but it has many advantages over a glow engine in models of this type.

1. Usually spinners on WW2 types are of a large diameter. The diesel will enable a larger diameter prop to be used. (Not a problem on the 'Airacobra').

2. The fuel does not attack the finish, as does glow fuel, with nitro added for the smaller engines.

3. It is difficult to fit a silencer without ruining the appearance and although I do advocate fitting silencers, a diesel engine can be satisfactorily silenced with a simple collector ring type.

4. If the model is kept in your car boot, you only require a pint can of fuel and the transmitter. No need for tons of back-up equipment.

5. Without a third function for throttle control an R/C glow engine is not necessary.

Flying

Get a helper to hand launch for you, at least for the initial flights. Keep the model fairly close as it quickly becomes a speck in the sky at any distance. When you estimate the tank is about dry, gain some altitude to enable you to plan your landing approach.

You only have one chance when 'dead-stick'. Don't attempt to stretch the glide as you may well quickly reach the stalling point with no chance of recovery action. Keep the speed up on landing. Finally, a few references to keep you happily browsing instead of building!

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