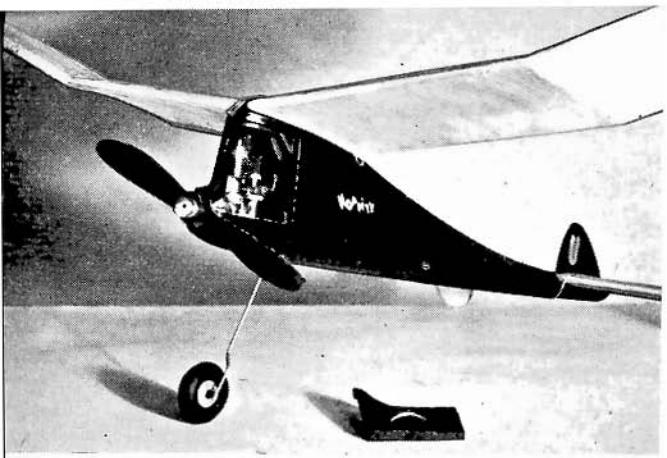


HOPPITY

CLASS "A" POWER DURATION MODEL

By John Chinn

DESIGNED around the popular Amco Mk. I .87 c.c. diesel, "Hoppity" is exceptionally agile under power and demonstrates a glide not often found in small models. The prototype was flown all last season, often under quite windy conditions. As is often the case with smaller power models, it proved well able to stand up to comparatively rough treatment, and has now become a worthy successor, for general purpose flying, to "Austerity" (October, 1948 MODEL AIRCRAFT) which was lost on its last flight and not recovered.

The Amco engine is an ideal power unit for this model, but almost any other engine of between 0.5 and 1 c.c. may be installed without extensive modifications to the fuselage. The 1 c.c. E.D. Mk. I. will fit the existing engine mounting, and the Mills .75 c.c. motor should also be a suitable installation.

Construction– Fuselage

This is built on the now popular "crutch" system, the crutch consisting of two $\frac{3}{16}$ in. sq. balsa longitudinals with $\frac{3}{16}$ in. square cross-members. The engine mount, cut from $\frac{1}{8}$ in. plywood, forms the front of the crutch and should be strongly cemented to the side members. While the crutch is still pinned down, the upper formers, T.2 to T.7 may be fitted and the wing mount, shaped from three laminations of $\frac{1}{8}$ in. sheet balsa, and the $\frac{1}{8}$ in. sheet backbone added. Note that T.2 and B.2 consist of $\frac{1}{16}$ in. plywood backed with $\frac{1}{16}$ in. sheet balsa, while all other formers are of $\frac{1}{8}$ in. sheet balsa.

The assembly may now be removed from the plan and the bottom formers and $\frac{1}{8}$ in. square stringer fitted. The undercarriage leg should be shaped from 14 s.w.g. steel wire and securely bound and cemented to the engine mounting and to former B.2. Former T.2 is temporarily removed to facilitate this operation. A single leg undercarriage is fitted to cut down drag and has proved quite serviceable on the original model.

Assuming that the engine to be used has been positioned on the engine mount and bolt holes drilled, 8-B.A. nuts should be soldered to small brass plates, one to each lug, and these, in turn, cemented to the underside of the engine bearers.

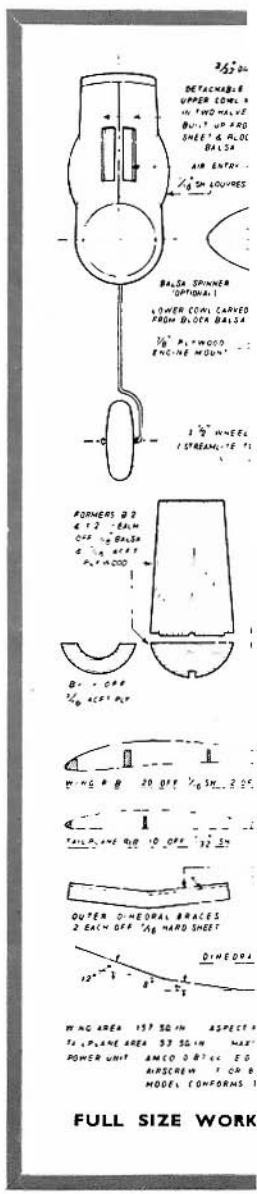
The lower cowling is carved from a balsa block and is hollowed out to a wall thickness of approximately $\frac{1}{8}$ in. It is cemented to the engine mount and to former B.2, its front end being faced off with the $\frac{1}{16}$ in. ply former B.1. A $\frac{1}{8}$ in. diameter drain hole should be drilled in the bottom of the cowling.

The upper cowling sections are best built up from block and sheet balsa, the lower part being carved to follow the lines of the spinner and moulding into the upper part enclosing the cylinder which may be of $\frac{1}{16}$ in. sheet with grain vertical. A hard balsa frame lining the edges of the two halves will prevent any tendency to warping. Cooling slots are cut in the leading edges of the cowling and the semi-circular exhaust exits are covered with louvres cut from $\frac{1}{16}$ in. sheet. The two cowling halves are simply and effectively held together by a rubber band passing around them below the air entry slots and secured to wire hooks fixed to the crutch at No. 2 station. Due to its close proximity to engine oil, this band should be frequently renewed.

The fuselage may now be covered with 1/32 in. sheet balsa. By steaming the balsa to shape, this may be accomplished with three pieces, as there are no difficult curves to cover. Use one piece for the bottom and one for each side. The tail of the fuselage is filled with a small block of soft balsa and rounded off. A piece of $\frac{1}{16}$ in. diameter dowel is then inserted in this to serve as a hook for the tailplane rubber. Dowels are also fitted, as shown in the plan, for the wing rubbers. A $\frac{1}{4}$ in. sheet gusset is cemented between former T.2 and the wing mount.

Wing

The wing employs orthodox construction methods and may be built over the plan in the usual manner. Twenty-two ribs are required, two being from 3/32 in. balsa and fitted at the outer dihedral breaks where additional stiffness is required during the covering stage. When built



over the plan, the front of the trailing-edge spar should be packed up approximately $\frac{1}{16}$ in. to preserve the true section. Notch the ribs into the trailing edge for greater strength. The two centre-section ribs are cut 1/32 in. smaller on both upper and lower surfaces to allow for the sheet covering.

Tail-Unit

Tailplane construction follows that of the mainplane and should not present any difficulties. The fin and anti-spin fins are cut from $\frac{1}{16}$ in. sheet balsa and are cemented to the upper and lower surfaces of the tailplane after the latter has been covered and doped.

Covering and Finishing

Rag tissue of a light cream colour is recommended for covering the model. This appears to be superior to another grade of rag tissue which is of a greyish-white shade.

The fuselage should be rubbed down with fine glasspaper and, if a good surface is desired, given a coat of wood filler. Two thin coats of coloured doped should then be sufficient to provide a smooth finish. Paint the inside of the cowling liberally.

Two thin coats of clear dope should be adequate for the wing and tailplane. Pin them down to

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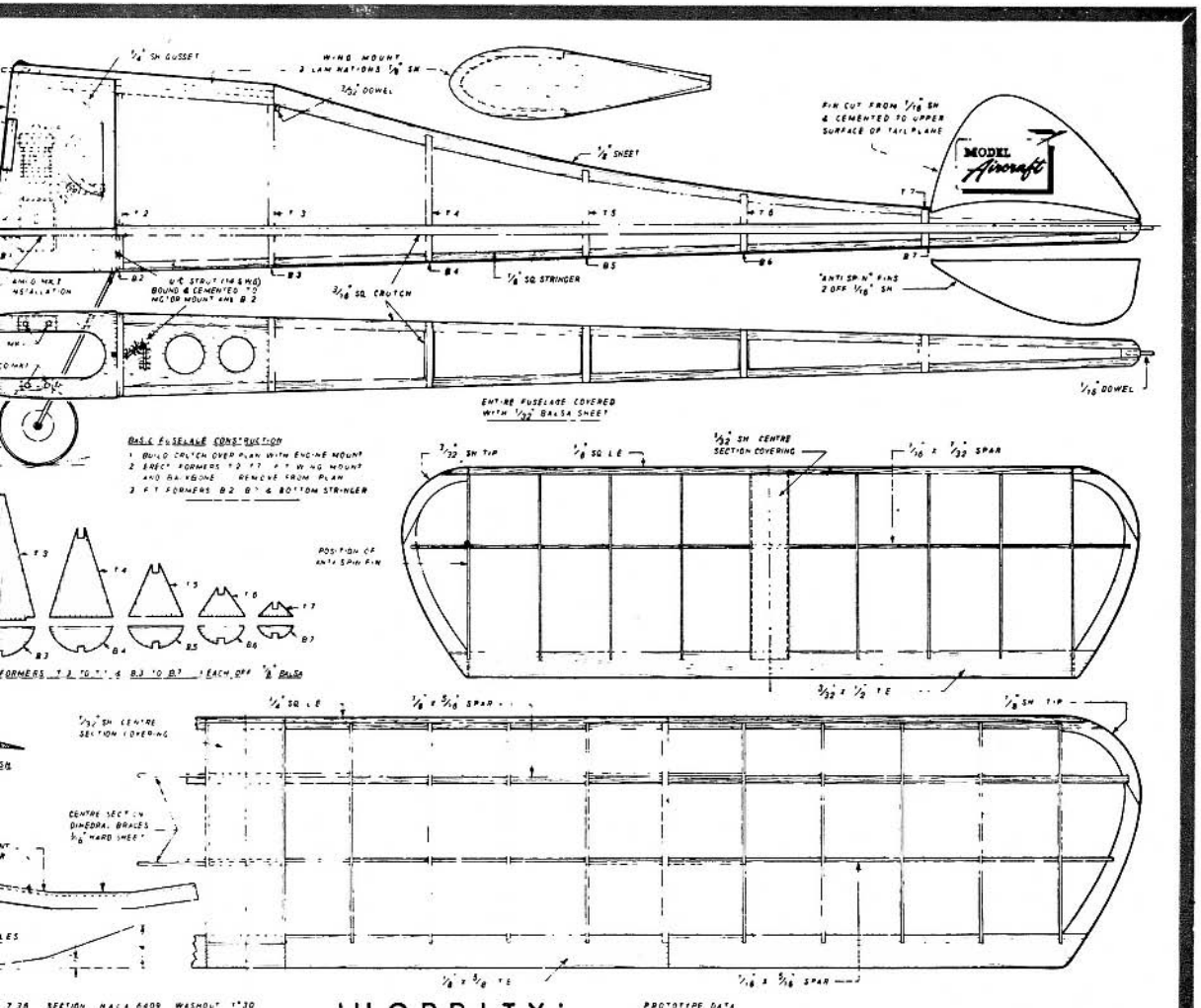

DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 23, GREAT QUEEN STREET, LONDON, W.C.2, at 2s. 9d. POST FREE.

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prevent warping when doping and wash out the wing tips approximately 1½ deg. A final coat of banana-oil may be applied or, alternatively and to impart a pleasing gloss to the whole model, a coat of hot-fuel proofer such as "Marjonos" may be brushed on thinly.

Flying

Assemble the model and check alignment of flying surfaces. With the Amco engine installed, the centre of gravity of the original model was at 65 per cent. chord and it is not recommended that the c.g. should be located farther aft that this. Most other suitable engines are heavier than the Amco and with the c.g. moved forward slightly, a lower tailplane rigging angle will usually be required.

For the first power flight, slow the engine down as much as possible. As revs are increased the model should climb steeply and rapidly in a fairly wide turn. To make the machine circle with power off, the tail-unit may be offset slightly and, when a satisfactory adjustment is obtained, $\frac{1}{16}$ in. square balsa strips cemented to the under-surface of the tailplane on each side of the fuselage to maintain this setting.

The standard Amco airscrew will give this model quite a spectacular climb but, to allow the engine to develop an output closer to its peak power, a somewhat smaller diameter propeller is required. A 7 in. × 3½ in. propeller was found to be suitable and a similar, or very slightly larger, propeller may also be used with the E.D. since, like the Amco, this engine also peaks its h.p. output at very high revs.

No timer was fitted to the prototype, engine run being entirely dependent on fuel "guestimation," but a standard diesel timer may be very easily fitted between formers T.2 and T.3 to provide direct linkage to the Amco cut-out. Similarly, no provision is made for needle-valve or compression adjustment when the cowling is in place, the "knack" of starting on running settings being easily mastered.