

**A 352 SQ. INS. FLYING WING
FOR POWER UNITS WEIGHING
UP TO 2½ OUNCES**

BY

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Arrowhead shape of Ghoul III is plain in this view of designer M. M. Gates and the Allbon Dart version. Note temporary trim tabs on elevons for preliminary flight tests.



EASY to fly, and simple to build, Ghoul III is the latest design by our well-known specialist contributor on tailless types—M. M. Gates. Why not try one for your baby class diesel or Jetex unit? Its high performance is equal to the best of orthodox designs.

Construction : The wing centre sections are constructed by cutting out the ribs and cementing them to the $\frac{1}{8}$ in. square spar, then add L.E.'s and T.E.'s which are first roughly shaped. Outer portions are made similarly.

The centre section block is made from laminated sheet, shaped to give the correct dihedral. Only the inner ribs of the outer sections need be set to allow for dihedral. All five sections of the wing should be very carefully cemented together, and the joints gusseted as shown on the plan.

Sew the rear undercarriage legs to the trailing edge and cement firmly. The nosewheel legs are pushed into the centre section. Cover with rag tissue, well doped and fuel proofed. Note that before covering, the washout will be insufficient, the tissue will induce further washout into the outer sections quite naturally. Final adjustments should be made to the washout after doping; but before fuel-proofing. Fins and elevons should be cut from

lightweight $\frac{1}{16}$ in. sheet and added after covering. Care must be taken in setting both elevons to the same angle.

The method of pylon construction will depend on the motor to be used. This may be anything from a Jetex 200 to an Elfin 1.49—in other words anything up to 2½ ozs. in weight which will give over 2 oz. thrust.

The dihedral shown on the plan is selected to give good stability with high thrusts. Especially with the small power units, it will give a certain amount of "Dutch rolling" on windy days.

Trimming : Trimming presents no difficulty if carried out systematically. First check the wing for warps, check the C.G. and rectify any faults that may be apparent. Stick temporary trim tabs to the elevons, then glide test the model. If the glide appears nose heavy, raise the trim tabs until the glide is correct. If there is a tendency to stall, add some lead to the nose.

After checking that the pylon is correctly aligned—according to the power unit used—try low power tests. The model should have a slight left turn under power, with a suitable glide. Gradually increase the power by raising compression until full power is obtained, making slight trim tab adjustment if necessary. The tabs can later be dispensed with by resetting the elevons.

VARIETY IN POWER is evident in these five views of different power units. The popular choice will probably be the Allbon Dart 0.5 c.c. shown at extreme left. Left to Right: the next is a lightweight Jetex 200 installation, then the Elfin 1.49 c.c. unit (not for beginners!). Fourth is another tricky high power unit, with twin Jetex 350's, and last, with a single lightweight Jetex 350.



