

ARROW

DESIGN BY WOLFGANG MATT

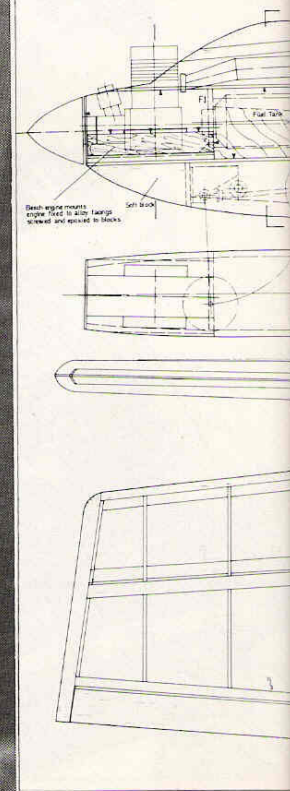
AEROBATIC MODELS intended for competition work are amongst the most demanding of all projects in modelling. These models have to be perfectly tuned aerodynamically to the flight schedule demanded of them, and this is a schedule that calls for a great deal of power. Hence you cannot hope to reach the top level in aerobatic flying without a first-class motor. On the other hand, environmental considerations dictate that the motor be effectively muffled.

Hence the designer of an aerobatic model is faced with what appear to be mutually exclusive requirements. Assuming a first-class aerodynamic design, his first priority must be to make sure he has a large excess of power available, made necessary by the demanding vertical manoeuvres. With the high flying weight of aerobatic models, it is essential to use the most powerful motors in their class, and to extract every ounce of power from them wherever possible.

In the interests of environmental protection — and here we come up against the second requirement — the motor should be as quiet as possible. For this reason motor silencing is a very important factor in the design of a modern aerobatic model, a factor which cannot be neglected, and should be borne in mind from the initial stage in designing the layout of the model.

The aerodynamics of the model presented no problems, as I was able to base the design on my experience with the ATLAS, with which I won the World Championships in

Wolfgang Matt brings Arrow into the landing circle at the end of one of his competition flights during the 1979 World Championships held in South Africa.

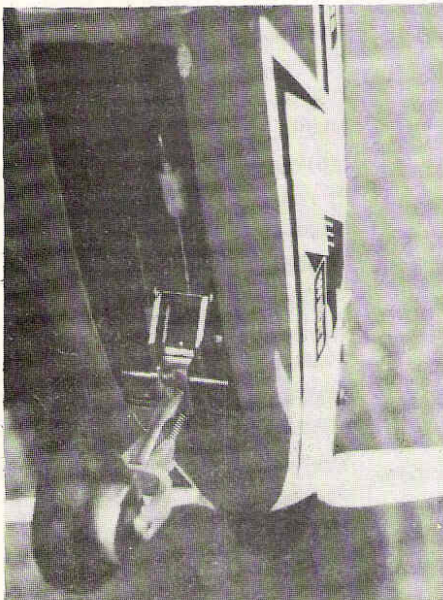


the arduous conditions of aerobatic flying. Naturally the model is designed to be fitted with a retractable undercarriage.

In the interests of simplicity, our models' wings have been made with foam cores and balsa skinning. The wing features landing flaps and spoilers, although they can be omitted without incurring any loss of performance. The flaps and spoilers were designed for the violent manoeuvres included in the Las Vegas Tournament of Champions schedule.

The cutting of the foam core for the wing and tailplane presents no problems at all, an electrically heated wire being used in the normal way. The vital factors are exact alignment of the two rib templates, and an even

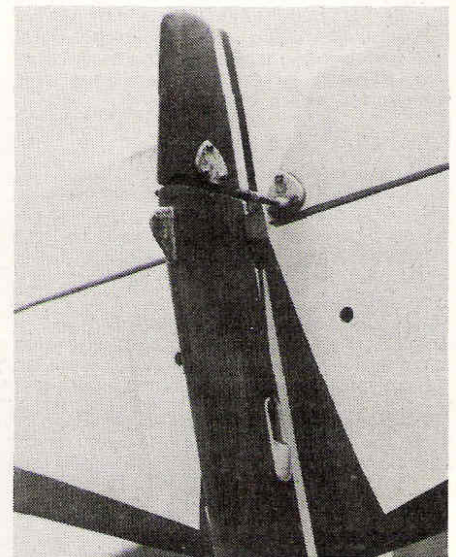
Right: powerhouse of Arrow - the Webra 61 rear exhaust. Note the neat bracket for the fuel filler pipe and the variable pitch propellor. Below: plenty of room for retractable nose leg in the deep front fuselage.



cutting speed with the hot wire. The wing is covered in balsa, using white glue as adhesive, and this is also a straightforward procedure. The wing centre section is reinforced with a layer of glass cloth and polyester resin. The wing is attached to the fuselage with one dowel and two plastic M6 screws. The tailplane can be made detachable for transport, or it can be glued in place if you prefer.

When constructing the fuselage, take great care that it stays true and does not warp. Allow the glued joints to harden completely before removing the framework from the building board. This model is intended for experienced modellers, and for this reason we are not providing step by step building instructions. Take the trouble to seal the surface of the fuselage structure well,

Right: underside view of tail feathers: note the access holes for tailplane retention and incidence adjustment. Below: underside exhaust outlet and recessed wing fixing bolts.



and in particular the tuned pipe compartment, which should be insulated from the heat of the pipe by a layer of aluminium foil. The exhaust from the silencer is led to the bottom of the fuselage via silicone tubing and an aluminium tube. This leaves the model largely unsoiled by exhaust residue.

The wing is fitted at a positive angle of 0.5° relative to the tailplane, and the motor is installed with 1.5° of right thrust. The centre of gravity is at 40% of the root chord on the symmetrical sectioned wing. These values are drawn in on the plan and it is vital to keep to them to ensure that your model performs as well as the original.

Finally, we would like to wish all those who build this attractive model many fine flights, and good competition results.

Below: main undercarriage units - the legs are coil sprung with wheels mounted on pivoting forks. Low bounce tyres are essential for smooth landings.

