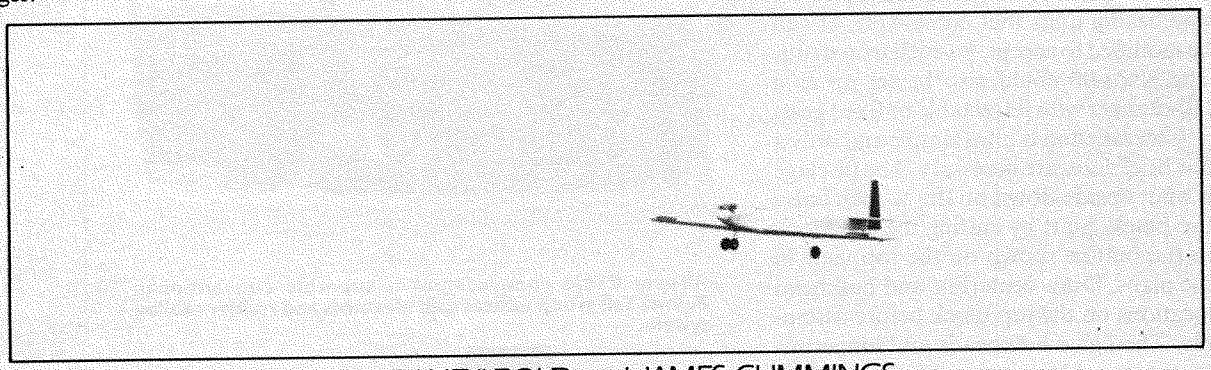
Classic designs remain the same regardless of size.

KAOS-90

A new approach to a classic design.



by DEWEY NEWBOLD and JAMES CUMMINGS

DESPITE ITS occasional frustrations, I love pattern flying—but there are times I've wished for something simple and yet impressive in its presentation and performance. Larger models have an impressive smoothness and grace, but I wanted something *completely* aerobatic and yet very simple to construct and maintain.

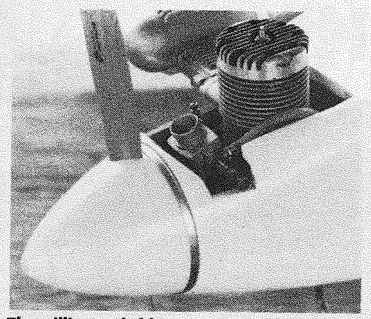
Local hobby shop owner James Cummings and I decided that by enlarging a good basic pattern design and taking advantage of the improved Reynolds Numbers, we could have spectacular performance without the complexities of retracts, pipes, etc. Since 1970 Joe Bridi's Kaos design has maintained a reputation as the most docile and simple airplane available with competitive aerobatic capability. I can wholeheartedly agree with Dave Brown's recent endorsement of it as an ideal first low-winger.

The Kaos-90 is a 25% direct enlargement of the Super Kaos. Please note, the original Super Kaos is still produced by Great Planes but at this time there are no plans to manufacture a kit of the Kaos-90.

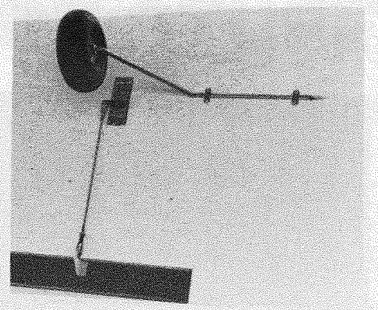
Whereas the standard size Super Kaos spans 59 inches with a wing area of 644 square inches, the Kaos-90 spans 73 inches with just over 1,000 square inches of area. All of the good flying traits of the original design have been retained and even enhanced. I think this design fills a real void between conventional-sized models and giant-scale. The Kaos-90 is ideal for beating up the sky on a Sunday afternoon and will fly a surprisingly precise pattern. I feel it would make a good transitional aircraft for those wishing to move into the larger models, especially if built as a tail-dragger. The simple fast construction also makes it suitable as a testbed for some of the larger servos, engines, etc., before they go into that ultimate quarter-scale project.

Speaking of engines, we flew the prototype with an O.S. 90. This is a good engine, but it shares the same size muffler with the .61 FSR and this restricts performance somewhat. I would recommend drilling out the outlet tube in the O.S. muffler or discarding it and using a less restrictive type, such as the Mac's. At 10½ pounds, the .90 is plenty of power for lively aerobatics. Real hot-doggers could add a tuned pipe or, better yet, one of the new O.S. 1.08s. We've considered installing a 1.20 four-stroke, which should also be an excellent combination. Please do not consider using any of the chainsaw-type engines as the structure is simply not designed for that size.

CONSTRUCTION. The construction has changed very



The willing and able O.S. 90-FSR rides in style.



Independent aileron control via an extended servo.

Maneuvers are large, smooth, and graceful.

little from the original Super Kaos design, as I don't feel the Kaos-90 is large enough to warrant switching to giant-scale construction methods. We opted for simple, light construction familiar to most modelers. The major deviations from Bridi's design are a foam-core wing in place of the original built-up one and a firewall-type motor mount instead of beams.

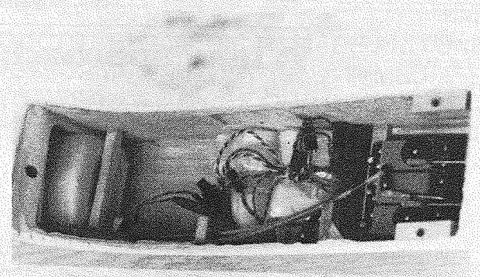
As shown on the plans, the prototype featured fixed tricycle gear. If the weight can be kept under 11½ pounds, the landing speed is slow enough that most of the standard commercial retract systems should function well. You should plan on purchasing units that come with, or can be modified to accept, 3/16-inch wire struts. The Kaos-90 could also be set up as a tail-dragger with retractable or fixed gear.

Construction is ultra simple and only a few brief notes are necessary. The fuselage is built upside-down on the ⅜-inch balsa top block. Start by cutting the top block to the outline shown on the top view in the plans. Draw centerline and bulkhead locations on the top block before assembly. Then glue bulkheads and longerons to the top block using Sig* modeler's triangles to ensure alignment. After you assemble the sides and doublers, they can be added to the top and bulkheads and the bottom can be sheeted, all without removing the assembly from the building board. Be sure to brace the firewall with *large* triangular stock on each side and don't forget to coat the inside of the tank compartment with resin or epoxy. Install the nose-gear bearing blocks (Goldberg or similar) before gluing the bottom nose block on.

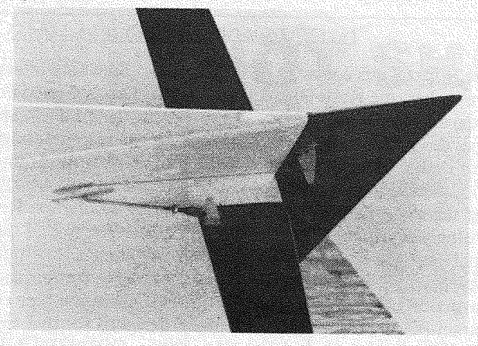
Build the cowl up from ½-inch sheet balsa to suit the engine you're going to use. Wing fillets are not shown on the plans but you can add them if you want, using a 1/32-inch ply base and a micro-balloon filler.

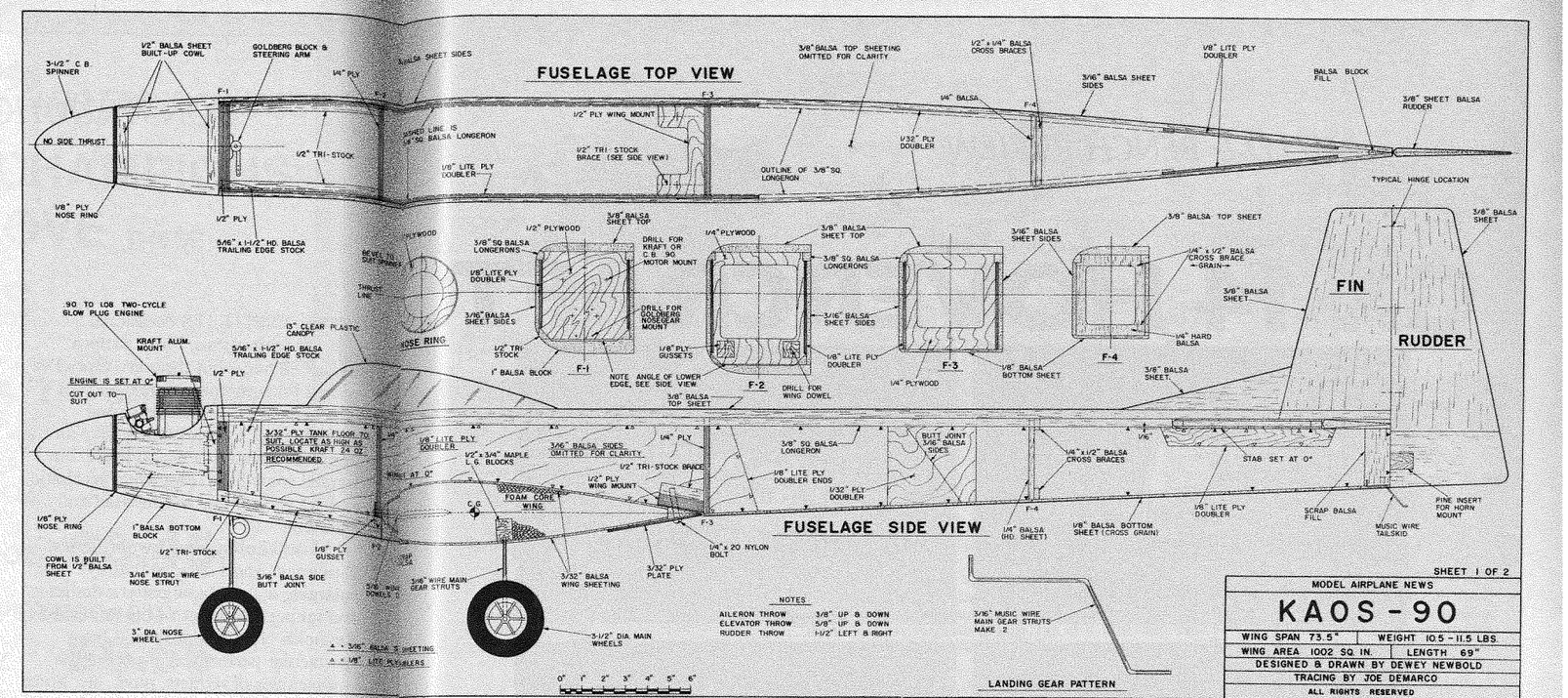
Sheet the wing cores with 3/32-inch balsa. I prefer a slow-setting epoxy for this, as opposed to contact cement. Spread a very thin coat on the inner surface of the balsa skins only. An auto body putty

(Continued on page 99)



Above: Radio compartment is superbly conventional. Below: Tail group utilizes split elevators and rudder cabling system.





FULL-SIZE PLANS AVAILABLE...PAGE 124