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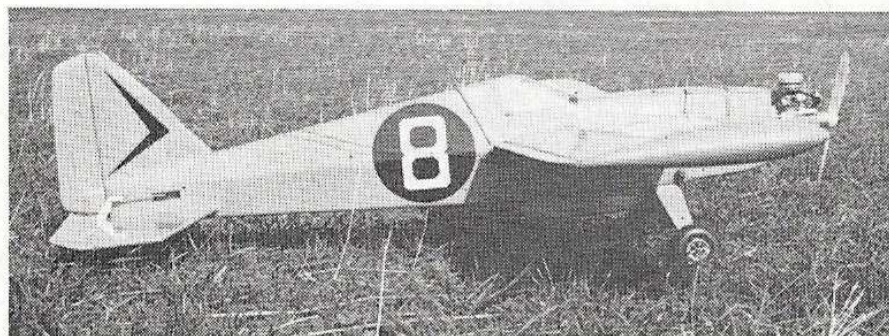
Build this racy-looking sportster— 56" span, for '35 to '40 power

AFTER spending many months looking around for a shoulder-wing model that didn't look like a box with a wing stuck on top, I had to conclude that there are few available, and none had the "full-size" appearance that I was seeking, so I just had to sit down and design one for myself.

My first consideration, therefore, when designing *Maricardo*, was an attractive appearance. Looks are a matter of individual taste, and my own preference has always been towards the miniature "pylon racer" type model. However, my flying ability being, at best, somewhat average and pylon racers being, at best, somewhat hairy, I've always steered clear of these machines. As my needs on the flying side were quite different from this type of

model (I wanted an easy-to-fly model, capable of sports type aerobatics), and not having to conform to limiting specifications, I felt that I could "cheat" all round and still come up with a model that looked the part.

Pylon racers are designed to have a very high turn of speed and, to this end, have a very thin wing of minimum area resulting in a high wing loading combined with neutral stability. My task was simple, I wanted exactly the opposite! The fairly thick semi-symmetrical wing section and a generous 600 sq. in. wing area, took care of any ideas *Maricardo* might have had towards breaking the "ton," and with an estimated all-up weight of between 5½-6lbs., a reasonable wing loading was ensured. Modest dihedral and a shoulder to mid-wing layout gave



MARICARDO

me a certain amount of built-in stability (I like to relax when I fly). The low mounted tailplane keeps clear of any wing turbulence, and besides we're told by those who know about these things—or tell us they do—that the location of the c.g. is less critical with a low mounted tailplane.

So far, so good. On paper, at least, I had an attractive model, with a fair amount of inbuilt stability, a non critical c.g. location, and a reasonable wing loading.

However, one's equipment (in my case, Flight Link 5 series II), can also influence the final shape, the most obvious example of this being the dummy air scoop. The mid-wing position employed, left

insufficient clearance above the servos for the aileron linkage, and the only solution was to lower them through the fuselage bottom and cover the protruding ends with a dummy scoop. (This is shown dotted on the plan—with aileron horns above the wing, for other types of equipment.) Another alteration (also shown on the final drawing) necessitated by installation difficulties, was to the forward fuselage outline. This tapers from the undercarriage position up to the spinner. However, on the prototypes, I delayed the taper thus enabling me to install the receiver between F1 and F2. The reason for this was that I tend to build tail-heavy and my receiver is

fairly bulky. To install it in the more usual position behind F2, would have meant installing it flat and moving the servo tray aft. Owners of Flight Link Series III-IV and other mini outfits won't have this latter problem, and should build as per plan. They may, if they wish, also dispense with the dummy air-scoop, but personally I like this item, as it helps give a "different" look to the model and, let's face it, that's what own designs are all about.

CONSTRUCTION

I've enjoyed giving you the background of *Maricardo*, but telling you how to build it I wouldn't enjoy as much, so my building notes



will take the form of "stick A to Z" rather than A to B, B to C, C to D etc.! Seriously though, the building is straightforward and you shouldn't require detailed building notes. Construction-wise, consideration was given to the following points. It had to be cheap, simple, yet strong. There's not much one can do about costs—one buys what one needs. However, towards this end, most sheet balsa used in the construction is of the easily obtained slightly cheaper 36 x 3in. wide sheet.

Wing

The wing utilises full-depth spars and follows standard building techniques. The main spar is pinned to the building board, followed by the leading edge, trailing edge, and rear spar, all propped up with jig pieces. The ribs are then slotted in and white glue fillets smeared on all joints. Top

sheeting and cap strips are then added, followed by the dihedral braces, and the bottom sheeting.

I would like to add here that I use a wing jig *a la* Dave Platt (*RM*—August 1966). This considerably simplifies wing construction and the time spent building a jig is well worth the effort. The wing is completed by adding the tip blocks, cutting out the servo compartment, then strengthening the centre section with fibreglass tape.

Construction of the tailplane is obvious from the plan, a simple frame covered with $\frac{1}{16}$ in. sheet, while the elevator, fin and rudder are simply cut from $\frac{1}{4}$ in. sheet.

Fuselage

The fuselage is a simple "box" with the top decking added. As an aid to obtaining a properly-aligned fuselage, the basic sides are flat along the top edge from firewall to tail

post and, during construction, may be pinned over the plan along their entire length, making the task of ensuring that they are perpendicular to the building board and each other, a simple one. The tailplane may also be added at this stage, and measurements taken from the board to the tailplane will ensure that it is properly aligned. The fuselage is of medium $\frac{3}{32}$ in. sides, with $\frac{1}{16}$ in. ply doublers extending from firewall to just beyond the wing seat, and the rear fuselage is framed with $\frac{1}{4} \times \frac{1}{4}$ in. strip longerons, spacers and diagonals.

Once the basic fuselage is complete, the wing should be temporarily banded on, so that the centre-section top-decking may be built around it, followed by the forward and rear decking, thus ensuring a neat fit of wing-to-fuselage. Considering the shape and constructional methods used, *Maricardo* builds up in a surprisingly short time.

Trimming and flying

Test-flying was delayed a number of weeks for two reasons. Firstly, I was enjoying some consistent and trouble free-flying with a K.K. *Student* and was loath to put my gear into something that could be splattered all over the field at the next outing and, secondly, I was plain chicken. However, fate took a hand and, after years of being a lone-hand, I finally met up with a group of fliers as mad keen on the hobby as myself and now enjoy an aspect of the hobby I'd missed—that of sharing one's interest with others. One of our group, Dave, is quite a dab hand on the sticks (we actually caught him smiling while he was flying) and so my dilemma was solved. I had a Test Pilot.

The day dawned, cold and overcast with little or no wind so, without further delay, we set off for the field. The others soon had their models airborne and I began preparing *Maricardo* for flight. Final checks were made on the rigging, control surfaces and centre of gravity and soon all was ready. At first the Super Tigre 40 refused to start and I was about to despair when Dave's quiet voice suggested I attach the glow clip to the engine. This proved a sound suggestion and the engine roared into life at the next flip. Dave quickly checked out the controls and gave me a nod.

At this point there was a slight delay while my other colleagues prised my trembling hands from their vice-like grip on the model. *Maricardo* tore away down our



rough grass strip. The take-off run was absolutely straight (Dave commented afterwards that very little rudder work was necessary) and *Maricardo* lifted off into a shallow climb-out. A touch of down and left was all that was required in the way of trimming and she was flying hands-off.

For this first flight, Dave enjoyed himself just flying around, throwing in the occasional roll. He commented many times on the smooth response to commands and lack of any vicious tendencies. The rolls were as axial as one would normally expect from a low-wing design, and I was surprised afterwards when Dave told me that on some of them he hadn't used any down-elevator, but had simply slapped on full aileron. Power-off handling was extremely good and my test pilot brought her in to a beautiful three-point landing.

I have since carried out many more flights with *Maricardo* and am now convinced that, although designed for the modeller with a fair amount of experience, the model has shown itself to be so easy to fly that I wouldn't hesitate to recommend it as a first r/c venture *provided an experienced flier was at hand*. I feel qualified in making this statement in that, although I have been flying r/c since 1965, business and family commitments have prevented my flying as frequently as I would have liked, with the result I've never felt at ease flying a low wing, high powered, aerobatic mo-



This snap of designer with *Maricardo* emphasises the "Buster"-like lines of model.

del, and have done all my flying with shoulder-wing types having a certain amount of built-in stability.

Maricardo responds smoothly to control movements, neither lagging behind nor getting ahead of the pilot. In addition, she will hold a medium turn without dropping her nose, thus allowing a novice pilot ample time to work out which way he should move the stick to bring her out!

I may be wrong, but I feel a great many beginners ignore the advice given them about forgetting good looks on their first model and build a sleek-looking low-wing "bomb," with the inevitable results. *Maricardo*, with its attractive appearance,

could well be the answer for this type.

Moving on now to discuss the aerobatic potential, I can only say she can perform all the manoeuvres that the average sports flyer might care to try, with an ease and smoothness that's given me more confidence than I've ever felt before. Certainly no sports flyer will feel himself limited.

If you're fed up flying shoulder wing boxes, but are hesitant about going on to a low-winger, build *Maricardo*. She's as easy to fly as your shoulder-wing job, only she looks a darn sight prettier, and you'll be able to place her on the flight-line alongside those sleek low-wing jobs and still hold your head high