

RADIO CONTROL MODELS

PRICE 2s

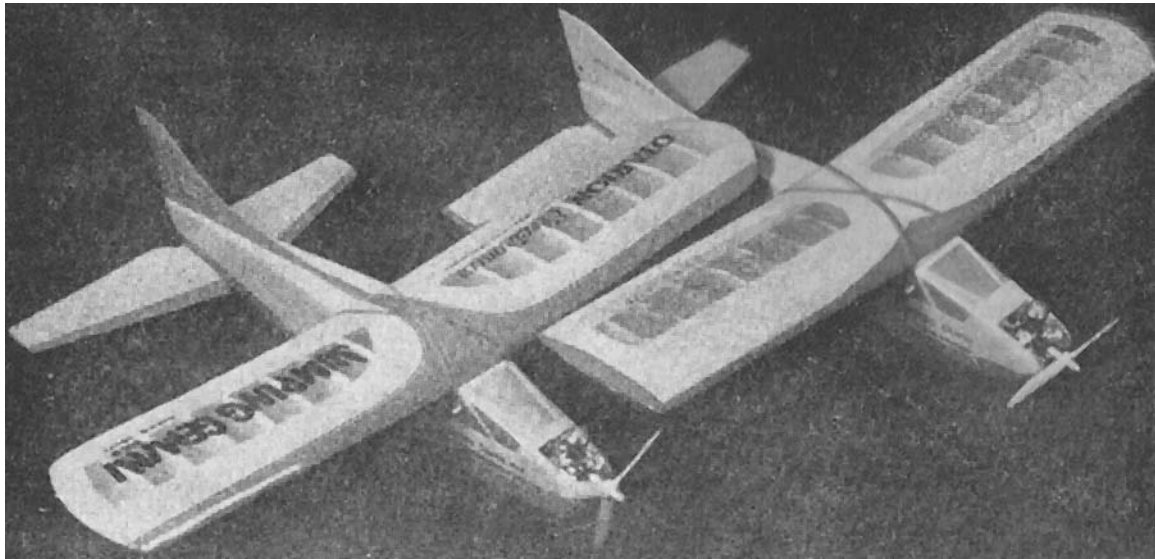
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FREE PLAN FOR THESE MODELS ★ HOW TO SOLDER ★ S/C TESTS ★ TINY Rx.



OUR FREE BIRTHDAY PLAN



ESCAPEMENT OR PULSE,
YOU'LL HAVE FUN WITH
D.TAFLEIT'S . . .

JUMPING GEMINI

WE were watching the lads practicing for the followings day's contest at the British National Championships 1962. The voice that we had heard a number of times that afternoon came over the loudspeaker again, "Next on please"; suddenly I was shoved out on to the runway, "It's your turn Dave". The Orbit 10 Tx. which I was holding seemed a little out of place, for it had just that second been pushed into my hand and the surrounding crowd were laughing their heads off, their reason, in my other hand was a Keil Kraft "Gemini", a 22 in. span rubber model, converted to free flight with a Cox TD. .010, the impish grins on the faces of Ray Brown and Roy Norris, even made me see the funny side of it.

The two days I spent at the Nationals, set me thinking, why was it not possible to R/C a model of similar dimensions to the K.K. "Gemini"? So in the following weeks I got to work sorting through many magazines to find a miniature radio unit that would be constantly reliable. This I found in the Otarion 0-21 which was ideal, being only 1 x 14 x

5/8 in. and 1/2 oz. in weight and needing only 3 volts. to operate. Then came the actuator, and on the advice given by Otarion themselves the Elmic Range were ideally suited to the receiver, being that all the Elmic line have 12 ohm coils, I chose the Conquest, being the most compact of them all. Then came my first "Jumping Gemini", a 24 in. span weirdly! the first flights of which were absolute disaster, after flying erratically around our flying field it did a perfect spiral dive from about 150 ft. from which, unfortunately, it never ever "recovered". This put paid to my Otarion Rx. for a while, I had broken off one of the condensers (well, no one told me that it was really necessary to wrap the Rx. in sponge rubber, *I guess I always learn the hard way!*)

After this experience I got down to some more serious designing. My second "Jumping Gemini" started to look a little more like I he model I wanted, being slightly larger, 27 in. wing span, all slice! fuselage, sheet tail plane and a balsa and ply laminated fin. Not being fond of slow (lying models I decided to

The Otarion was returned from the U.S.A. after exceptionally quick service, the model was now completed and ready to fly and after a few satisfactory glide tests the motor was started, the radio checked, step up the power from 0.02 to 0.049.

then "All systems go". I think in the few seconds that followed all Hell was let loose!

That afternoon I put the model on my workbench and looked at it, where had I gone wrong, why wasn't it constant? On the other hand, what was I looking for? In the back of my mind was a cross between Chris Olsen's "Uproar", Johnny Dumble's "Sixgun" and Ken Willard's "Schoolboy" condensed! Whereas, at the moment, I had a missile with characteristics not unlike "Skybolt", on reflection I jotted these down as follows: Weighed -20 oz. Flight characteristics - Uncontrollable. Maneuverability, virtually nonexistent. Glide attitude - fast and vertical.

I would start designing all over again, taking into consideration what I had learned with the two previous models. Obviously the 6 per cent wing section I had used was insufficient so I decided to try 17 per cent, also a lighter construction using a "D" box section and 1/16 in. sheet balsa

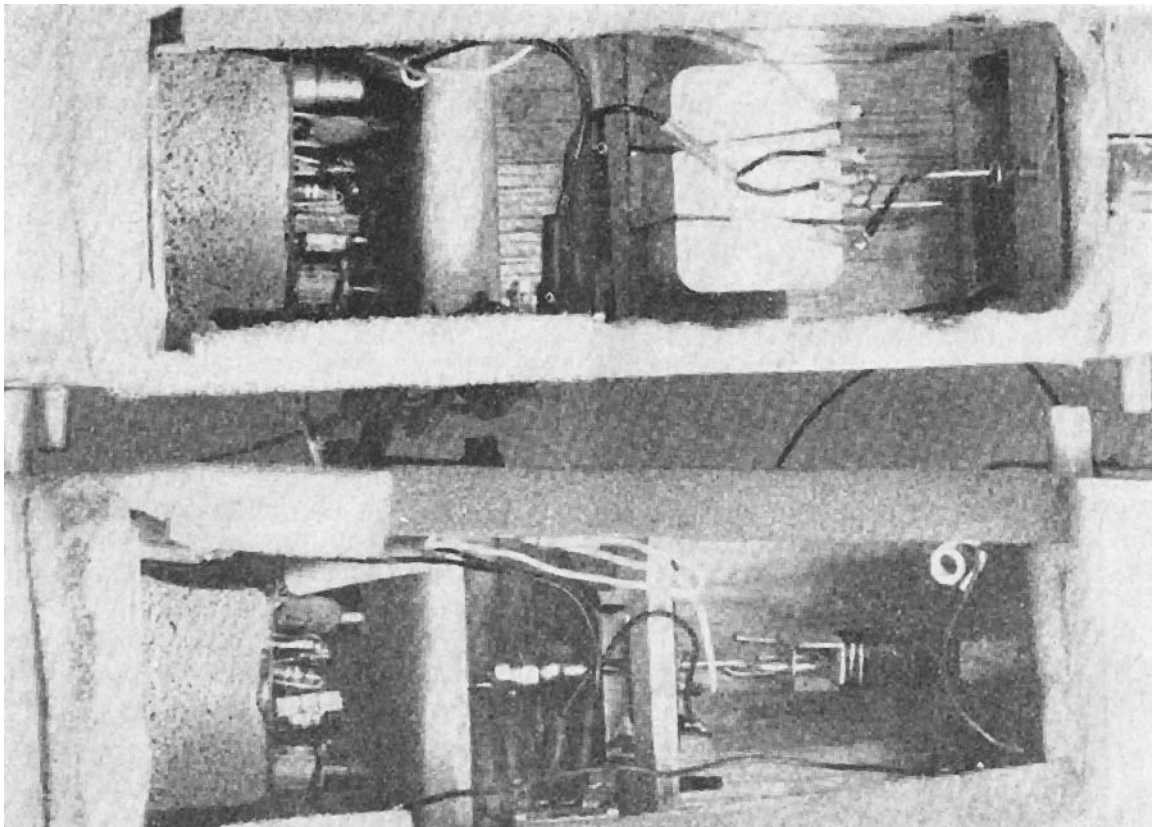
throughout, no leading edge just a lap over. Now, for the fuselage.

In the previous model I had used 1/8 in. sheet balsa throughout and a knock-off nose block, containing the fuel tank and the motor, but I had not found this satisfactory. I now use 3/32 in. sheet for the fuselage sides and keep the S in. for top and bottom using only one ply former to take the nose-wheel. The length of the fuselage is now increased by 2 in. giving a slightly longer tail moment. I felt the tail plane area should be increased to help the glide stability, so I added 2-1/2 sq. in., laminating two pieces of 3/32 in. sheet to prevent warping.

The model was duly complete, weighing 4 oz. Less than its predecessor and looked a lot cleaner in design. On the day of flying, the first launch was again tragic! As the model left my hand it just went nose in (too much down thrust). This was adjusted and to my delight it soared away a real treat, its air speed greatly reduced by the drag caused by the considerably thicker wing section and it handled very well.

After flying this model consistently for many weeks I decided to build another for proportional control, which

Interiors of both models; 0-22 and Septalette above 0-21 and simple escapement



I found gives you a really great feeling of being more in control of your air-craft, and making turns extremely smooth, once you get over the first tendency to over control. My equipment consisted of a Septalette Actuator and the Otarion 0-22, this Rx. being basic-ally the 0-21 with a complementary out-put for driving a dual coil actuator of the Septalette type, and being only I in. larger than the 0-21. I have found that proportional control allows me to fly and stunt consistently, even in winds of 15-20 m.p.h., of course, I have to change the flight trim for windy weather and can in fact trim the model to "crab" into the wind, which is also of some aid.

The other thing that I thought might add a little more fun, was motor speed control. So I built another model identical to the previous two, and once more got to work, acquired an A.M. throttle, removed the stem, cut the venturi of the Cox .049 down to the bottom of the trumpet then added the two together and was pleased to see it looked very professional. I rigged the Elmic "Commander Compound" a little further back in the fuselage, this gave me just enough room to fit the Elmic "Corporal" amidships, which was indeed a tight squeeze, but with a little wangling it was managed, the linkage unfortunately had to go outside, which is a little un-tidy, but I think the added control that motor speed gives you, compensates adequately. (*Cox have just released news of their new coupled throttle "Medallion" engines, including the new .049.—* Ed.)

Well, that is the life history of the "Jumping Gemini", and I feel it has now arrived at the stage I had first strived for, but it has by no means been a one man effort, a lot of its success is due to the kind advice and technical help of: Ron Molton and Peter Holland of the Model Aeronautical Press; Ken Smalley of Otarion Corporation; Dennis Elmes of Elmic; Brian Smith of the Wembley Park Model Shop, and all the rest of the mates with whom I fly.

Construction

The construction of "Jumping Gemini" is very simple, but quite strong. Let's start with the

fuselage incorporating the Elmic Conquest or Commander Compound. Firstly cut the fuselage sides from 3/32 in. sheet balsa of medium grade, all ply doublers and formers 1 to 5 and cut tail post to shape. Cement formers 2 and 5 in place making sure that they are at right angles and leave to set. Cement tail post in place and check that the fuselage is true. Bind the nose wheel leg to former 1 place in position and cement in place, fit actuator of your choice to former 4 and cement. When all is set add former 6 and hold with pins. A couple of elastic bands help a little because at this point the fuselage gets the nipped in waist look. Now add the torque rod and winder hook to tail post. All dowels can now be fitted. Cut engine bearers to shape and Araldite in place. Add radio deck supports and wing supports. The underside of the fuselage should now be cemented and pinned in place. This completed, fit the fuel tank which can be made quite simply from tinplate cut from an old fuel can, a little scrap balsa will help in securing it firmly. Add fuselage top front, fuselage top rear should be cemented in position. The fin is laminated from two pieces of 1/32 in. balsa sheet and one piece of 1 mm. ply, pin to a board and leave to dry. Cut fin to shape and cement in position the rudder can now be tapped on, or as shown on plan. (But this means making a new rudder from I in. balsa sheet to take the connecting pins that fit into the brass tubes in the fin). Check the alignment of the whole fuselage.

The installation is the only thing that is different for the proportional "Gemini" and can be seen on plan this also applies to motor control. The Elmic Corporal was slightly modified but is not difficult to do. Drill out the rivets holding in the yoke supports, re-drill the mounting lugs as close to the plastic pawl as possible, without restricting its movement. Before reassembling, cut down the mounting lugs as much as necessary to fit the fuselage. This will of course mean making a new yoke. This should be made from 1/16 in. silver steel wire. The Commander is standard but as it fits low in the fuselage a slight bump had to be incorporated in the underside. (You can always tell your friends that it is a radar blister!)

Wings

The wings are made completely from 1/16 in. sheet of medium grade balsa. Cut all ribs, lay (the underside leading and trailing edge in position and pin to board. Place spars, cement all ribs in position (it helps here to cut little wedges) place them at the tips of the trailing edge to build in the washout. Cut the dihedral braces from 1 mm. ply, fix in position and cement. Lift one wing to the correct dihedral and cement to the other side to the braces, when set add top trailing edge and leading edge, pin securely whilst setting. Add centre panels top and bottom and rib caps on top only. Tip blocks should be carved from soft balsa block.

The tail-plane is simple lamination of two pieces of 3/32 in. hard balsa. Pin down, leave to dry and cut to shape, sanding into a non lift airfoil section.

All now completed, bend undercarriage to shape and add wheels to nose wheel and main undercarriage.

Finishing

Sand down the whole airframe with a fine sandpaper, dope tissue on to the airframe and give four to five coats of sanding sealer. Rub down with wet and dry No. 400. Now give five coats of coloured dope thinned down to 50/50, then rub down with wet and dry until a smooth surface is obtained. Finish with metal polish, afterwards making sure that is all washed off. Complete the model by fuel proofing carefully.

Flying

Check that the C.G. position is correct, as shown on the plan. Test the glide preferably over long grass, it should glide in a straight line without any tendency to stall. First power flight should be made with very little fuel on board, if all is satisfactory fill her up and let it scream about. "Jumping Gemini" is by no means a slow flying model, so to over elevate can cause a lot of problems, but once trimmed correctly it provides a great deal of fast flying fun.