

BAe HAWK

TONY NIJHUIS WHIPS UP THE IDEAL RECIPE FOR SOME FAST, FUN-FILLED FLYING - ADD A .25 TWO-STROKE AND GO! GO! GO!



Designed in the spirit of the traditional fighter, the Hawk takes a .25cu. in. two-stroke and gives a sparkling performance.

Whilst the Red Arrows scheme is the obvious one, it needn't necessarily be that way, indeed Hawks are used the world over in a variety of roles and with some truly attractive colour schemes.

Now here's something a little unexpected... a Nijhuis plan that's not powered by an electric motor! Well, you may be surprised to hear that I have twice as many i.c.-powered aircraft as I do electric and, this being the case, I guess it was only a matter of time before one such design appeared in the mag. That time actually arrived very much sooner than I'd expected when ed. Graham called, 'on the ear' for a plan to publish in a forthcoming edition of the magazine "...something built, flown, tested and drawn would do very nicely," said he! Hmm... tricky, that one! Fortunately Graham came to the rescue (I'm sure he just wanted to make me sweat), suggesting I use one of my current kits as a basis for the plan... In truth, a great idea.

If you've previously bought a Westfield kit of the BAE Hawk then the model featured here may look familiar, that's because they're one in the same. It may seem a little strange to give away a free plan of a production kit but I have a fairly laid back attitude to such things, and if someone prefers to build from a plan rather than buy a kit, then fair enough... enjoyment for all, I say!

So, here's a bit of background. The model was originally designed some 8 years ago to take 15 to 25-size

engines and 3-channel radio operating ailerons, elevator and throttle. The construction is very similar to that of the small electric Spitfire and Me109 'Dogfight Double' produced as a free plan a couple of years ago.

At just under 40" wingspan, the Hawk is a little larger than the Spitfire and '109 yet retains the same sheet wing configuration using 9mm thick balsa sheet instead of 6mm. It's a one-piece model, thus the wings are permanently fixed to the fuselage. This gives the aircraft great strength, so it should be able to take the odd rough landing or two. A hatch in the top of

wing panels. Be sure to select the same quality of (medium grade) wood for both so the weights are similar, then glue the parts together to form left- and right-hand panels. When dry, take one panel and mark the area of wood to be removed to create the wing profile (detail shown hatched on the plan). Shape the panel roughly using a razor plane, then finish with a sanding block. Repeat this procedure on the other wing panel, trying to get both as close as possible in terms of profile. However, don't be too concerned if they're not absolutely identical as it won't make a noticeable difference in flight.

Next, cut out the ailerons and chamfer the leading edges. Make up a pair of aileron torque rods using lengths of 14swg piano wire then, using



the fuselage provides access to the Rx NiCad and servos.

With a total of just over 25 parts the model is very quick to construct - a couple of evenings should see the airframe finished with the balance of the week for covering and finishing. Of course, the icing on the cake for you lot is that Highbury Leisure (formerly Nexus) can provide the canopy and a set of vacuum formed dummy air intakes for less than £15. Okay, let's get on with the building.

WING

Start by cutting out the four pieces of 9mm balsa that go to make up the two

the threaded end of a piece of similar wire, file a slot in the top surface of each wing panel for the torque rods to fit into. Make a dry fit ensuring the rods are well recessed into the wing, then apply some light grease to the bearing part of the wire, i.e. that which fits into the slot. Reposition the rods and in-fill the exposed slot areas with scrap balsa. Don't be too concerned about getting glue on the torque rods, as the grease will protect them. Finally, trim the slot fillers flush with the wing surface and hey presto... a perfect aileron torque rod installation.

Before joining the wings you'll need to make a wing brace using

4mm birch ply. Next, chamfer the root faces of each wing panel to achieve the correct dihedral (40mm under each tip), then glue the brace to one wing panel followed by the other. Dry-fit the ailerons (without gluing the hinges) and check for free movement, then remove them for covering at a later stage.

FUSELAGE

Begin by cutting out the fuselage sides and all the formers, then make up the 12 x 17mm triangular longerons that fit along the top edge of each fuselage side and fit them in position. Glue the 6mm square longerons to the forward lower edge of each fuselage side, likewise the 6mm square servo support rails.

With one fuselage side flat on the building board, fit formers 12, 13 and 14, then add the other fuselage side piece. Install the remaining formers (15 and 16), checking for alignment as you proceed. Okay, so far so good. Now is a good time to form all the necessary holes and slots for pushrods, cables, engine mounting bolts etc., then fit the upper forward decking (17) and cockpit decking (20). Next, secure the engine mount to former 12, install the throttle cable and fit the fuel tank; a 6oz bottle should fit quite easily. Pack the remainder of the compartment with foam to secure, and enclose the tank compartment with the lower forward decking (19).

TAIL FEATHERS

Moving to the tailplane, glue the two halves (8) together and fit piece 9. Lay the assembly in the tailplane recess at the rear of the fuselage, then add the rear top deck (18) between the cockpit and former 15. You'll notice a triangular gap above the tailplane, which will need to be filled using scrap 3mm balsa.

Cut the elevators (10) to shape, chamfer the leading edge as shown, then slot the elevator and tailplane ready for hinging.

COWL

Cut out parts 21, 22 and 23 from 9mm balsa. Fit the engine (without silencer) then add parts 21 and 22, noting the

slight toe-in angle and the 40mm internal face-to-face dimension specified on the plan. Fit part 23 and trim the front edge flush with 21 and 22. Slide a 58mm (2 1/4") spinner over the engine crankshaft and draw the circumference of the spinner on the front edge of the assembled cowl parts. The engine can now be removed and a piece of 12mm x 17mm triangular stock fitted to the inside top edge of part 22. To strengthen the joints between 21, 22 and 23, fit a length of 9mm triangle along each internal joint, as shown.

When the glue's well and truly dry, the cowl can be profiled to shape using a razor plane, occasionally placing the spinner back on the marks made earlier to gauge the curvature of the fuselage against that of the spinner. The remainder of the fuselage can now be shaped as per plan, using a razor plane and finishing with sandpaper.

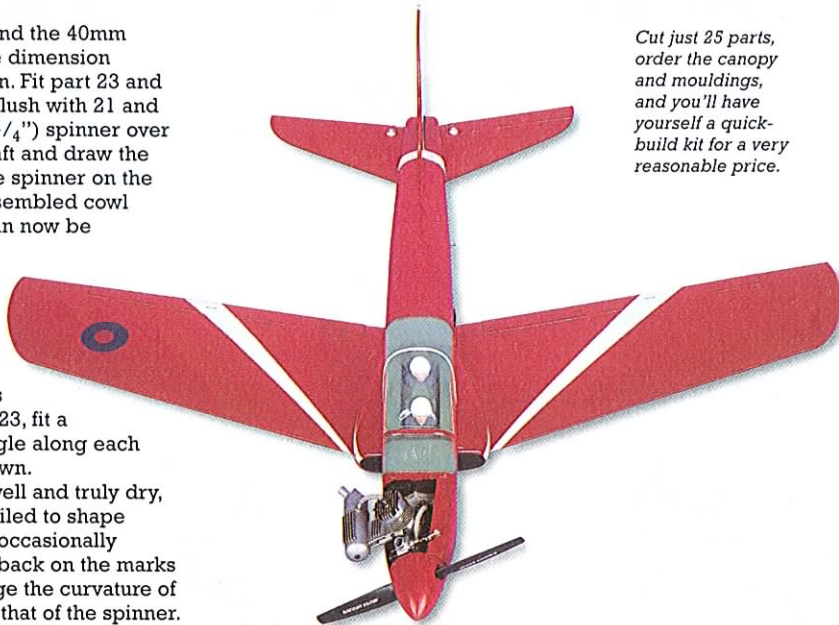
TOGETHERNESS

Glue the wing into position and cut out the radio access hatch to the dimensions shown. Fashion the hatch end caps, retaining tongue and retaining plate and glue them into position. Now fabricate and fit the elevator servo support rails and blocks (24 and 25). The rear lower deck (26) can now be installed, after which you'll need to use a sanding block to achieve a smooth transition between 26, the lower forward decking (19) and the wing underside.

Strengthen the wing joint by applying a 50mm wide strip of fibreglass bandage to the underside. Overhang the tape by 25mm onto parts 19 and 26 in order to strengthen these joints as well. For added assurance apply a fillet of epoxy to the inside and outside edge where the wing joins the fuselage. Fit the fin pieces 6, 7 and 27 into position.

Returning to the cowl, re-fit the engine and trim to provide clearance for the silencer.

Now's the time to add some cockpit detail and a couple of pilots. J. Perkins distribute a lovely injection-moulded



Cut just 25 parts, order the canopy and mouldings, and you'll have yourself a quick-build kit for a very reasonable price.

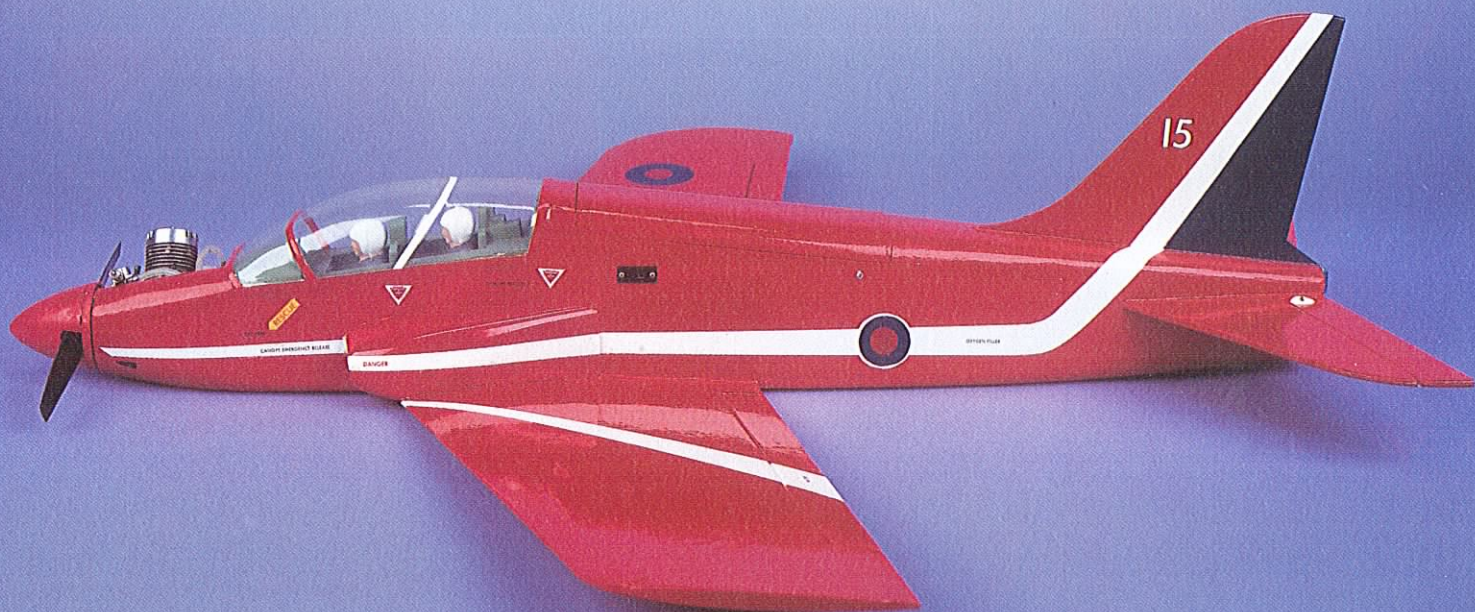
jet pilot just the right size, which should be available from your local model shop.

COVERING & FINISHING

When planning a livery for the BAe Hawk I immediately thought of the Red Arrows display team - don't we all? The vibrant red makes an excellent, high visibility colour scheme for a fairly small and fast model and, as such, the prototype was covered using red Solarfilm, with white and blue Solartrim for the graphics. Ailerons and elevators were covered separately, then attached at the last minute.

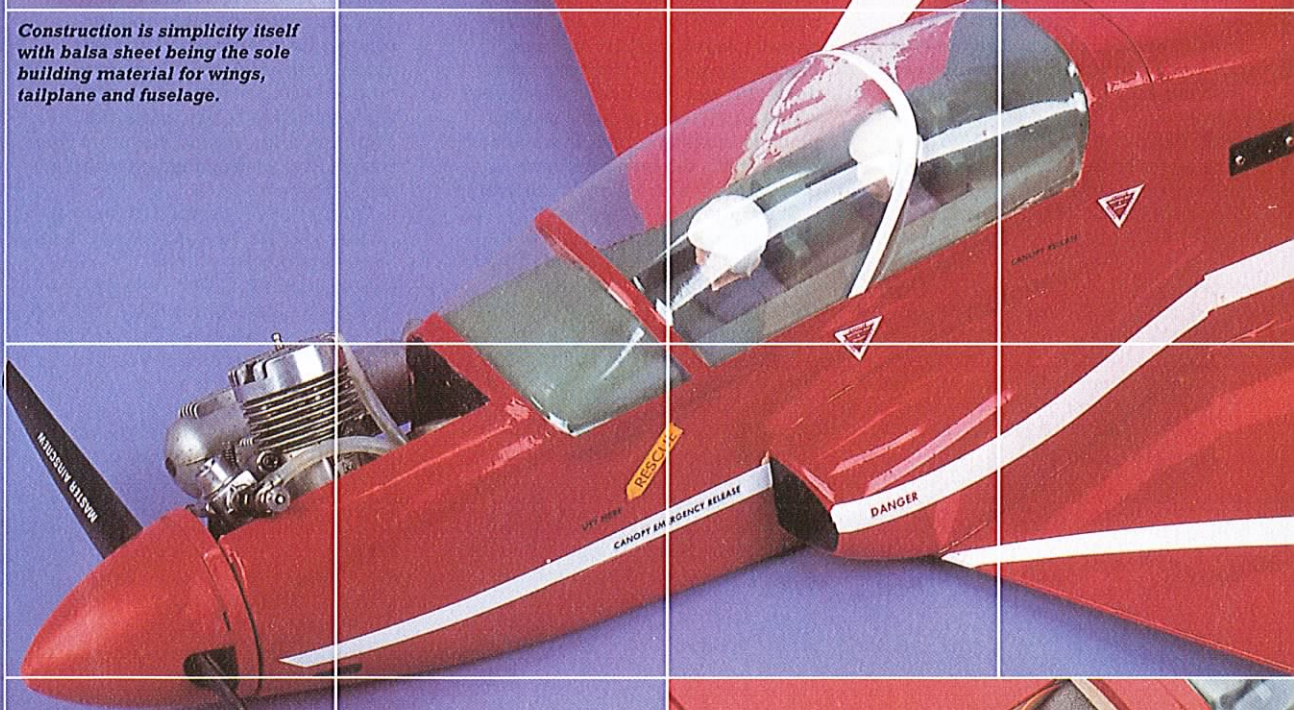
Fitting the vac-formed dummy air intakes is quite straightforward. Trim each moulding to outline and sand the cut edges flat. Take a piece of 3mm balsa, onto which the outline of the air intake is traced, cut out and trim the balsa to fit flush with the inside edge of the moulding, then glue in place. The balsa acts as a stiffener to the plastic and gives a better gluing surface when fixing to the fuselage. With the latter in mind, remember to remove an area of Solarfilm behind the intake to provide suitable wood-to-wood gluing surfaces and thus a strong bond.

Although concessions to exact scale have been made, we're sure you'll agree, she really does look the part.

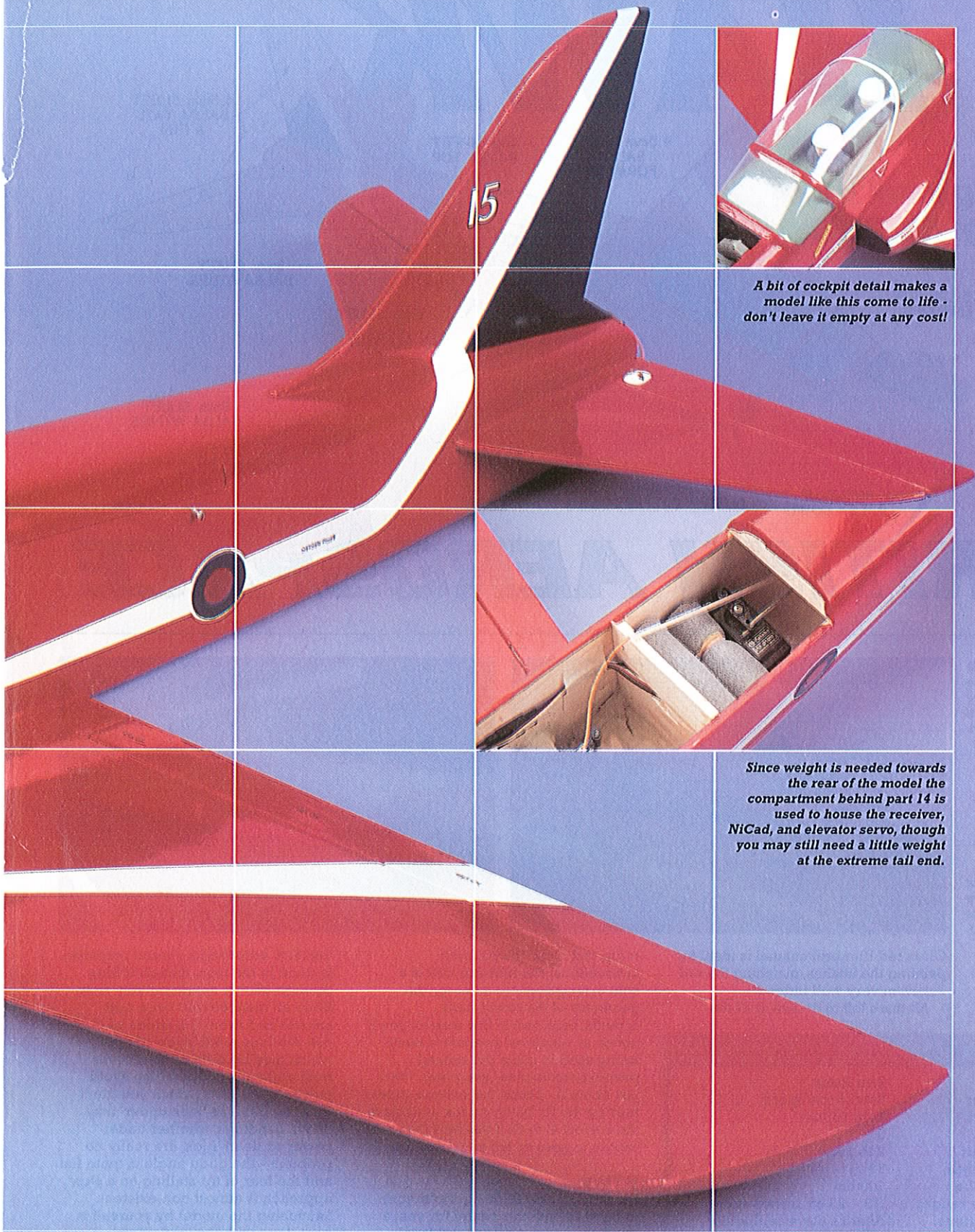




Construction is simplicity itself with balsa sheet being the sole building material for wings, tailplane and fuselage.



Aileron operation doesn't get much easier, or more bomb proof, than this. Take care with the construction and there's very little to go wrong.

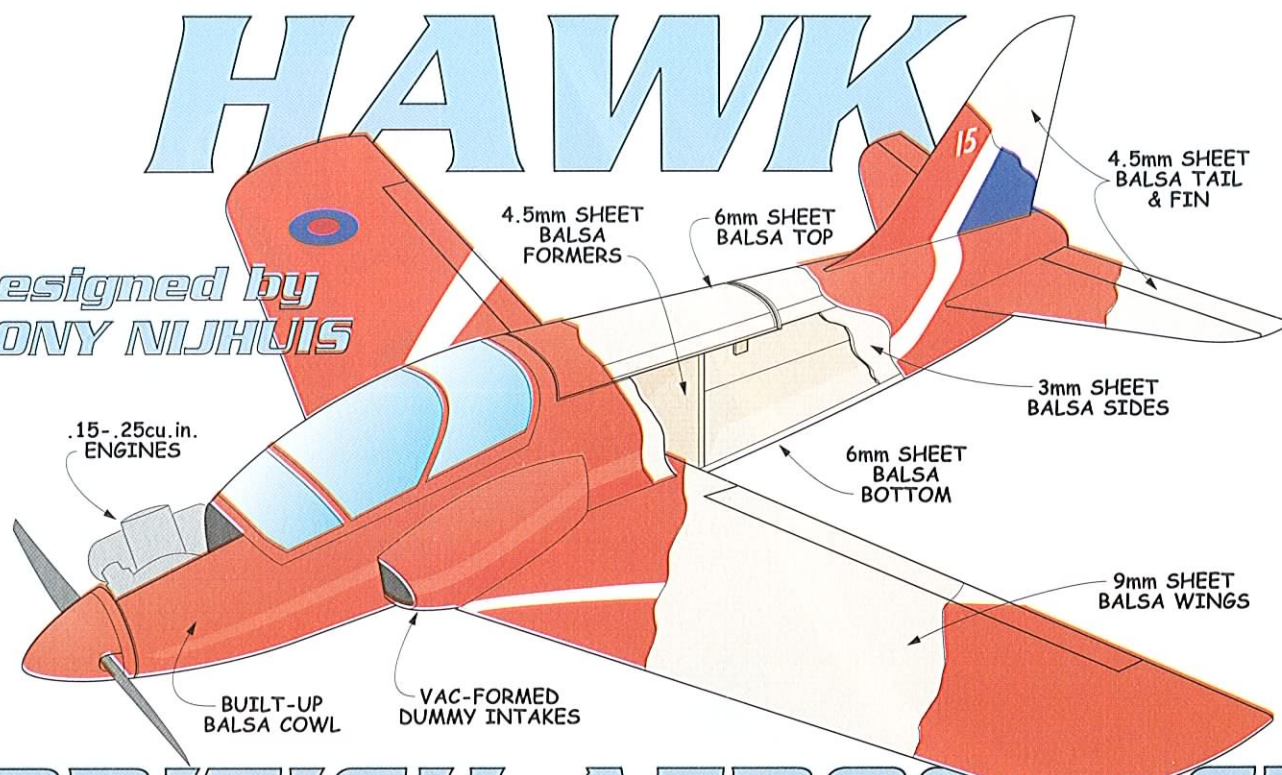


A bit of cockpit detail makes a model like this come to life - don't leave it empty at any cost!

Since weight is needed towards the rear of the model the compartment behind part 14 is used to house the receiver, NiCad, and elevator servo, though you may still need a little weight at the extreme tail end.

HAWK

Designed by
TONY NIJHUIS

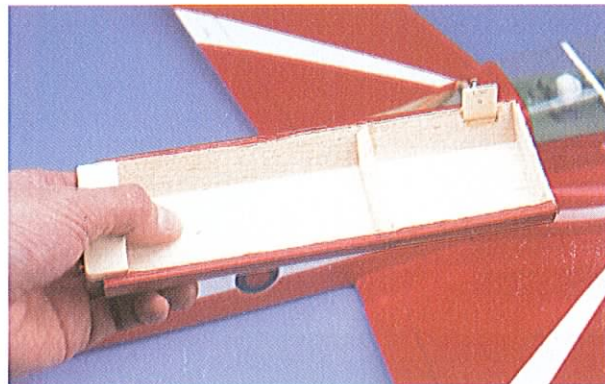


BRITISH AEROSPACE

Radio access is via a neat hatch in the top of the fuselage - plenty of room inside, too.



The hatch is cut after fuselage assembly has taken place.



Gloss red Humbrol enamel is ideal for painting the intakes, matching the red Solarfilm very well indeed.

All that's left to do now is fit the

radio and make the pushrod connections. The elevator 'rod' is a split arrangement to cater for the geometry of the swept-back arrangement, and in this respect you'll notice an electrical connector block being used to make the second pushrod connection (see plan). That's just about it - check the balance point, moving the Rx battery pack to achieve the correct C of G; if this fails then add weight to nose or tail as necessary.

FLYING

For the first few flights get someone to hand-launch the model for you; a good firm push straight and level directly into the wind is what's needed. Allow the her to build up some speed before climbing to a safe height for trimming.

Fast, very smooth and stable, the Hawk can perform most aileron /

elevator aerobatics; aileron response is good in the turn, though rolling through 360° is comparatively slow. Keep all manoeuvres large and smooth and avoid tail slides as these can produce a flat inverted spin, which may be difficult to recover from without a rudder. Also avoid power in the dive (which you don't do of course!) as 'tuck under' may occur. Landings, whether under power or dead-stick, are really no problem - the glide angle is quite flat and the fear of tip-stalling on a slow approach is almost non-existent. Launching the model by yourself is best done with the 'underarm' launch, preferably with at least a little wind present.

So, there you have it - a 'feel good' fun model that flies superbly and looks great in the air... a model for all seasons no less!

DATAFILE

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| Name: | BAe Hawk |
| Aircraft type: | Semi-scale sports |
| Designed by: | Tony Nijhuis |
| Wingspan: | 39" |
| All-up weight: | 2 lb 10oz |
| Fuselage length: | 33 1/2" |
| C of G from l.e.: | 100mm |
| Rec'd engine range: | .15 - .25 cu. in. two-stroke |
| Control functions: | Aileron, elevator, throttle |

Vac formed parts: A clear canopy and air intake mouldings are available from the Highbury Leisure Plans Dept. priced at £11.00 plus £2.15 p&p (£3.50 overseas). Please telephone 01689 899232 / 899233 and quote order reference SETRC2020.