

# Vampire

TONY NIJHUIS CARVES OUT DE HAVILLAND'S CLASSIC '40s TWIN-BOOM FIGHTER

Some of you may be thinking, "I'm sure I've seen this model before somewhere"... and you'd be right. If you're aware of Westfield's Vampire kit then you'll realise that the model featured here and Westfield's offering are one of the same.

It may seem a little strange for *RCM&E* to publish a free plan from a production kit, but I do have a fairly laid-back attitude towards copyright (I designed the Westfield version, of course!) and if a modeller prefers to build from a plan rather than buy a kit, then fair enough... enjoyment for all, I say!

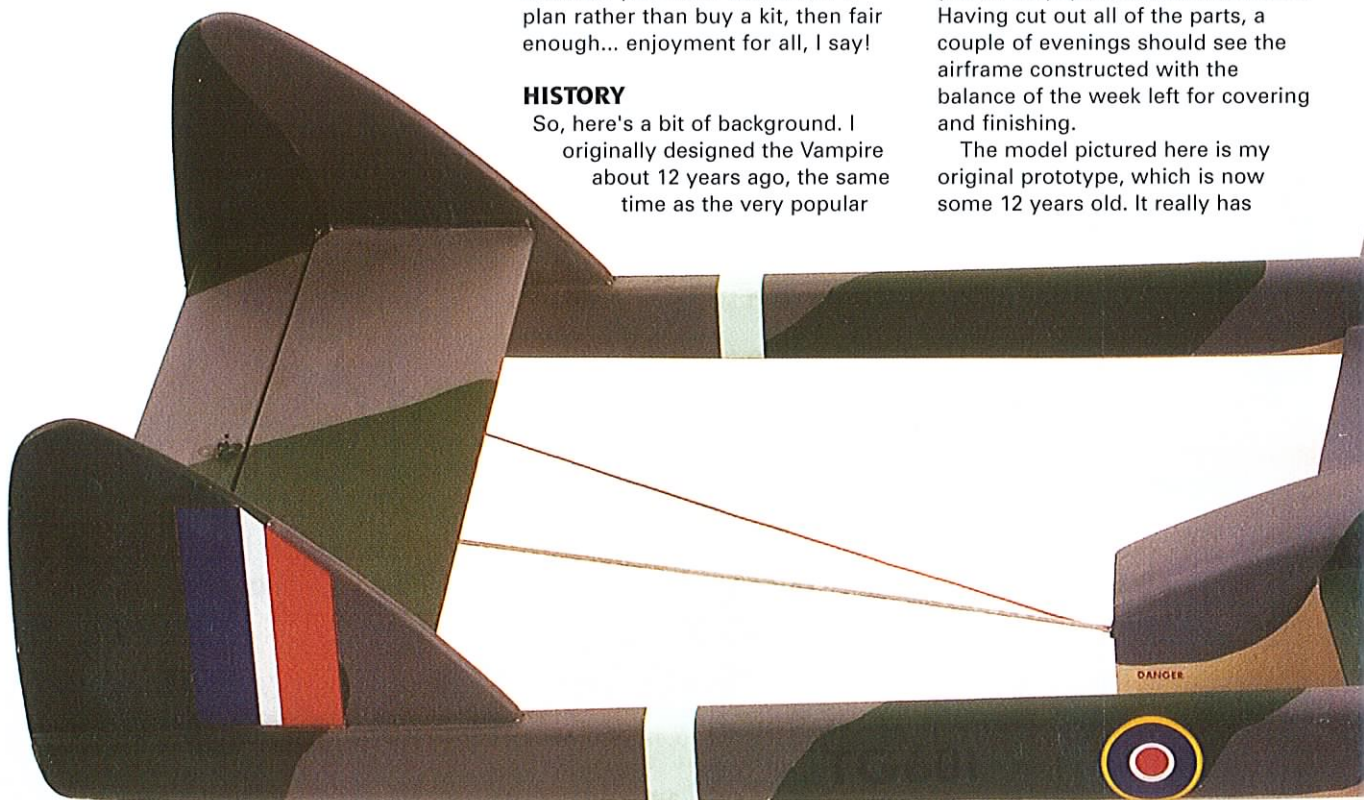
## HISTORY

So, here's a bit of background. I originally designed the Vampire about 12 years ago, the same time as the very popular

means a one-piece model sporting a trusty, tried and tested 9mm ( $\frac{3}{8}$ " ) balsa sheet wing. Building the model in one piece gives the airframe surprising strength, so it should be able to take the odd knock and stand up to a fair bit of rough handling. As you can't remove the wings there's a hatch in the bottom of the fuselage so you can gain access to the onboard radio gear.

Although the model looks complicated at first glance, the part count is quite small; just over 25 bits yield a very quick construction time. Having cut out all of the parts, a couple of evenings should see the airframe constructed with the balance of the week left for covering and finishing.

The model pictured here is my original prototype, which is now some 12 years old. It really has



As always, a tiny bit of cockpit detail and a cheap pilot make all the difference to the overall effect.

BAe Hawk, which was also the subject of a free plan (*RCM&E* March 2004). The model is designed to take a .15 to .25 engine, mounted in the nose in conventional fashion. As the full-size Vampire is a jet, the spinner is an important part of the model as it gives profile to the fuselage, so be selective in your search for a suitable item. Simple 3-channel radio operating ailerons, elevator and throttle is all that's required, and hand launching is the order of the day as there's no undercarriage.

Construction is very similar not only to the Hawk but pretty well all of my 'dog fight double' plans that have appeared in *RCM&E* over the past few years. By definition this

stood the test of time and, despite my piloting skills, has remained in one piece.

## WING FIRST

Begin by cutting out the four pieces of 9mm balsa that comprise the wing panels. Make sure you select the same quality of medium grade balsa wood for both the left- and right-hand panels so the weights end up being similar. Glue the parts together to form both panels, then take one such and mark the area of wood to be removed to create the wing profile shown on the plan. Use a razor plane to profile the wing roughly to shape, finishing with a sanding block to the final profile.

Repeat this procedure on the other wing panel and try to get both panels as close as possible in terms of profile. Fear not, any slight inaccuracies won't make any difference in flight.

Cut out the ailerons and chamfer their leading edges, then make up a

pair of aileron torque rods with 14swg pushrod. Using the threaded end of another 14swg rod, file a slot in the wing undersurface where shown, for the torque rods to fit into. Make sure the torque rods are well recessed into said slot. Next, apply some light grease to the bearing part of the torque rods then locate them and infill the remaining exposed slot with scrap balsa. Don't be concerned about getting glue on the torque rods as the grease will protect them. Trim the infill flush with the wing surface, and hey presto... a perfect aileron torque rod installation.

To join the wing panels, first fashion the 4mm birch ply brace. Chamfer the mating edges of each wing panel to achieve the correct dihedral, fit the brace to one wing panel and glue the other panel in position, ensuring that the correct dihedral is maintained.



*A single servo drives the ailerons via a traditional torque rod arrangement. A good simple solution that keeps control horns and linkages safe from accidental damage.*



With the wings joined and the glue dry, dry-fit the ailerons (i.e. without gluing the hinges) and check the movement. When you're satisfied that all's well, remove the ailerons ready for covering.

Finally, use some 2" (51mm) cotton or glass cloth bandage to reinforce the wing joint, secured using either epoxy resin or PVA.

#### **TAIL BOOMS**

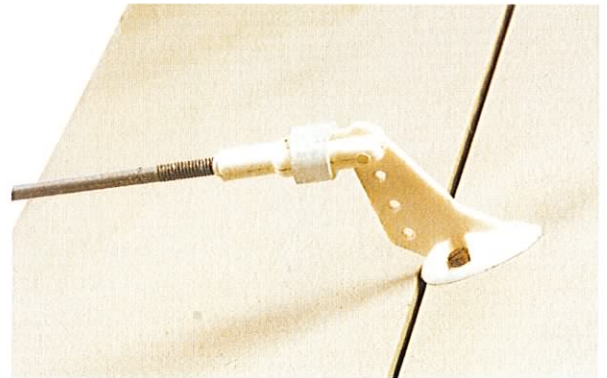
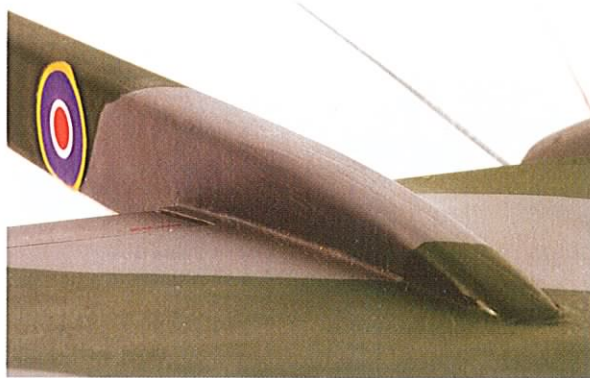
Using 4.5mm ( $\frac{3}{16}$ " ) sheet balsa, cut out the four boom sides required (the booms aren't 'handed'). Line the inside edge of two side pieces with 6mm square balsa longerons, as shown on the plan (you may need to make a number of saw cuts in the longerons to aid bending along the curve towards the nose of the

*Grab an old .25 two-stroke, three standard servos and a few fixtures and fittings from a dusty corner of your workshop, and you're in business.*



*The old adage that 'if it looks right it'll fly right' is totally justified with this one, she's an absolute cracker.*

*Do make sure you get good 'wood to wood' contact when joining the tail boom to the wing.*



*There aren't many of us who haven't got a .25 two-stroke kicking around somewhere, and this is the ideal use for it.*



booms). The other side pieces are then glued in place to enclose and finish the item. Both booms can now be profiled to shape, and the fins / rudders installed.

### FUSELAGE

Moving swiftly on, cut out the fuselage sides and all the formers. Note that the fuselage is made in

two pieces: main section and top section, with the break on former F2 above the wing and back to just beyond former F3. Making left- and right-hand sides, fit a 9 x 9mm triangular strip along the bottom of each fuselage side.

With one fuselage side flat on the building board fit formers F1 and F2, to the lower part of the fuselage only. Now fit the other fuselage side and glue to the same locations on formers F1 and F2. Glue in the remaining formers F3 and F4. When dry, pull the top of the fuselage in on formers F1 and F2.

At this point make all the necessary holes and slots for pushrods, engine mounting bolts, servo mounts etc. The finished wing can now be glued into position. Fit the top rear fuselage sides, following the curve of former F2 (you may need to wet the outside surface of these pieces to aid bending). Trim the fuselage top edge flush with the

tops of all the formers and then fit the 6mm balsa upper forward deck, followed by the soft-ish 6mm cross-grain rear decking.

Fit the engine mount to F1, install the throttle pushrod and fit the fuel tank (a 6oz job should drop in quite easily). Pack around the tank with foam so that it's secure, and then enclose the fuselage with the 6mm balsa lower decking.

### COWL

To make the cowl, cut out the parts shown on the plan from 12 and 9mm balsa. Secure the engine (less silencer) to the mount and fit the 12mm balsa side pieces, noting the slight 'toe-in' angle and the dimensions specified on the plan. Finally, fit the 9mm bottom piece and trim the front edges flush. Now slide your 65mm (2½") spinner (SLEC or Radio Active type) over the

engine's crankshaft and draw around it, marking the circumference on the front edge of the cowl. The engine can now be removed and a piece of 12 x 17mm triangular balsa fitted to the inside top edge of the left-hand side. Incidentally, 12 x 17mm triangular stock can be made by taking a length of 12 x 12 triangular and then gluing a 12 x 5mm strip of balsa onto it. To strengthen the joints between the sides and bottom, fit a length of 9mm triangular along each inside joint.

The cowl will now be ready for shaping using a razor plane; occasionally place the spinner back on the marks made earlier to gauge the profile against it.

### FUS' AGAIN

The remainder of the fuselage can now be profiled to the shapes indicated on the plan. This can be done with our trusty razor plane, finishing smooth with fine grade

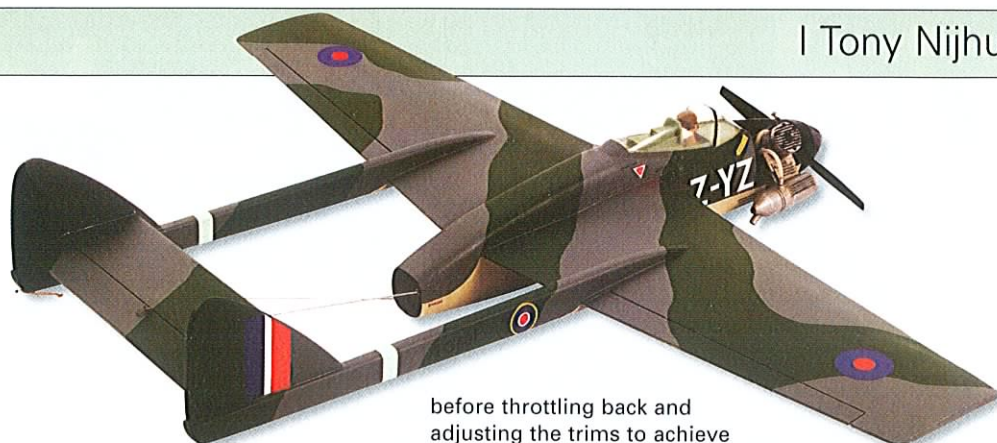
sandpaper. Returning to the cowl, re-fit the engine and trim the balsa to allow clearance for the silencer. The radio access hatch can now be cut using the dimensions shown.

Now's a good time to fabricate the dummy air intakes using sheet balsa to form the shapes (A, B, C and D) shown on the plan. Glue these into position and use filler to blend the intakes smoothly into the fuselage and wing.

To do the model justice you should really add some cockpit detail and a pilot. Fortunately J. Perkins offer a small injection-moulded jet pilot who's just the right size and should be readily available from most model shops.

### COVERING & FINISHING

I used silver Solarfilm to cover the prototype, etch-primed with Prymol so that enamel paints could be applied. The Vampire's shape makes it somewhat awkward to cover, so I suggest that you wrap the wings / fuselage and tail parts separately



dummy tail pipe and straight on to the elevator horn.

The final task is to check the C of G. You'll notice on the plan that the battery is positioned at the rear of the fuselage. With the battery thus placed and using a .25-size engine similar in weight to the O.S. 25FP, no additional ballast should be required.

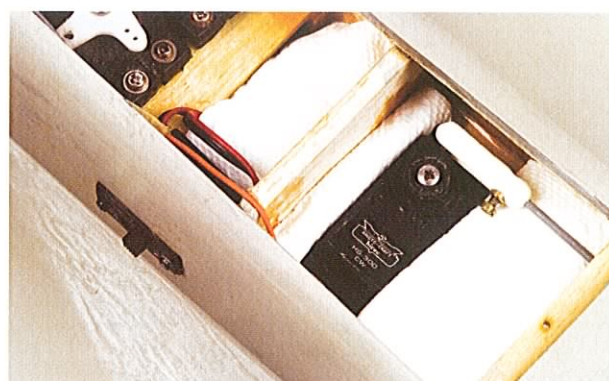
### VAMP UP

Get someone to hand-launch the model for you initially. A good firm push, straight and level and directly into wind is what's required. Allow the model to build up speed before climbing out; hold in any corrections necessary and climb to a safe height

before throttling back and adjusting the trims to achieve straight and level flight.

The Vampire is fast, very smooth and very stable, and can perform most aileron / elevator aerobatics. Whilst the aileron response is good in the turn, the roll through 360° is fairly slow in comparison. Keep all

*How many Vampires have you seen at the patch just recently? I'll wager it's none!*



the manoeuvres large and smooth, as with a real jet, and you'll impress your mates! Landings, either under power or 'dead stick', are no problem. The glide angle is quite flat and there's very little hint of the dreaded tip stall as the model slows up, so no worries there. Hand-launching the aeroplane by yourself is easy as the fuselage has a good amount of area to hold directly under the balance point.

So there you have it, a cracking little model that's lots of fun and flies as good as it looks. Enjoy!

*There's plenty of room inside for standard servos, and with the receiver NiCad pushed as far back as it'll go, she should balance without any additional ballast.*



before gluing them into position (ailerons and elevator are also covered separately before being attached). When making the 'tail boom to wing' and 'tailplane to fin' glue joints do make sure that you get good 'wood to wood' contact.

I used (fuel-resistant) Spectra enamel to paint the Vampire; dark green and dark sea grey for the top camouflage, and light grey for the undersurface. The decals were all hand-painted.

All that's left to do now is fit the radio and make the pushrod connections. The elevator pushrod is simply a length of 14swg piano wire running from the servo, through the

## DATAFILE

<b>Name:</b>	DH Vampire
<b>Model type:</b>	Sport-scale fun fighter
<b>Designed by:</b>	Tony Nijhuis
<b>Wingspan:</b>	40" (1016mm)
<b>Fuselage length:</b>	34½" (877mm)
<b>Wing area:</b>	2.5sq. ft. (0.2sq. m)
<b>All-up weight:</b>	40oz (1.14kg)
<b>Wing loading:</b>	16oz / sq. ft. (4.9kg / sq. m)
<b>C of G:</b>	65mm from root leading edge
<b>Rec'd motor:</b>	.15 to .25 two-stroke
<b>Control functions:</b>	Aileron, elevator, throttle
<b>Control deflections:</b>	Aileron ±8mm, elevator ±12mm