



Hawker Typhoon

RCM&E readers clearly exhibit good taste with their preferences - the Typhoon is a cracker!

You'll be hard pushed to find a good ARTF or traditional kit of the Typhoon, so this one fills the gap very nicely.

Earlier this year the ed. took me to one side and asked if I'd be happy to design a model, the subject of which was to be decided by *RCM&E* readers. In a moment of weakness I agreed, then instantly questioned my decision. After all, what if the winning subject wasn't a favourite of mine? Well, having accepted the challenge all I could do was sit back and wait for the result. I breathed a sigh of relief when the Hawker Typhoon was announced as the winner and set about planning the model with relief and, indeed, some enthusiasm.

The forum threads at modelflying.co.uk proved invaluable regarding the model's

One of the most formidable weapons of W.W.II is brought to the R/C scale enthusiast by Tony Nijhuis



size, power-set up etc., indeed it seemed the vast majority of readers wanted a .60-size model, and there was more than a little interest in an electric variant.

At the time I'd just produced the 62" span i.c. Spitfire for *RCM&E* and from the experience gained was able to guess the weight of the Typhoon at around the 7 lb (3.2kg)

mark. Since sport type mechanical retracts with bespoke oleo legs worked very successfully in the Spitfire, I could see absolutely no reason not to use the same set-up in the Typhoon.

Two other important design factors centred on finding a suitable canopy and, hopefully, a cowl. I normally end up making



It's the small detail that turns this one into a stunner. Early Typhoons were armed with 12 machine guns, although these were quickly replaced with four 20mm cannons.



Wing mounted aileron servos have worked well for me in the past, as they have here.

plug moulds for each of these, but time wasn't on my side. It was fortunate, then, that an old friend of mine found an ancient glassfibre cowl, a metal spinner and a very discoloured canopy in his loft that were just what I needed. With this a quick call to Roly at Sarik Vacform saw these turned into three new vac' formed mouldings.

GET IT ON

It might seem strange to design a model back from the cowl, but it's actually a very good place to start. In the case of the Typhoon it provides the depth and width of the fuselage as well as the profile of F1.

Since I was going to draw the plan using AutoCAD, the end profile of the cowl (where it meets F1) was traced before being scanned and imported into the system. The side profile was also traced and imported, along with a jpeg 3-view

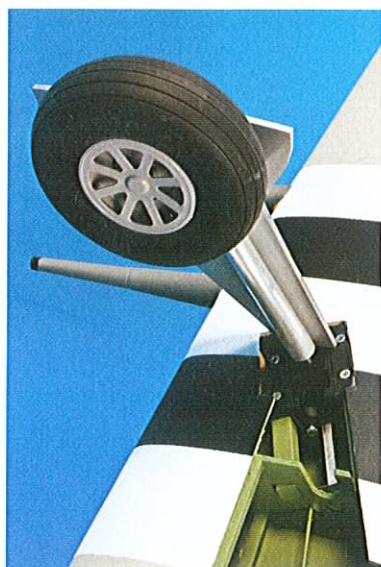
outline of a Typhoon, and scaled to match the cowl size. After a few fine adjustments, the cowl was perfectly aligned over the 3-view to give the required 62" wingspan.

With the size of the model established it was time to crack on with the plan itself, which meant deciding on the type of wing and tailplane sections. Using Compufoil to select the section and produce a fully lofted set of wing and tailplane ribs makes the design process so much easier and quicker. With this, the plan was finished in about a week, including preparing a CNC cutting file so that Ian at SLEC could produce the CNC components.

It wasn't long before the bits arrived so I started building. The work started on a Monday evening, the first of six consecutive evenings spent in a balsa dust laden atmosphere. This concentrated effort culminated at 3 am on the Sunday morning when the raw Solarfilm-covered Typhoon was rolled out ready for action. Having grabbed an hour or two of sleep, I set off for the patch. Arriving before the crowd, I quickly rigged the model, fired her up and lined her into the teeth of a 15 knot wind. But enough of that for now, we'll continue the flying report later...

FUSELAGE FIRST

Start by pinning the five spine pieces over the plan, gluing S2 to S3 and S4 to S5. Now cut out the fin post from 3mm birch ply and glue it into place. Stick the half formers F2, F3, F4, F5 and F6 in position on the spine, then locate and glue in the wing seat WS1.



Cut and glue the 6mm square longerons to the formers making sure to leave sufficient wood to overhang F1 when it's fitted. Remove the fuselage side from the plan, fit the remaining halves of F2 - F6 and the second WS1, then add the remaining longerons, ensuring the fuselage is kept straight and true while you do so.

F1 can now be fitted, gluing it onto the two WS1 wing seats and aligning it flush with the front edge of S1 before gluing the overhanging longerons into position. The skeletal fuselage can now be sheeted using 1/8" (3mm) soft, longitudinal grain balsa. By this I mean the sheet balsa should easily curl across the width of the wood.

To sheet each fuselage half in the most economic way (in terms of time, that is), first cut a sheet to fit across the middle top three longerons (those at 1, 2 and 3 o'clock), spanning from F1 to the tail post. As the fuselage is a little longer than the standard 36" (900mm) sheet you'll need to graft on another 4" (100mm) or so. When cutting the sheet to fit, make sure the edge straddles only half the width of the longerons at 1 and 3 o'clock so that the next sheet edge

The retracts are of the mechanical variety, with a central wing mounted retract servo doing all the pushing and pulling.



There's something about the Typhoon's brutish stance that endears it to us model flyers.

has something to glue against. For best results wet the outside surface of the balsa, allowing the water to soak in for a few minutes before gluing into position. When the first sheeted section is complete repeat the process for the opposing side, and so on. Each fuselage half only requires four sheets; middle top (as just described), top (between 12

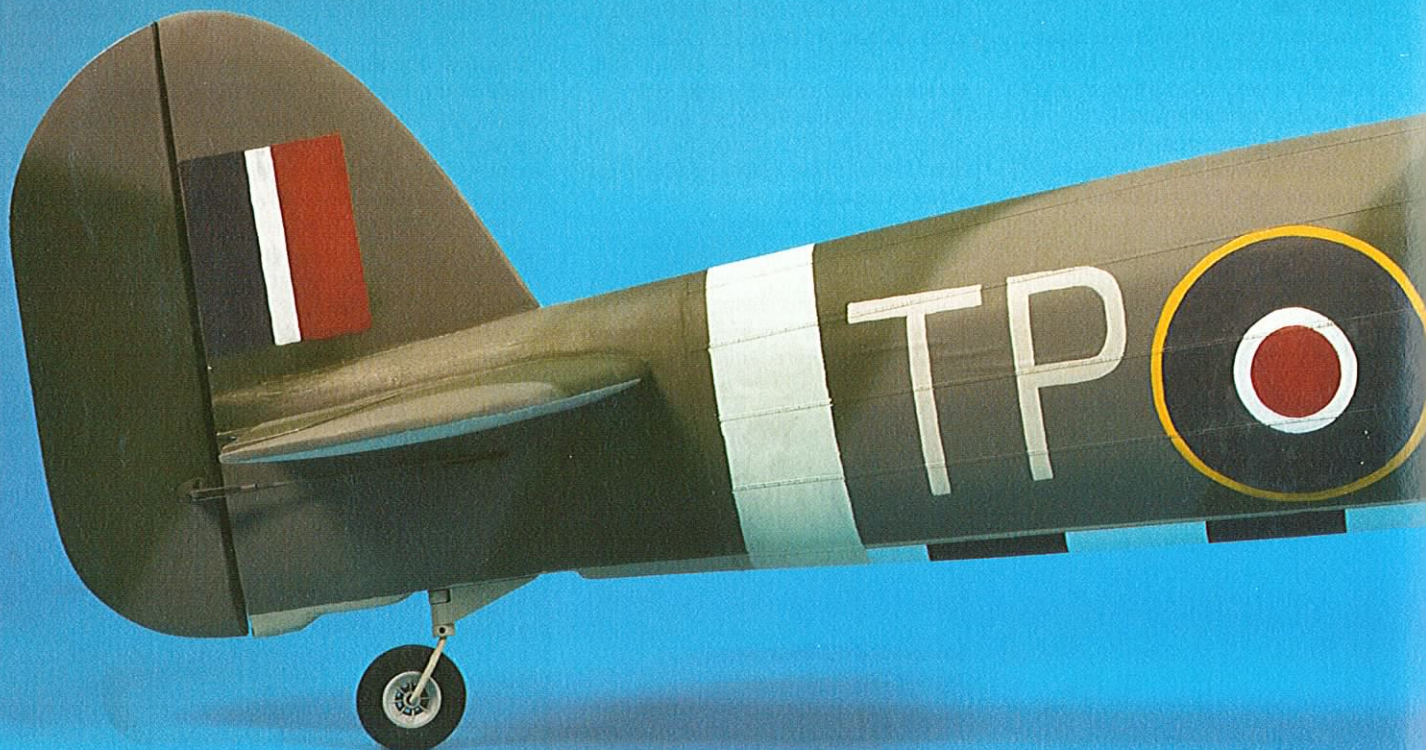
and 1 o'clock), middle bottom (between 3 and 5 o'clock) and bottom (between 5 and 6 o'clock). When the fuselage skinning is complete, open out the cockpit area, then, using a sanding block and WS1 as a guide, sand the wing seat to the finished profile.

To make the rear part of the chin, cut the two $\frac{1}{2}$ " (12mm) balsa side

pieces and glue them to F1. Trim and fit two lengths of $\frac{3}{4}$ " (18mm) triangular balsa in the positions shown on the plan, then proceed with the underside of the chin, also made from 12mm balsa.

COWL

Assuming you've purchased the vacuum formed cowl and canopy, trim the excess material from the cowl and square off the perimeter edge. Now fit and glue the cowl ring into position flush with the cowl edge and again, sand flush. The plan shows the four fixing positions where the cowl attaches to F1 and to this end the fixing holes must be drilled in the cowl ring, the cowl squared up to the fuselage and the four hole positions marked through onto F1 using a pencil. Drill these centres through using a 1.5mm drill then take 4 x 2mm self-tapping screws and secure the cowl into position. Right then, draw around the cowl where it butts the chin beneath the wings and use this pencil line as a



guide to start shaping the chin. It's a good idea to edge the cowl with masking tape at this point to avoid damage when feathering the fuselage into the cowl. To finish, open up the air intake where the motor shaft passes through.

TAILPLANE & FIN

The fin is constructed from a laminate of 3mm and two 4.5mm pieces of soft sheet balsa, whilst the rudder is made from a single piece of 12mm sheet.

Built in two halves over the plan, begin the tailplane by pinning down the spar and gluing the ribs into position, remembering to use a set square on rib T1. Now cut the balsa trailing edge and inner leading edge and glue these into position. Fit the top spar and remove the panel from the plan.



Make sure you use the correct size wheels. Too small and the appearance is ruined.

Note that the tail wheel is a free casting affair.





Although the choice of colour scheme is pretty limited, the Typhoon looks superb in the traditional RAF livery.

Build the other side in similar fashion and finish off by adding the outer leading edges. Note that the panels are built upside-down over the plan, so when joined, the tailplane will have a very slight dihedral. Sheet the top and bottom of both tailplane panels, then cut out the tips, glue into position and when dry, use a razor plane and sandpaper to shape.

WING IN THIRDS

The wing is assembled in three sections. Starting with the centre-section begin by pinning the lower forward spar over the plan and then fit wing ribs W1 - W6. Now add the top forward spar, cutting a small notch and breaking it across the centre rib. The upper rear spar and 6mm sheet balsa inner leading edge go in next, after which the skeletal section can be removed from the plan and the remaining lower spars fitted.

Now add the retract mount bearers. To make life easier I'd suggest that this is a good time to install the retracts, pushrods,

servo and mount. Get the mechanism working correctly with the oleo legs and wheels attached then, when you're happy, remove it all, safe in the knowledge that it all works.

Fit the wing bolt plate flush with the bottom edge of W1 and W2, then prepare to concentrate on the two outer panels.

Start by pinning the main spar of the first panel over the plan and positioning wing ribs W7 - W14. Glue the forward and rear upper spars in position, followed by the inner leading edge and the inset trailing edge, between W9 and W14. Remember to trim the top spars at W6 to take the dihedral into account. The wing panel can now be removed from the plan and the remaining lower spars fitted. At this stage the aileron servo bearers can be added, that is, unless you wish to use a proprietary plastic servo mount?

Now glue wing braces B1 - B4 to the centre panel only and offer-up the outer wing panels, taking account of the dihedral. When

happy, glue the outboard part of the braces to the outer panel spars.

At this point you should either install the aileron extension leads, or drop in a few 'draw' strings to make life easier later on. Okay, apply the shear webbing between the upper and lower main spars, as shown on the plan. Now sand the inner leading edge, spars and trailing edges flush with the ribs and begin to sheet the underside of the wing. It's a good idea to mark and cut the openings for the wheels and oleo legs at this point, after which the top skin can be applied. Note that the prototype wing has no washout. To my mind the advantages are so marginal it's far better to build the model as light as possible. Still, having said that, if you wish to build in some washout, go ahead, it certainly won't do any harm.

Moving on, trim the top and bottom wing skins flush with the inner leading edge, then cut and fit the outer leading edge, making sure to splice it across the inner joint. Finally, shape the l.e. to the profile shown on the plan.

Sandwich sheets of balsa together to form the wing tip and glue onto W14. Once in place, roughly shape the tips then sand to a smooth, flowing profile that matches the wing.

Finally, construct the ailerons by first cutting the bottom skin to shape then trimming and fitting the leading edge at the angle shown. Glue the aileron ribs in position, then add the top skin before trimming to shape.

FUSELAGE ENCORE

Now's a good time to install the 'T' nut mounting plate for retaining the wing, after which the locating



The invasion stripes help no end with visibility. Did you know that early on, the Typhoon was often mistaken for the FW 190?

TYPHOON MK.1B

DESIGNED BY TONY NIJHUIS

PILOT
ANNOTS CENTRE SPINE

100mm (4") METAL SPANER OR VAC FORM PLASTIC FOR ELECTRIC VERSION ONLY

LAMINATED Balsa FIN

RUDDER
SOFT 12mm Balsa

ACCESS FOR 4x 180° PACK
THROUGH CRUISE AIR INTAKE
SECOND PACK USED AS BALANCE
BACK-UP AFTER FIRST PACK IS
GASPED

BUILT UP
TAILPLANE

FEET WINGS AND ONE
WING DOWEL

45mm TAIL WHEEL

100mm (4")
METAL SPINNER

WING RIBS FROM 3mm LITEPLY
AND 2.5mm Balsa

6mm sq OBECHI SERVO
BEARERS

WINGS SHEETED TOP & BOTTOM IN
2.4mm Balsa

6mm x 3mm OBECHI
TOP & BOTTOM
REAR SPAR

1.5mm SHEET WEBBING

LEADING EDGE FROM 6mm
SHEET Balsa

6mm sq. HARD Balsa TOP &
BOTTOM MAIN SPAR FROM W6 TO W14

WING TIP FROM SOLID Balsa

3" SIDE THRUST

FUSELAGE SHEETED WITH
2.5mm SOFT Balsa

11mm PUE. TANK

FORMERS F2 TO F6 FROM 3mm LITEPLY

WING FAIRING BETWEEN
WING L.E. AND F2

WING FAIRING FROM F3 BACK MADE
USING SOLID Balsa

VAC FORMED CANOPY

DUMMY EXHAUST STACKS
FROM SCRAP Balsa

WING PLATE
FROM 6mm BIRCH PLY

FORMER F1 FROM 6mm BIRCH PLY

90mm (3.5") WHEELS

REAR FAIRING FROM 3mm LITE PLY

MECHANICAL 'SPORT' RETRACTS AND 140mm OLEO LEGS

100mm (4") SPINNER

45mm TAIL WHEEL

FORMER F1 FROM 6mm BIRCH PLY

90mm (3.5") WHEELS

REAR FAIRING FROM 3mm LITE PLY

MECHANICAL 'SPORT' RETRACTS AND 140mm OLEO LEGS

100mm (4") SPINNER

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MECHANICAL 'SPORT' RETRACTS AND 140mm OLEO LEGS

100mm (4") SPINNER

45mm TAIL WHEEL

The full CNC wood pack makes life easier for the builder, the canopy, cowl and spinner moulding set even more so.

If you're looking for a retract set, contact Unitracts International on tel. 01474 359990.

dowel can be added. To do this, start by positioning the wing centrally on the fuselage. Next, insert strips of $\frac{1}{32}$ " (0.8mm) birch ply between the fuselage and wing to act as packing for the fairing pieces that are yet to be installed. Drill through F1 and into the wing leading edge, then remove the wing and open out the holes to accept the dowel. Glue said dowel into the wing, re-fit, then centralise the panel before drilling two 6mm holes for the wing bolts. Remove the wing once again, open out the holes in the mounting plate to accept the 'T' nuts, then secure with epoxy.

So far so good! Cut out the forward wing fairing pieces from $\frac{1}{32}$ " (0.8mm) birch ply and the rear pieces from $\frac{1}{8}$ " (3mm) liteply. Now re-fit the wing and slide the fairings into position between fuselage and wing. When happy with their location, glue them along



Order list

Item	Code	Price
Canopy, cowl and spinner mouldings	CANRC2044	£21.45
Typhoon plan pack (CNC wood selection, plus mouldings)	SETRC2044	£90.00

To order, email: customer.services@magicalia.com or telephone the Plans Service on 01689 899200

the fuselage edge and when the glue's dry, remove the wing. If all's well the fairings should stay in position. Now locate the liteply rear part of the fairing and glue that into position. Cut a piece of soft $\frac{1}{16}$ " (1.5mm) balsa to the profile shown on the plan's fuselage side view, soak it with water, then roll it (to achieve a curve) before gluing it first against the fuselage and then the ply fairing. The front piece of the fairing infill is made from solid balsa, shaped to blend with the forward sheeting.

Refit the wing and make up the rear under-wing fairing from block balsa, blending this into the rear fuselage underside.

ALMOST THERE!

With the airframe nearly complete, now's a good time to cut the tailplane slots in the fuselage and epoxy the surface in position, remembering to fit the elevator torque rod first. The inner tailplane fillets are cut from $\frac{1}{2}$ " (12mm) balsa sheet, shaped and glued into position. Secure the fin by cutting an opening to suit its profile, noting that it should slot over the spine and the ply fin post.

Now's the time to install a

mount to suit your chosen i.c. engine or, of course, make up the CNC motor mount for the AXI 4120-14 motor. Do be aware that the motor mount parts are of differing size to create side-thrust, so test fit the parts and make sure that all's well with the fit before gluing anything. If you're building the electric version then you'll find enough room within the cowl to fit the battery pack. On the prototype I decided to house a pair of 3700mAh FlightPower Evo-20 packs - the second acting as ballast. It goes without saying that the i.c. version will require some ballast in the nose, this being placed as far forward as possible.

COVERING & FINISHING

It's up to you when to fit the canopy but don't forget to add some cockpit detail and a pilot. A Perkins $\frac{1}{7}$ scale W.W.II chap will do the job, if you're in any doubt.

The prototype was covered in silver Solarfilm, after which I fitted all the control surfaces, these secured using Mylar hinges, pinned in position. Fit the servos, followed by control horns and pushrods, then hook it all together for a control movement check.



I applied a coat of Prymol (Solarfilm etching primer) to the prototype, prior to painting with Spectrum enamels: dark grey, dark green and light grey.

You can either paint the roundels (as I did) or use Solartrim. Likewise, the squadron markings were painted on, the invasion stripes made using black and white Solarfilm. To add a touch more realism some exhaust stacks were fashioned out of balsa, painted black and glued in place.

FLYING

There was no doubt in my mind that the Typhoon certainly looked right. So there she was, facing into wind and ready for the off.

Pushing the throttle stick forward stirred the AXI motor into life and the Typhoon was off and running. A small amount of elevator had her racing down the strip, nicely balanced on her main wheels. With a tad more elevator she gently rose into the air, tracking straight and climbing with gusto. Hitting the retract switch saw the undercarriage disappear although the nose noticeably pitched up. Clearly, the undercarriage provides quite a substantial amount of drag. Having throttled back, a few clicks of down trim made for straight and level flight, whereupon the first few circuits revealed what a very stable model this is, she just goes where you point her!

Even though I say it myself, this is one of those models that brings confidence and is a real pleasure to fly. The power from the AXI motor proved more than adequate and there's plenty of agility, hand-in-hand with good stability.



I hope you enjoy building and flying the Typhoon as much as I have. Whatever powerplant you choose, she's one to savour.

One point: you may notice that if you slow the Typhoon in flight and then apply full power the nose will pitch down slightly. If you find the model doing this excessively make sure the C of G is correct and if necessary slightly nose forward. You can also add a degree or two of up-thrust to the motor if you think it necessary.

Landing proved to be uncomplicated, but be aware that the nose will drop when that drag-inducing undercarriage is extended.

GOOD 'UN

Anyone building the Typhoon will not be disappointed with the flying performance, but as this is a scale model, producing a scale flight pattern is the order of the day. Barrel rolls and loops are a delight, and she looks terrific during a low pass, followed by a climb into a half roll and reversal.

Just keep the manoeuvres smooth and fast and use the model's momentum rather than brute engine power to perform them.

The Typhoon has no real vices and happily goes where you put it, so you really couldn't ask for more. Mind you, wouldn't it be something if those cannons really worked?



For Typhoon build sequence photos visit www.modelflying.co.uk/typhoon



DATAFILE

Name:	Hawker Typhoon
Model type:	Scale warbird
Designed by:	Tony Nijhuis
Wingspan:	62" (1575mm)
Fuselage length:	48.5" (1232mm)
All-up weight:	7 lb (3.2kg)
Wing area:	4.5sq. ft.
Wing loading:	24oz / sq. ft. (7.2kg / sq. m)
Control functions:	Aileron, elevator, throttle, rudder, undercarriage
Rec'd motor:	.61 cu. in. four-stroke AXI 4120-14 or equivalent
Rec'd cells:	4s 3700mAh Li-Po