Rato backdated an old-but-good kit to model the Supermarine Type 300, prototype of the famous Spitfire.

BUILD THE FIRST Spitfire

Converting Airfix's 1/72 scale Mk.I to the Type 300 prototype

By Rogério "Rato" Marczak

When a new kit makes an old one obsolete, what do you do with the old kit? Give it away? Trade it?

Here's another option: Try converting it to an unusual version of the subject. Building models of prototypes is an obvious choice; they generally are close to the same shape and dimensions as the production versions, so they can be modeled with easy conversions. When I dug an old Airfix Spitfire Mk.I out of my stash, that's exactly what I thought.

Redrawing a Spitfire

Years ago, I rescribed the panel lines on this Airfix Spitfire but put it aside after the release of new kits by Revell and Tamiya. When I got plans for the Supermarine Type 300, the Spitfire's prototype (Air Ministry registration K5054), they showed the panels on the wings and horizontal stabilizers were very different from the Mk.I but that my earlier scribing work on the fuselage could be used.

So, I filled in the wing panel lines with super glue, sanded them smooth, and scribed new lines, **1**.

Before gluing the top and bottom wing halves together, I backed the wheel wells with styrene tubing and added structural details, **2**. I added rivets to the underside of the wings, simulating the aircraft's most visible rivet lines, **3**. I didn't want to overdo the rivet detail because Rolls-Royce puttied and sanded the K5054 while at its paint shop – just like its cars!

Exhausts and landing gear

The K5054's exhaust stacks fit flush with the cowling panels, rather than protruding as on
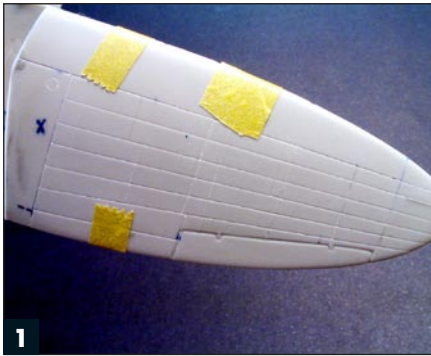
1 Rato replaced the original panel lines and his earlier work, scribing the unique, tapered panels of the prototype using plans as a reference.
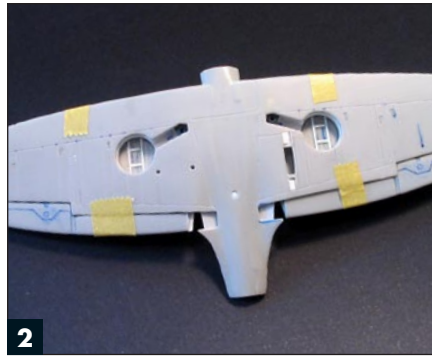

2 Rato's work on the lower wings included detailing the landing gear bays and flaps as well as scribing panel lines.
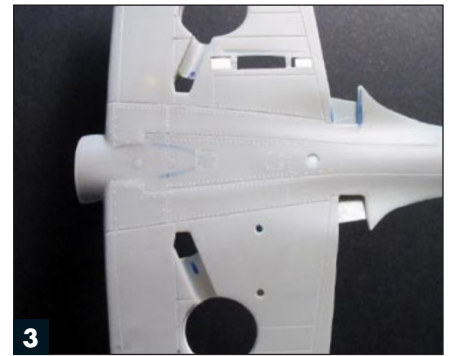

3 Rato practiced restraint when he added rivets to the belly of his model; the full-size aircraft was puttied and sanded before painting.
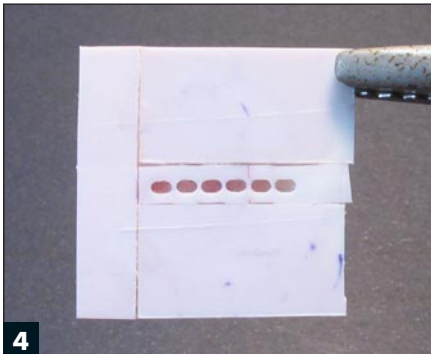
4 Using sheet styrene, Rato scratchbuilt a master for the flush exhaust stacks of the Type 300 and cast resin copies to be used on the model.
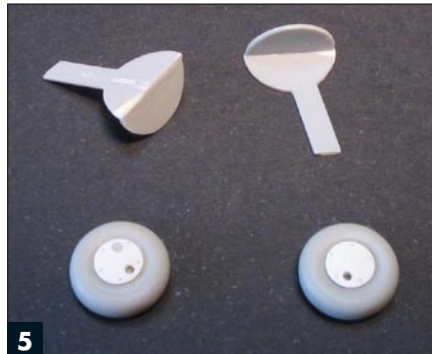

5 Rato added styrene details to the hubs of the main gear wheels and attached hinged sections to the well doors.
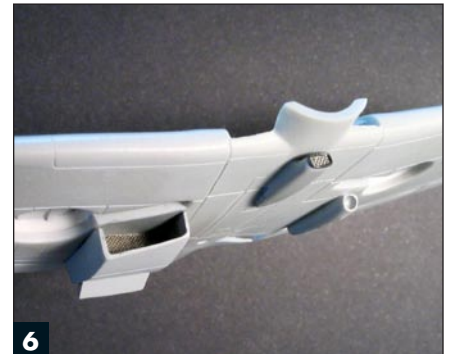

6 Fine pieces of wire mesh detail the front of the radiator and oil cooler scoops underneath the model's wings.

7 With a Hi-Tech resin cockpit as a starting point, Rato added prototype-specific details, including decal instruments, a control column, and wiring.
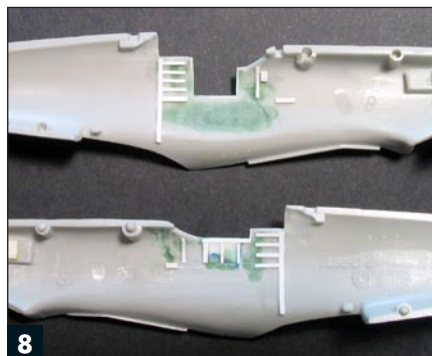
8 Rato added strip styrene inside the fuselage to create structural details not provided in the resin detail set.
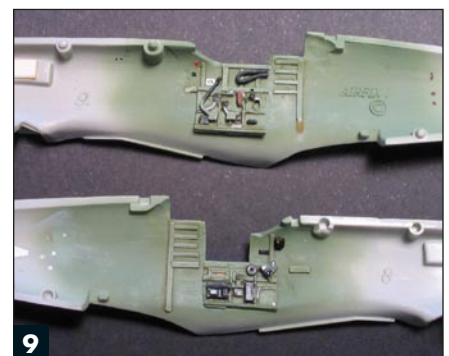
9 The Hi-Tech set included sidewall inserts. Rato thinned inside the fuselage to make room, installing the sidewalls after painting and detailing.

the production models. I built one from sheet styrene by cutting six oval holes, then duplicated it in resin. The new pieces were cut to fit in the kit's exhaust slots, **4**.

Unlike the Mk.I, the prototype's main gear included hinged, semicircular doors that completely covered the retracted wheels. I thinned the kit's main doors and added styrene details, **5**.

I used the kit's radiator, opening its flaps and installing metal screen inside to simulate grilles, **6**. A scratchbuilt skid replaced the kit's tail wheel.
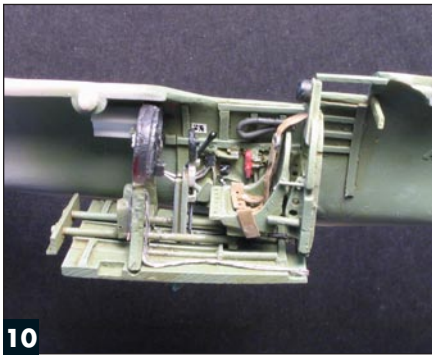
The cockpit

I used a Hi-Tech resin set as a starting point for the cockpit. I detailed and painted the pieces, deleting those items reportedly not on the K5054. It is important to add the manual hydraulic pump handle to the right side of the cockpit.

The Type 300's control panel didn't share much with those of the production machines, but I decided to make do with Hi-Tech's rendition. Punching out Reheat instrument decals and applying them to their raised locations individually, I created gauges. A drop of

clear nail enamel simulated the glass on each dial. I also scratchbuilt the control column and added lengths of thin wire to simulate cables and electrical connections, **7**.

The inside of the fuselage halves were thinned to accept resin sidewalls. I opened the cockpit door on the port side of the fuselage. I added structural details with styrene strip, **8**, and painted everything Royal Air Force interior green. The cockpit sidewalls were painted and installed, and small rectangles cut from dry-transfer letters simulated cockpit placards, **9**. I planned to install the

10 Constant dry-fitting ensured the cockpit assembly would fit later, when Rato installed it through the wing opening after joining the fuselage halves.

11a
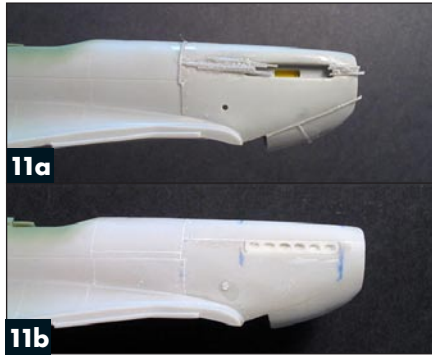
11b After filling heavy panel lines around the nose with stretched sprue and super glue (top), Rato installed the new exhausts and sanded everything smooth (bottom).
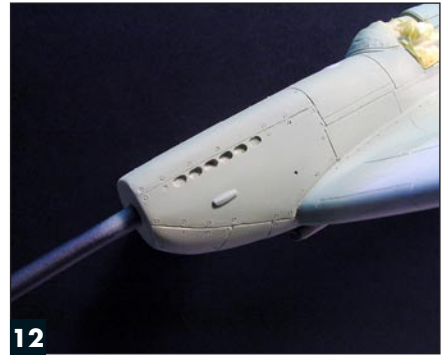

12 Primer helped Rato find blemishes in the engine panel fasteners. He formed the fasteners by pushing a .5mm nib in a technical pen into the plastic, leaving an impression.

13 Using epoxy-putty molds, Rato vacuum-formed canopy parts. The left mold is for the windscreen and canopy, the right for the rear section.

14 Rato dry-fits the vacuum-formed canopy parts, refining the shape carefully to ensure a tight fit with the fuselage.
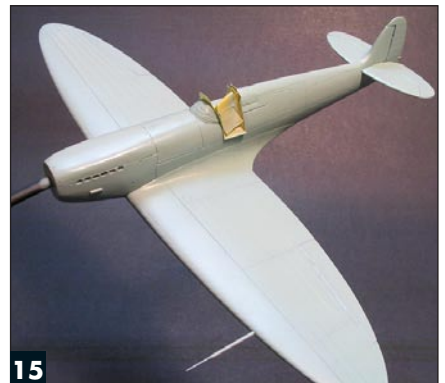
15 A mixture of Tamiya acrylic paints created the Rolls-Royce pale blue K5054 was painted in 1936. Future floor polish gave the model gloss.

cockpit assembly through the wing opening later in the construction sequence; repeated dry-fitting at this stage ensured proper placement, **10**.

The fuselage
Before gluing the fuselage halves together, I cut the rudder off, replacing it with a better-shaped one from a Revell Spitfire Mk.V kit. The fin had to be thinned to match the new rudder, but the result is a better-looking tail.

With the fuselage closed, I filled Airfix's heavy, recessed panel lines around the cowling area with stretched sprue and generous amounts of super glue, **11a**. After gluing the exhaust stacks in place, I sanded everything flush, **11b**.

I've found the perfect tool to reproduce the characteristic fasteners found on Spitfire and Hurricane engine panels: technical pens (the type used for ink drawing). Pressing an empty pen's nib against the plastic produces a perfectly round, recessed rivet. A typical pen set comes with nibs gauged from .2mm to 1mm. I think .5mm is perfect for 1/72 scale panel fasteners, **12**.

After cementing the cockpit in place, I mated the assembled wings to the fuselage.

Vac-forming a new canopy
Unlike production Spitfires, K5054 had a rounded windscreen devoid of reinforcement. The sliding part featured a flat top (similar to very early Mk.Is). I made molds from epoxy putty: one for the windscreen and the sliding part, the other for the fixed rear section, **13**. I hate working with acetate, so I used clear styrene. Because styrene distorts easily when heated, it was difficult to maintain consistent thickness. On the other hand, styrene sands more easily than acetate, and I had no major problems fitting the new canopy parts to the fuselage, **14**. I secured the clear parts with liquid cement (another advantage of styrene versus acetate) and masked them for painting.

I fashioned wingtip lights from pieces of colored toothbrush handles glued into place and sanded flush. After polishing the lights, I masked them and the wheel wells, added a pitot tube machined from brass rod, and the airframe was ready for paint.

Dressing the debutante
My references showed K5054 remained unpainted for a few months before being sent to the Rolls-Royce paint shop, where it

received an overall coat of pale blue. Based on color photos of a museum replica of the full-size aircraft, I mixed an appropriate shade of blue using Tamiya light blue (XF-23) and flat white (XF-2) with a little blue (X-4) added to correct the hue, **15**. The model was sprayed with Future floor polish in preparation for decals.

I acquired a set of long-out-of-production decals for K5054 by Tasman Model Products (sheet No. 7204). After applying them, **16**, I gave the model another coat of Future to protect the decals and paint from being attacked by my subsequent oil-wash weathering.

I concentrated the washes around the engine, belly, and control surfaces, using a very light touch on the rest of the airframe, **17**. I sprayed the entire airplane with a mix of 95 percent Future and 5 percent Tamiya flat base to cut the glossiness of the final finish just a bit. Then the undercarriage legs were installed and weathered.

Examining photos of the original aircraft, I saw minimal exhaust staining. I scrubbed iron oxide, a black powder pigment found in art shops, around the exhaust openings to replicate the effect, **18**.

16 Iron oxide powder, a artist's pigment, provides subtle exhaust stains to the nose. Photos of the full-size Type 300 show just a little staining around the nose.
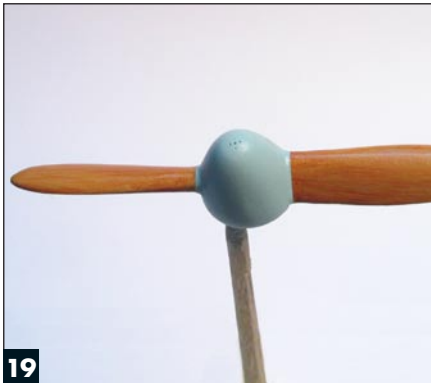

17 Tasman Model Products printed the decals in two parts – one for the white, the other for the black – avoiding any registration issues in printing the black-on-white numbers.

18 Rato's weathering started with an oil wash concentrated around the engine and underside of the airplane, with a lighter application over the wings and rear fuselage.

19 Rato used artist's oils wiped off with a stiff brush to replicate the wood grain of the prototype's big two-bladed Watt propeller.

20 Scratchbuilt wheel chocks and a wooden tail stand complement the groundwork and base Rato built to display his Type 300.

Meet Rato Marczak

DR. ROGÉRIO "RATO" Marczak is a professor of mechanical engineering at the Federal University of Rio Grande do Sul, Brazil. Besides teaching, he is involved with research in computational mechanics. He enjoys building 1/72 scale dioramas and detailing 1/32 scale aircraft, and is an associate editor of the modeling Web site www.largescaleplanes.com. Rato lives in Porto Alegre with his wife and two daughters, and suffers from a longtime devotion to the S.E. Palmeiras soccer team.

A big fan

I scratchbuilt the two-bladed Watts propeller from styrene. I sealed a base coat of Model Master wood color with Future, then simulated wood grain by applying artist's oils and wiping them away with a stiff brush moistened with mineral spirits. I masked the blades and airbrushed the spinner, **19**.

Finally, I made a cockpit access door from sheet styrene.

Building the base

To display the model, I cut an asymmetrical shape from sheet styrene and covered it with a thin player of plaster. I impressed the wet plaster with a wheel from an Airfix truck kit, replicating tire tracks made on a typical, rainy English day.

I painted mud in the wheel ruts and scattered static grass over the remaining ground, then dry-brushed with different shades of green.

I glued the completed groundwork to a 12cm x 12cm wooden base, then added scratchbuilt chocks and a small stand for the Spitfire's tail, **20**.

Finally, I installed the remaining parts, placed my K5054 on the base, and added an Airfix RAF officer figure for scale. The vignette captures a moment in time at the Aircraft and Armament Experimental Establishment at Martlesham Heath Airfield, circa July 1936.

And that's it: 70 years after its first flight, I have a decent representation of the first Spitfire. **FSM**

Packed with details, Rato's K5054 looks like the Spitfire fighters it sired but shows subtle differences unique to the prototype.