

An FM Product Review: By Lenny Stanko



Spitfire

Mk IX

Top Flite's
Gold Edition

Along with the North American P-51 *Mustang* and the Lockheed P-38 *Lightning*, the Supermarine *Spitfire* "earned" its right to be considered one of the best fighters of the Second World War. Its clean, graceful lines and elliptical wing were the brainchild of R.J. Mitchell who, unfortunately, died of cancer before the first flight of the prototype. The *Spitfire* design lived on, however, and underwent various improvements and refinements to its airframe, powerplant, and armament.

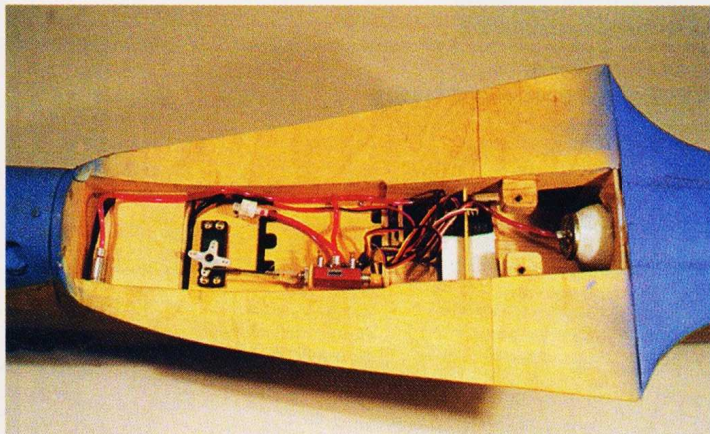
The version chosen by Top Flite for its kit is the Mk IX, the variant that came to be because of the introduction of Germany's daunted Focke-Wulf FW-190. The Mk IX not only matched its adversary in performance, it was considered by many as the finest *Spitfire* of them all.

For sport scale, this extensively engineered kit inspires any modeler to go for the extras. Flies great with a .61 two-stroke.

Long time R/C warbird enthusiasts will notice that the popular Top Flite warbirds have been filtering back into our lives. Some of us, eager to sink our teeth into a warbird, may have felt a little intimidated by the Top Flite kits of old. This is not the case with the new "Gold Edition" series. With the goal of making construction "user friendly", Top Flite has used CAD technology to re-engineer and vastly improve these earlier designs and make parts fit more accurately. Improvements to the flying characteristics have also

helped Top Flite take their "new generation" warbirds into the 90s and beyond.

Starting the familiarization process, the first thing that hit me was the smell of the wood. Nothing like the smell of balsa in the morning. As I continued rummaging through the box I could see that the quality of the wood was good: clean and straight-grained. I was impressed with the die-cutting; nice sharp cuts, clean, no mashing. There were also some laser-cut parts. Laser cutting seems to be the way to go these days, high tech for model air-



PHOTOGRAPHY: RICH URAVITCH & LENNY STANKO

Fuselage radio equipment compartment is very active (above left) and tightly packed so neatness counts. Rudder, elevator and throttle servos are located



under a removable tray. Installing flaps on any Top Flite kit is a must (above right), and besides, it's easy. A single servo drives both flap halves.

planes. The vacuum-formed ABS cowl, wing fairings, and gun blisters are all of good quality and represent a nice addition to the kit. One additional item that I thought would have been nice to have vacuum-formed (but wasn't) was the intake scoop on the underside of the fuselage. Too bad!

The plans are full-size, clearly laid out, and give part location and description. It is used in conjunction with a well-illustrated assembly manual into which Top Flite has obviously put a lot of work into. Included are not only pictures and step-by-step text, but helpful building tips to make the job easier. Everything you need to know is in it. Just to name a few other items needed to complete the model like hardware, building supplies, tools, and a layout of the die-cut parts. Then there are also sections on engine types, retracts, flaps, and even some tips on scale detailing! What more could you ask for!



The Robart heavy duty retract adapts to the scale actuating direction by simply repositioning the air cylinder to the opposite side of the mechanism. Wheel cut-out in wing is oval shaped for clearance.

Tail section

Building a strong, but lightweight stab and fin is important to any aircraft, especially a scale model. Top Flite's method of construction seems to work well. The ribs have jigs attached to them to keep them straight and true. A die-cut inner core interlocks with the ribs. This core plus the addition of leading (LE) and trailing edge (TE) pieces finish up the structure. With the sheeting added, the result is a fairly lightweight assembly. Keep in mind the importance of having good contact between the sheeting and the ribs. One small glitch with the fin: the $\frac{3}{16} \times \frac{3}{8}$ LE should have been a little wider. It falls short because of the curve of the fin.

On the full scale *Spitfire*, the elevators and rudder were fabric covered. To achieve a scale-like appearance, die-cut elevator and rudder outline shapes are used. To these, blocks and ribs are added. These assemblies are then sanded to tapered shape. This method of construction is simple, but effective, in creating this added look of realism. It will take some effort in sanding the tail section to its proper cross-section, but it's worth it. One scale step further would be the use of scale hinging. A nice touch, but I chose to stay with the hinges provided. Next time

Wing

Building the wing posed no real problems. The quality of the die-cutting really shows up here. The notches in the ribs and other

Top Flite Spitfire Mk IX at a glance

Wing span	63 inches
Fuselage length	53 inches
Wing area	687 square inches
Weight as tested	10½ pounds
Wing loading as tested	35.2 ounces per square foot
Engine required	.61 to .75 two-stroke .70 to .91 four-stroke
Radio requirements (ail, elev, thr, rud, opt. flap & gear)	4-6 channel 5 to 7 standard servos
Scale	1/7 Sport Scale

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selected die-cut parts fit perfectly. I had already decided to install retracts and flaps since it wouldn't do justice to this model if I hadn't. This decision, however, should be made early on.

The wing structure might look a little on the fragile side, but the use of shear webbing and interlocking trailing edge pieces help stiffen it. The $\frac{1}{16}$ sheeting plays an important part of the overall wing structure. So, once again, make sure you have good contact between all the mating surfaces. The joining of the outer panels to the center section is done with the help of provided jigs which aid in keeping the wing straight during assembly. Weights, (sand bags work great) are used to hold everything down while everything sets up.

Undercarriage

At this point, the retracts are needed. The units of choice are the Robart #605HD (Heavy Duty). They use a $\frac{3}{16}$ -inch wire strut and are air-operated. The *Spitfire* is designed to use these units after performing minor modification of reversing the air cylinders to the opposite side of the retract unit. Robart Mfg. (P.O. Box 1247, St. Charles, IL 60174) has also introduced a new air valve which enables you to control the speed of the retract system. Two simple, adjusting screws control the air flow to the "extend" and "retract" part of the cylinder. I've used Robart products in the past, and I like them; I find their products reliable and factory support excellent.

Back to the wing

Having attached the lower sheeting, let's get ready to sheet the upper surface of the wing. Be-

fore doing that, however, cut-outs should be made in the lower skins for the undercarriage and aileron servo hatches. The lay-out geometry for the landing gear makes it retract in a scale fashion, but for proper clearance, you will end up with an ellipse for a wheel well. When the top sheeting is added, the wing is placed on a different set of jigs, again to keep any unnecessary twists from occurring. Have plenty of bags of weights on hand to help hold the sheeting down while the glue dries.

Flap installation

Flaps on warbirds go hand in hand; you gotta have them! They definitely make a dif-



Departing from the usual grey and green color scheme, our author chose a U.S. desert camo scheme. Finish is MonoKote® painted with Chevron.

Top Flite Spitfire Mk IX

ference in your landing approaches. As we all know, they enable an aircraft to land at lower speeds and steeper angles of descent. The *Spitfire* employs a "split" flap arrangement which aren't difficult to build, but do take time to make them operate properly.

One thing I had to do was close the gap I had at the trailing edge of the flaps. I did this by soaking the flaps with water, and clamping them in place until they dried. This lets the flaps conform to the wing. The ailerons are built up much like the elevators and when it's all said and done, you definitely have that distinctive, and beautiful *Spitfire* wing.

Cockpit

A cockpit is a welcome addition to any warbird, especially when most of the work is done for you. The Top Flite cockpit kit consists of side panels, floor, seat, back rest, control stick and, of course, an instrument panel. Everything is vacuum-formed, except for a few other goodies like pins for making control knobs, material for seat belts, and an adhesive-backed instrument sheet. The finished cockpit easily hides all of the wood structure. With enough time, creativity, and reference material, you could wind up with one heck of a scale cockpit!

To fill the seat in the cockpit, I purchased the new 1/7 scale U.S. WW II pilot from Top Flite. It's a full-body figure that needs to be assembled and painted. The arms and hands can be adjusted to suit your needs. Unfortunately I had to trim the pilot quite a bit in order to make him fit—which left him with no arms or legs. Once the canopy is on, he looks just fine sitting there, ready to go.

Radio installation

"Tight" is the word for it. The slender fuselage doesn't leave too much room in which to locate the electronics. Fortunately, everything has its place; a permanent tray for the rudder, elevator, and throttle servos, and a removable tray for the retract air valve and servo. I opted for mounting the receiver on the cockpit floor next to the switch, instead of using the removable tray. The battery is located on top of the fuel tank and is held in place by a hatch cover. In the wing, each aileron is driven by its own servo, and the flaps are driven via bellcranks by one servo. The radio I used is my 8-channel Futaba PCM. I really do like this radio; it has plenty of bells and whistles plus, perhaps, things that go bump in the night.

Fuselage assembly

Fuselage construction starts by building the top half directly over the plan and then building the bottom half directly on the top half. One small problem surfaced when fitting formers F3 and F4. They forced the main stringers beyond the lines indicated on the plans. The fuselage looked a little pregnant! A simple phone call to the folks at Top Flite cleared this all up; the formers were correct, but some early issue kits had plans that had incorrect cross sections.

The problem has since been resolved. If you happen to get one of the early kits, just go ahead and build it using the provided formers. They're correct! I have to say that all of the die-cut parts fit beautifully, notches were tight, which made the interlocking parts easier to assemble.

Everything that needs to be added to fin-

ish the top half is done right up to the point of sheeting. Now, here is something that struck me as unusual for a kit, I had to make my own fuselage sides from 3/32 sheet stock. By taking measurements from the book, I laid out the upper fuselage sides. I don't understand the reason behind this; I would have thought that die-cut parts could have been provided. Nevertheless, everything went just fine.

Here is something else I found a little different. Once the top half is complete, don't remove it from the table! You are instructed to glue the stabilizer in place. That's right! Standard practice is to have the wing in the saddle, and then add the stab. This is the opposite. I leveled the stab, and positioned it evenly, and the end result turned out fine. The stab mounts to a saddle, which only gives you a 1/8 inch gluing surface on each side. Fortunately, while setting the incidence, I had to add a shim so this gave me a bit more area to glue.

The fin is also added to the fuselage now. Just keep everything straight and it all will work out just fine. The lower crutches and laser-cut formers, along with the tail wheel assembly are now glued in place. The bottom sheeting is formed by gluing two sheets together and fitting them to the fuselage.

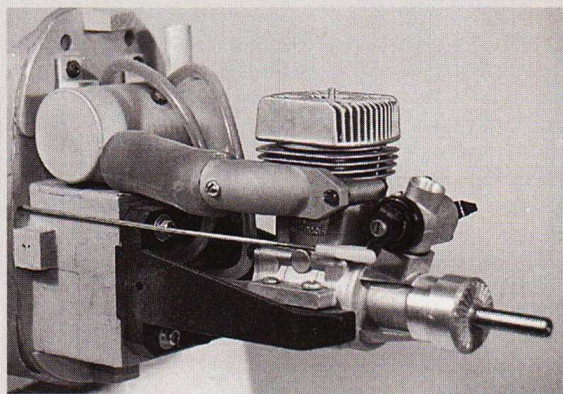
Now on to those characteristic wing fillets. This was probably the toughest part of the whole project. The fillets themselves are vacuum-formed plastic while the bases are die-cut 1/16 ply. It was difficult to fit the bases to the fuselage, because the grain of the fillet ran lengthwise. I substituted 1/16 ply with the grain running with the width. Once the wood fillets were in place, the plastic wing fillets could be glued on. If I had to do it again, I probably would have used 1/32 ply instead. It would have been easier, and would have finished better.

At the business end of the *Spit*, the SuperTigre G-61 is mounted on a Great Planes adjustable motor mount which is included with the kit. To help maintain the scale appearance of the model, Top Flite offers an "In-Cowl Warbird Muffler" and "In-Cowl Header". This allows all the unsightly stuff to remain inside the slender cowling. No more ugly mufflers hanging out of these warbirds!

The two halves of the ABS cowl are assembled and fitted to the fuselage. Having the engine in place, and using the spinner backplate as a guide, the idea is to match the cowl both to the backplate, and to the fuselage. I noticed that the cowl would have ended up curving to the right, due to the 3 degrees of right thrust that was pre-set by the firewall. So I decided to shift the motor mount over to the left as far as it would go. This allowed the cowl to stay straighter, but the 3 degrees of right thrust is evident by the spacing between the front of the cowl and the spinner backplate. Glass tape over the seams inside the cowl finished the assembly of this part. It would be a good idea to also coat the inside with epoxy or even use fuel-proof paint.

From here on, a lot of "odds 'n ends" needed to be done. Have you ever noticed about this time, how things kind of slow down? It's probably due to the tedious work of installing everything needed to make the thing fly *and* look good! You know, the radio

A closer look at the SuperTigre G-61ABC



The G series of SuperTigre engines has been around for a while and they seem to be well proven. It's a short stroke engine utilizing Schnuerle porting, and ABC technology, coupled with a positive flow twin needle carburetor. The engine package includes a standard header and an oversized bolt-on expansion chamber muffler, that greatly tones down this fast running powerhouse. A gasket is provided to keep the joint between the header and crankcase leak free; for longest life, this gasket should be coated with a light oil so it can be removed more easily.

The motor hand started right out of the

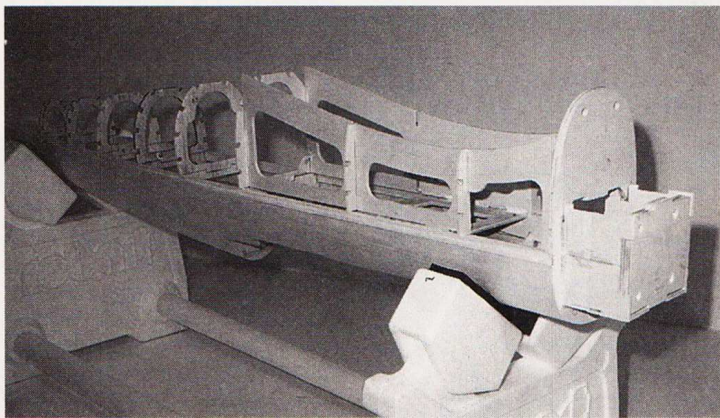
box. After a nominal run-in period the engine was dialed in turning an 11-7 APC propeller. The high speed needle was set at about 2 3/4 turns out, and the low speed needle was leaned about a full turn from the factory setting. The motor seemed to run much better with a hot style glow plug, like the Enya #3 or OS #8. The engine didn't like to turn big props. A 12-6 is okay, but a 13-6 causes the engine to load up. With an 11-7 propeller, the engine ran great. Its peak rpm on 15% nitro fuel (with 20% oil) was

12,700, and the lowest and longest running idle was clocked at 2,100 rpm.

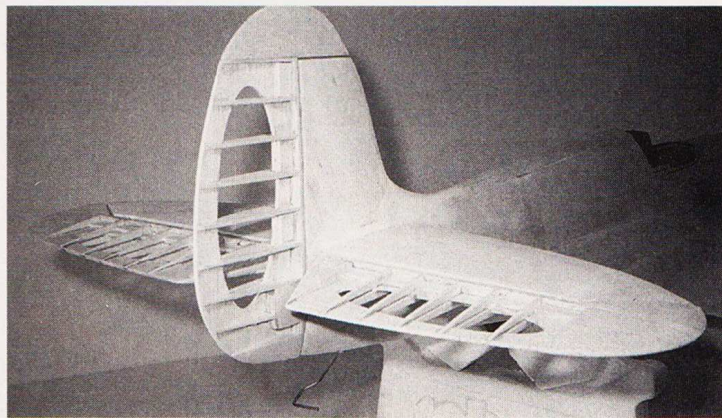
The G-61ABC proved to be an outstanding choice of power for the *Spitfire*. Using the specially designed "in-cowl" muffler system, engine noise was quite comfortable.

BASIC SPECIFICATIONS

Bore(mm): 24 Stroke(mm): 22
Displacement(cc): 9.95 Weight(g): 567
Prop thread: UNF 5/16-24
RPM range: 2,000-16,500
Normal propeller: 12-6



The fuselage is built in two halves. After the tail surfaces are installed on the fully sheeted top fuse half (above left) forward and bottom sections are added



to it. Rudder and elevators are built-up (above right) to simulate a fabric covered structure. An internal pushrod controls the tail wheel at the scale location.

gear, fuel tank, air tank, or even the cockpit (can't fly without a cockpit) ... But, it also means we're getting close!

Covering and finishing

There are a couple ways to approach this; one is to use your favorite type of iron-on covering or two, fiberglass cloth and resin. I usually prefer the latter method. I feel it provides some extra strength, plus giving the model that "hard" finish look. However, to save time with this project, I chose to MonoKote® the *Spitfire* with the new "military" flat colored film.

At first, my intent was to duplicate a paint scheme that many *Spitfires* of this Mk had used, which was gray and dark green camo. But my bud, "Brother" Rich Uravitch, insisted that I do something a little different. Instead of the same old camo scheme that everybody seems to do, he suggested I do a desert scheme. The azure blue underside and the midstone and dark earth upper side will definitely make the *Spitfire* stand out in a crowd.

This was a complete 180 degree turn around from my plan, since I had already secured the flat gray MonoKote® to start with. No big deal, just paint right over the MonoKote®! Once covered, I scuffed up the MonoKote® by wet sanding with 400 grit sandpaper. For color, I used Chevron Perfect Paint. (Ed Note: *Perfect Paints are once again in good supply. The company's new address is P.O. Box 517, Milan, OH 44846.*) They offer a wide selection of military colors, in both spray and brush-on formulas. The spray works beautifully and covers well.

After the painting is done, the next step is to add all that lovely detail that we dream about. To do the panel lines you'll need at least a 3-view drawing, for reference. With pencil in hand and a couple of flexible straight edges, I made my way around the model. Since I could no longer use the decals that came with the kit (wrong version), I called upon my bud again, to make up a new set of markings that would go with the scheme that I was doing. (Hey, what are buds for?) Once all of the detailing was done, including the weathering, I applied a coat of Top Flite's Lusterkote Flat Clear. This fuel-proofed and sealed in all that pain-staking detailing.

Balancing

Getting the c.g. right on any plane is important, whether it's a model or a full-scale aircraft. The starting point for the *Spitfire* is 4½ inches back from the leading edge. There is about a ¼ inch of play in either direction,

but I opted for the initial set up. I use my Great Planes CG Machine which enables you to accurately set the c.g. It took a whopping 24.8 ounces of weight in the nose to correctly balance the model. The indicated c.g. point is probably on the conservative side, and it's likely that I will remove some of this weight at a later time. But for the first few flights I wanted to keep it where it was recommended. The overall dry weight ended up being 10½ pounds, somewhat over the maximum weight called out by Top Flite.

Fly day

I scheduled a date with Brother Rich so he could take the flight shots needed for this article. That gave me enough time to pre-flight the *Spitfire*, making sure everything was moving in the proper direction. Getting a little extra running time on the engine couldn't hurt either! The day finally came, and a beautiful day it was; sun shining, puffy clouds in the sky—typical Florida day! I fueled up with 10% Sig fuel, and with just a bit of coaxing, I fired up the SuperTigre after some last minute adjustments to the engine. I waited for Rich to get into photo position, and with a big sigh, I was ready to go.

I advanced the throttle, correcting with right rudder as the *Spitfire* headed down the runway. I figured with the extra weight, it would need a longer run to build up some speed before lifting off. The model broke ground, made a shallow ascent and I quickly retracted the landing gear for some added flying speed. I added some "up" trim to achieve level flight.

While making passes for the camera, I could sense that the *Spitfire* had a real smooth feeling to it. The handling characteristics are good, giving you that feel of both agility and stability. The SuperTigre, which is noted for good high speed performance and steady idle, proved itself in the flying. I matched the engine with an APC 12-6 prop.

The combination proved to be a good choice for the actual flying. I wanted to use a larger diameter prop than the APC 11-7 which had been used on the bench

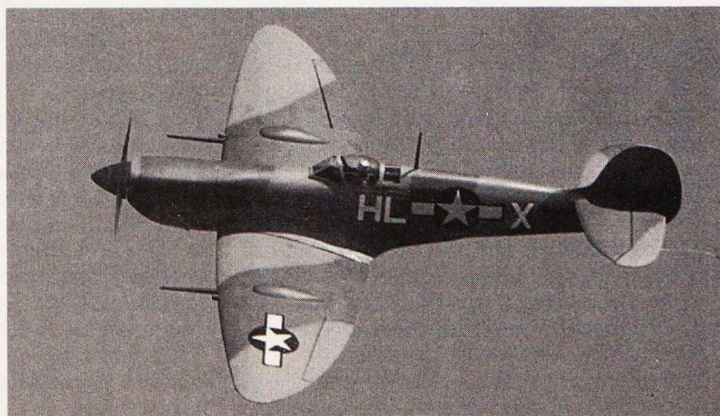
tests. Even when it was running a little on the "fat" side, the Tigre didn't show any sign of giving up. The Top Flite In The Cowl Muffler doesn't seem to restrict the engine at all and it actually sounds real good in the air, or for that matter even on the ground. Not too loud, just right!

Some time had passed since we took off and I needed to land this bird. Just as I made my last pass ... guess what? Out of fuel. I headed for the cushion of soft grass. The model's slow flight characteristics couldn't have been tested any better than here as the *Spitfire* settled right down onto the grass.

So much for the first flight, and no damage! The next few flights proved to be better and longer. I really enjoyed flying the *Spitfire* around. Not only does it fly well, but it looks great in the air. Landings couldn't be any easier or controllable. With flaps deployed, I carry a little extra power on descent and then throttle back just before touch down. The roll out is uneventful.

I think that Top Flite has taken the intimidation factor out of building a scale aircraft like the *Spitfire*, by making it much easier. But it is still a challenge to build. In the course of doing projects like this, one could ask, "Why did they do it that way?" or "I would have done it different." Yeah, I've pointed out problems when they arose, and would have done some things differently, but that's *me*! All in all, the Gold Edition *Spitfire* and others in the series of warbirds are a welcome addition to those of us who love aircraft of this type, and thrive on having kits like these so we could turn our dreams into reality.

Keep them coming Top Flite!



This *Spitfire* is a cinch to fly! With predictable handling characteristics, it can be slowed down for landing. At high speed, control response is very smooth.