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You don't see giant-scale warbirds like this very often! Don't miss our exclusive review of the Hangar 9 Ki-43 Oscar this issue.
(Photo by Andrew Griffith)

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FLIGHT PLAN

BY DEBRA CLEGHORN



MODEL AIRPLANE NEWS MAKEOVER

After being in continuous publication for more than 90 years, we are proud of our rich RC heritage. But like your favorite P-51 hangar queen, sometimes you just need to dust it off. And that's exactly what we've done with this issue. We have a whole new look, with cleaner layouts and several new columns, like "Hangar Talk," where experts share pro tips. A makeover highlight is our "On the Flightline" section, where we will be showcasing news tidbits, sneak previews, model and gear releases, build updates, and local club content. That's where you come in: if you know of an RC award winner, unique event, or special achievement, drop me an email at Debrac@airage.com—we want to make you famous!

We hope you enjoy this "refreshed" issue as much as we enjoyed creating it. As always, we welcome your suggestions for future content. Visit us on Facebook; we want to hear from you!

RC GOES HOLLYWOOD

In his debut "Sal's Scale Views" column, Sal Calvagna shares how the Long Island Skyhawks and their giant-scale WW I models helped moviemakers to create a documentary on the Lafayette Escadrille. The film about the first 38 American volunteers debuted at the U.S. Air Force Museum in Dayton, Ohio, and you can watch a teaser at ModelAirplaneNews.com/Lafayette_escadrille.

TAKEOFFS ARE OPTIONAL

Landing well every time isn't a matter of good fortune or even a sign of clean living, but instead the result of practice and being able to anticipate unexpected challenges like a crosswind gust. In this month's feature story, "Master the Crosswind Landing," we share expert tips and tricks for getting your aircraft safely back to terra firma. Spend some time with this "back to basics" feature and the plane you save may be your own!

QUESTION OF THE MONTH

What's your favorite type of RC plane event to attend?

Fun-flys: 50%
Scale fly-ins: 20%
Scale competitions: 15%
Jet events: 10%
Other (sailplane events, pylon races, FPV racing): 5%

*** Participate in our next audience poll on our Facebook page (Facebook.com/ModelAirplaneNews).**

MODEL Airplane NEWS 1929 2019 90 YEARS

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SE5a Scouts | Art & Brian Irwin, Calgary, Canada

PILOT PROJECT OF THE MONTH

Brothers Art and Brian decided to build 1/3-scale Vailly Aviation WW I biplanes in 2017 for their club's Battle of Britain fun-fly on Remembrance Day to honor Canadian WW I pilots Captain Fred McCall and Captain Billy Bishop. As Art writes, "Cutting two parts is just as fast as making one, right?" Both 108-inch-span aircraft flew together in 2019. Art notes, "Each plane takes about an hour to set up at the field, mostly due to connecting all the functional flying wires, which each took about 8 hours to make out of crimped steel wire with Sullivan 4-40 Kwik Links." Both planes are covered in Coverite. Art's SE5a is powered by a DLE 85cc gas engine with a custom Bisson muffler, and Brian's uses a Zenoah 62cc gas engine with a Mic Reeves prop drive system. *[Editor's note: Vailly Aviation plans are now available from ziroligiantscaleplans.com.]*



Piper J-3 Cub

Alan Dieterle, Franklin, Tennessee

Built from a Great Planes kit in 1988, this 82-inch-span Clipped Wing J-3 Cub is powered by a DLE 20cc gas engine and is controlled by a Futaba 9 radio. Would you believe it's wearing its original MonoKote covering? A 32-year-old RC model shows good building and piloting; nicely done, Alan!



OV-10 Bronco

Christopher Gleason, New Fairfield, Connecticut

Built from Rich Uravitch plans, Christophers 109-inch-span Bronco is powered by two Evolution 62GX gas engines and uses Savox digital servos. It's also equipped with a BVM central controller and PowerBox Competition power supply with servo matching.

SEND IN YOUR PICTURES! *Model Airplane News* is your magazine, and we encourage reader participation. Email your high-resolution images to MAN@airage.com, with your contact information and details on your project. The "Pilot Project of the Month" winner will receive a *Model Airplane News* digital download of his or her choice.



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Extra 300LP

Wilson Roque, Curitiba, Brazil

This GoldWing RC Extra LP ARF has a wingspan of 91 inches and is powered by a DLE 55RA 55cc gas engine. It's covered in UltraCote and has a one-piece, airfoiled carbon-fiber landing gear. With those big ailerons it looks like a terrific 3D performer! Wilson uses a Graupner mz-32 radio and servos for control.

P-47 Thunderbolts

Frank Russo, West Islip, New York

Frank built this pair of Thunderbolts from Ziroli Giant Scale Plans and writes, "There's nothing better than two Jugs!" The P-47B is 41 pounds and is powered by a ZDZ 90 gas engine and equipped with Shindin retracts. The P-47D weighs 38 pounds and is powered by a DLE 85cc gas engine; it has Sierra retracts.





CrocoJet

Guy Motovich, Rehovot, Israel

Powered by a Jetcat P100RX turbine engine, this 102-span jet weighs 33 pounds and is controlled by a Futaba 12FG radio. Guy redesigned his original-design, 80cc-powered, fiberglass Crocodile to accommodate the turbine. He adds, "This plane is very stable in flight and landing."

De Havilland DHC-6 Twin Otter

Jim McQueen, Wading River, New York

John LaBelle designed and built this plane and after buying it, Jim restored, repainted, and installed DLE two 35-RA gas engines with 18x10 Xoar 3-blade props. The 130-inch-span model weighs 48 pounds and is fiberglassed and painted with Rustoleum with custom Red 5 Designs vinyl decals.



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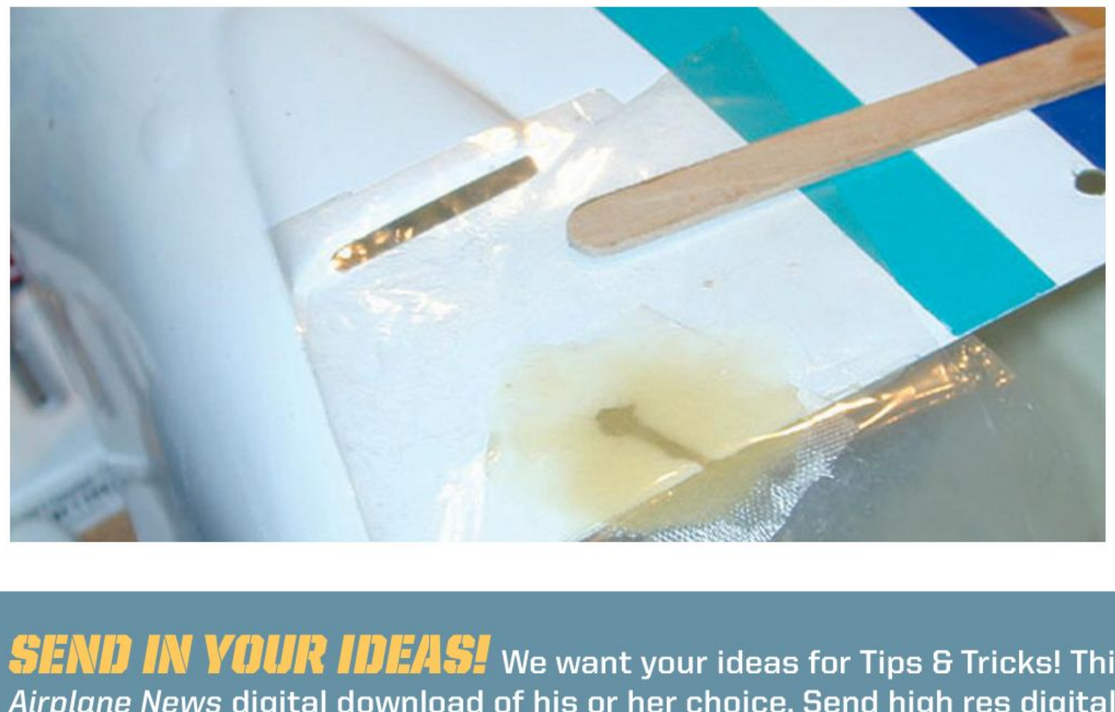
It never fails. You're working on your model and you lay the fuselage on the workbench only to gain some hangar rash, by placing it on top of some loose item you didn't see. In most shops, things like screws and servo arms are everywhere. The best way to prevent hangar rash is to keep your workbench clean, and the best way to do that is to store items in handy organizer boxes. Instead of throwing them in the trash, I recycle the plastic boxes that my servos come in and use them for storing my hardware. Most of them are stackable, with a recessed bottom for even more convenience.

Bob Perkins, Cherry Hill, New Jersey

No Sanding Required

Here's a nifty way to make quick work of molded fiberglass engine cowl repairs—and the technique eliminates sanding to boot. First clean and then remove the damaged portions of the cowl. Place some paper under the damaged part. Cut two layers of fiberglass cloth large enough to cover the repair area. Spread some 15-minute epoxy over the repair, and then place a piece of fiberglass over it and cover with a piece of MonoKote backing plastic. Now do the same to the underside of the repair. Use scrap balsa and squeeze the resin out from the damage. Allow the resin to cure and when you peel away the plastic, you'll have a smooth, no-sanding-required repair. Trim away the excess.

Mark D'Antonio, Terryville, Connecticut

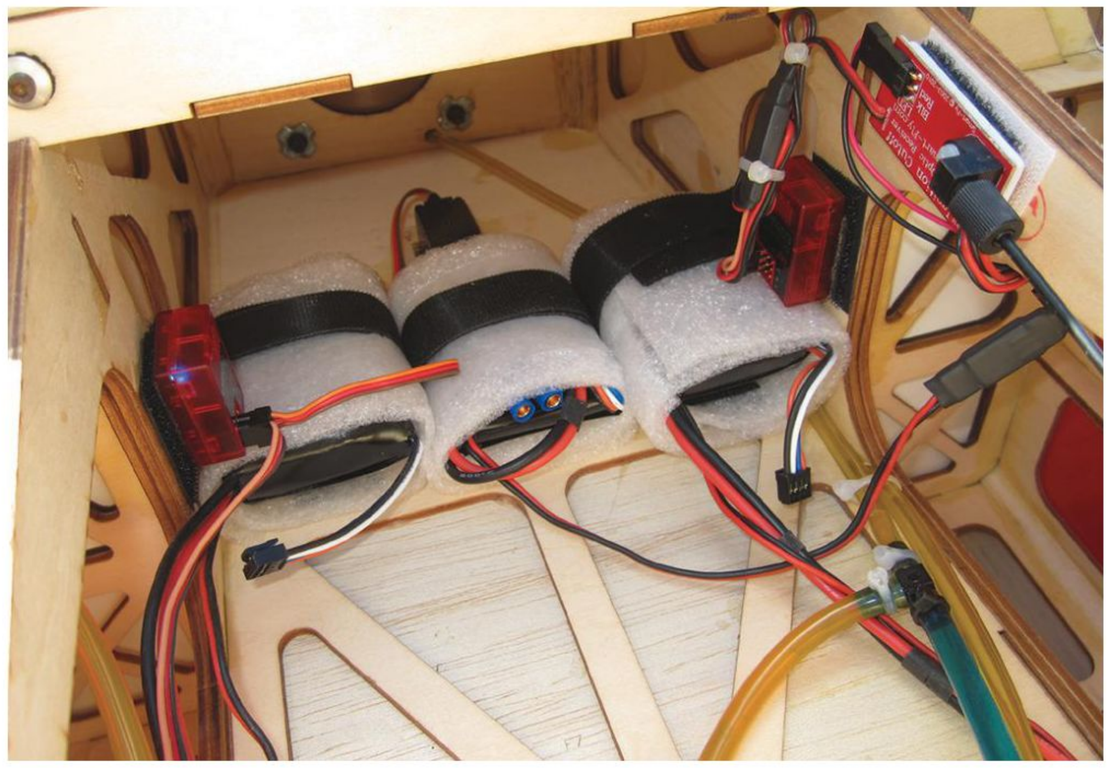


LiPo I.D.

There are plenty of articles about taking care of your battery packs and the proper way to charge them, but then what? I use a label writer and some Velcro tape to make identification tags for my packs. This way, I can quickly sort them out at the flying field. The packs already have Velcro on them to hold them to the airplane, so I make my tags so they are easy to remove and switch.

George Jennings, Prescott, Arizona





Secure Electronics

To secure my receivers and battery packs, I apply double-sided foam tape to the item before I wrap it with vibration isolation foam padding. Before I did this, my electronics often slid out from inside the foam padding—especially in gas-powered, giant-scale airplanes. The double-sided foam tape puts an end to the escaping electronics.

Kevin Siemonsen,
New Fairfield, Connecticut

SEND IN YOUR IDEAS! We want your ideas for Tips & Tricks! This month's winners will receive a *Model Airplane News* digital download of his or her choice. Send high res digital images, your name and address, and a brief description to MAN@airage.com.



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ELECTRIC JETS JOIN TOP GUN

Foamies Get Famous!

BY FRANK TIANO

The foam EDF jets that you see at flying fields everywhere will now be able to fly at future Top Gun Scale Invitationals.

So, I was sitting around one day a few weeks ago, just thinking about how quickly the hobby and sport of model aviation is evolving, and I wondered if there was any one thing I might be able to do to boost it up a bit. Then it hit me! We have Top Gun—a world-renowned event that hosts 160 or more entries and gets coverage from just about every media source on the planet. And what's newer or more exciting than the huge number of super looking and flying electric ducted-fan jets (EDFs) that have recently come onto the market? When you think of it, even from a short distance, these newer foamie models are difficult to tell apart from the fiberglass models. The color schemes are awesome, and some of the modified schemes can only be described as incredible.



This Freewing F-14 Tomcat Twin 80mm jet is a terrific example of a Top Gun EDF class model.



A Top Gun EDF class entry doesn't get easier than this E-flite F-16 Thunderbirds jet!

Full of excitement, I sat at my desk and fabricated some simple guidelines and rules for the best way to add an EDF jet class to Top Gun 2020, which will be held at Paradise Field in Lakeland, Florida on April 29 through May 3. I looked for some advice from a few people I know in the industry, trying to get a grip on what designs are available, which fly best, how large of an airframe is available, what size fans are being used, and the overall availability of support gadgets like speed controls, batteries, and other electronics. I reached out to some folks with a lot of EDF experience, including Richard Baker from RC Informer, Bob Curry (Top Gun chief static judge), Jerry McGhee (Imperial RC Club president), Ali Machinchy, Dustin Buescher, Steven Petrotto of Horizon Hobby, and of course, *Model Airplane News*. After some impromptu testing, they were able to supply me with data concerning flight times, battery choices, and maneuverability of the average scale-model EDF. I quickly came to realize that there are a great number of foamie models available—and some are fairly sophisticated. Putting together a series of maneuvers that could be completed on one battery was not so easy! Even with careful throttle management, flights approaching five minutes are rare. Arriving at a simple set of rules was a little easier, and here they are, in case you care to ask for an invitation in 2021. The EDF class for 2020 was filled just a few days after the announcement!

Two Classes: Stock and Modified

Model must be a commercially available product.

Aircraft must be a scale EDF warbird model of a full-size, manned, jet-powered aircraft.

Model's entire airframe must be constructed of molded foam (i.e., a "foamie").

Both EDF foamie classes are limited to a minimum fan diameter of 70 mm and a maximum of 105 mm.

"Stock" means box stock airframes; entrants may only alter or change the markings and may weather the surface finish.

No other changes may be made to the factory color scheme or outline.

What is allowed: beefed-up landing gear, larger batteries, different or modified fan unit/electronics.

Entrants in the Modified class may not modify the outline of the model as released by the manufacturer. However, any aspect of the surface detail or color scheme may be revised beyond the original factory finish. This includes overall color and markings, plus the addition of external surface details such as antennae, auxiliary fuel tanks, ordnance, lighting systems, afterburner, sound systems, cockpit/pilot detail, panel lines, and weathering. In other words, "Have at it!"

To qualify for Modified status (up to 25 static points may be awarded), the entrant must offer one color photograph or print (hard copy only) documenting the full-scale aircraft. (Digital screen documentation is not acceptable.) A data sheet will be provided for each entrant to fill out. Modified models will be lined up for concours judging during the Wednesday lunch break.

FLIGHT SCORING

Jerry McGhee and Bob Curry took it upon themselves to fly a variety of models, in all kinds of weather and wind conditions, to determine how many maneuvers could be completed in a typical flight. It was paramount that the jets retained enough battery to make a "go-around" if the runway wasn't available, or suddenly became unavailable when it was time to land. From their testing, and with some input from Ali Machinchy, we settled on a series of maneuvers that I feel does allow the pilot time to complete the schedule.

FLIGHT SCHEDULE

(Maneuvers, other than items 7 through 10, may be done in any order after takeoff)

1. Takeoff on runway centerline
2. Fast fly-by (clean/cruise)
3. Slow fly-by (dirty-slow)
4. Optional maneuver
5. Optional maneuver
6. Optional maneuver
7. Traffic pattern
8. Landing on runway centerline
9. Overall flight realism
10. Ten-point bonus to make scoring program work

All in all, every person who has looked over the rules agrees that this is feasible, so we are really excited about this new class. Best of all, it is going to show the thousands of spectators another aspect of aeromodelling, one that they may opt to get involved with, without spending a ton of dough! At the time I am writing this, Horizon Hobby/E-flite has stepped into the sponsorship role for practically the entire class. The Best Concours Award, which will be presented to one of the Modified entries, is compliments of *Model Airplane News*.

The EDF class will fly their rounds right after Pro-Am completes their rounds, on Wednesday, Thursday, and Friday. The awards will be given out at the Top Gun dinner on Saturday evening. Check out these beautiful photos, we have included just a few of the types that will compete at Top Gun 2020.


The FMS A-10 Thunderbolt II is another great choice for Top Gun EDF class competition.

18+

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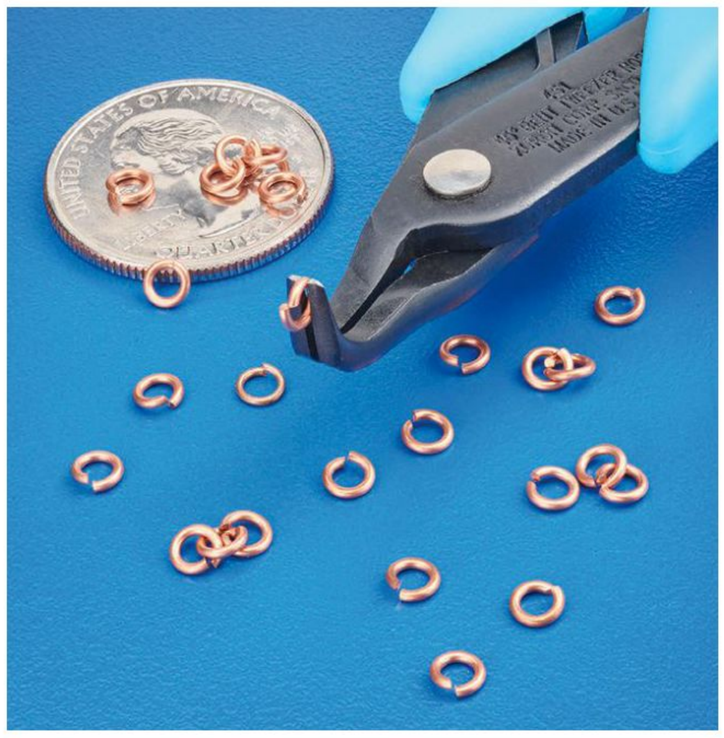
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Latest News & Gear



E-flite Twin Otter 1.2m

This 48-inch-span scale aircraft would be a perfect first twin for intermediate and experienced RC pilots. It's versatile, easy to fly, and is outfitted LED navigation and landing lights, flaps, and optional-use floats. Its one-piece, composite-reinforced wing is easy to install and remove with a thumbscrew and snap-in struts. The Twin Otter offers great STOL performance, and with the optional matching floats you can even fly off water. The Plug-N-Play version is $199.99; the BNF Basic with AS3X, SAFE, and floats is $229.99.
horizonhobby.com



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Flying Backseat in a Texan

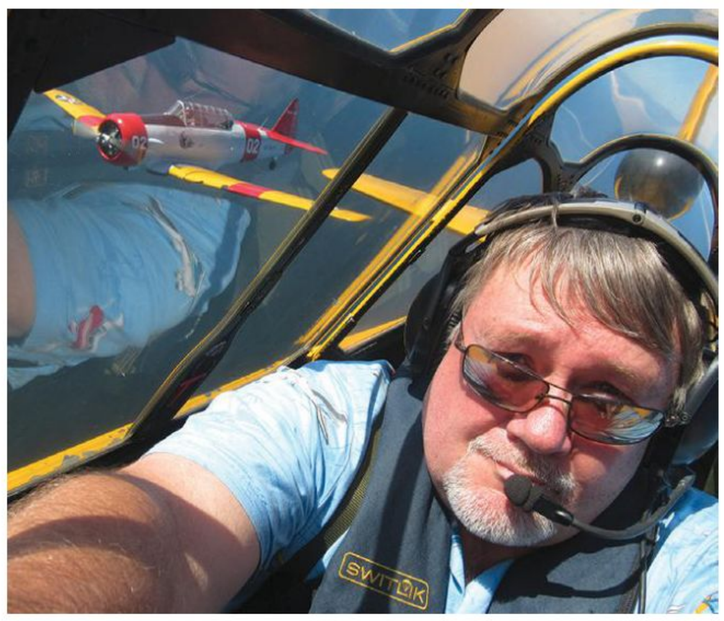
Recently, senior technical editor Gerry Yarrish was able to fly backseat with Nick Ziroli Jr. in his beautiful AT-6 Texan. It was during Nick's formation flight training, and being based out of the American Airpower Museum at the Republic Airport in Farmingdale, Long Island, the flight took place mainly over Long Island Sound. Nick flew training flight along with Craig Sampson and their half-hour flight included station keeping, close-in tight formations and maneuvers like 360-degree and 180-degree turns, tight 45-degree banking turns, as well as lazy eights and hard breakaways. After their series of training flights were successfully completed and logged in, Nick and Craig received their certifications (and their Texan Formation Patches) from Commanding Officer and Flight Leader of the GEICO Skytypers Airshow Team Larry Arken.

Gerry commented that even though it was a glorious day with blue skies and not a cloud in sight, at the end of the flight he was "Well wrung out!" While not overly aggressive, the maneuvers did produce some higher than normal Gs, and when they were over, Gerry was ready to land and start bragging about his experience.

Nick's Texan is beautifully maintained and he flies it and other museum warbirds regularly helping the museum give rides as part of their "Legends of Airpower" and the Jones Beach Air Show.



During Formation Flight training, Nick Ziroli flew in close with wingman Craig Sampson over the Long Island Sound.



Gerry flying backseat with Nick during a training flight. Craig's Texan can be seen in the background.



Here Nick (right) and Craig Sampson pose in front of Nick's 1942 AT-6 Texan.



Not many can wear this patch on their flight suit. Nick is very proud of his accomplishment.



MAN at the Movies

So, what do all scale RC airplane buffs have in common? Besides hiding the monthly credit card bills from their significant others, they all love wartime aviation movies. With the new long awaited "Top Gun Maverick" soon to arrive in theaters, we came up with our top 10 movies to add to your must-watch list. Tell us what your favorite aviation movie is on our Facebook page!

1. With its B-25 Mitchell bombers and the Doolittle Raiders, "30 Seconds Over Tokyo" (1944)
2. If you love the A-6 Intruders and Skyraiders, "Flight of the Intruder" (1991)
3. For lovers of the Spitfires and Bf 109s, "The Battle of Britain" (1969)
4. With terrific Zeros and P-40 Warhawks, "Tora, Tora, Tora!" (1970)
5. Who didn't fall for the Grumman F-14 Tomcat in "Top Gun" (1986)?
6. With its footage of the F-104 Starfighter, Bell X-1, and Mercury 7 Spacecraft, "The Right Stuff" (1983)
7. For the Hughes H-1 Racer, the Hughes XF-11 prototype reconnaissance aircraft, and the Spruce Goose, "The Aviator" (2004)
8. Showcasing the US Airways Airbus A320 miracle landing in the Hudson River, "Sully" (2016)
9. For its Zeros, Vals, Kates and Warhawks, "Pearl Harbor" (2001)
10. With its amazing CGI SBD Dauntless dive bombers and Betty Bombers, "Midway" (2019)





Old School Model Works Mambo

Engineered to be easy to build for the first time builder using precision, laser-cut, interlocking parts and built-in alignment jigs, the Mambo can be built straight and true with a minimum parts count. The 44-inch-span model is intended for a .15 to .30 glow engine or equivalent electric. The kit comes with full-sized rolled plans, printed construction manual, pre-bent main gear, clear plastic canopy, and hardware. It costs $129.95. **oldschoolmodels.com**



Jim Broberg: Hall of Fame Inductee

Congratulations to Jim Broberg, who has been elected to the AMA Model Aviation Hall of Fame. He joins his late father and DU-BRO Products founder, Dewey (Orv) Broberg, to become the only father/son Hall of Fame inductees. Pictured with Jim (at right) are Ralph Warner (left) and Don Anderson (center). These two Hall of Fame inductees are two of the four who wrote letters of recommendation to induct Jim. ✚

TrakPower TK955 Digital Soldering Station

A do-it-all soldering station

TEXT & PHOTOS BY KEVIN HETMANSKI

MODEL Airplane NEWS APPROVED



The settings of the iron can be changed using the up, down, and star pushbuttons on the face of the control unit. The security key provided must be inserted into the key slot on the left to be able to do so.



You get a chisel tip and a pencil tip with the iron, and it comes out of the box with the chisel tip installed.

At some point during your adventures in RC, you are going to have to solder something—and this is an area where the right tool for the job makes all the difference. You need a tool that can solder fat wires, yet be delicate enough to take care of the small details as well. That's where TrakPower and their $110 TK955 Digital Soldering Station come in. The TK955 is a durable digital unit that lets you change the temperature and comes with two tips. Let's take a closer at the TK955 and see what it has to offer.

FEATURES

The TrakPower TK955 includes the control unit, the soldering iron itself, and a stand for the iron. The control unit is 4.6 inches wide and 5.5 inches long and comes with a 5-foot-long power cord. The power switch is located on the right side of the unit, and venting on the top keeps it from overheating during use. The face of the base has three pushbuttons to set the temperature of the iron. This information is displayed on an easy-to-read, bright red digital screen. A slot just to the left of the display is used for key insertion, which allows you to make those changes. The face of the power unit also has a plug for the soldering iron. The cord for the iron is 3 1/2-feet long and has a twist lock to secure it to the control unit.

Two tips are included: a chisel tip and a pencil-style tip, and changing them is as easy as removing the retainer nut, sliding off the tip holder, and making the swap. The iron base is a sturdy cast metal piece with a convenient spot for the cleaning sponge and a handy piece of sheet metal just below the tip. The cleaning sponge has a hole in the center to direct any solder that has been cleaned off the tip into the collection area below.

TESTING

When I plugged in the extra-long power cord, I had a lot left over thanks to my small work space, so I folded up and secured the excess with a couple of wire ties. The cord for the iron fits snugly in its spot on the control unit. The twist lock on the control unit is convenient because it ensures the plug doesn't come out and it helps you fully seat the plug. I really like the fact that you can adjust the temperature of the iron, and that the temperature is displayed on the control unit. The security key locks in your selected temperature to prevent accidental changes while you're working, although I'm not a fan of having to use the key, which is thin and small so it's something that can easily be lost.

Once the security key is inserted, you can adjust the temperature by selecting each part of the number and adjust up or down. Or, you can simply scroll all the way through the numbers and press the "up" or "down" button to change them as a whole unit. I set the temperature to the high end of the range and then shut off the unit so it would completely cool. Turning it back on, it only took the iron 75 seconds to return to the previous temperature.

I started my test with the pencil tip and used it to solder some small wires and pieces of brass tube. Being able to lower the temp for the smaller pieces was great, and the small tip was perfect for the delicate wire. For the brass, I cranked the temp up and was able to make clean solder joints. I was able to get the heat to the point where I was able to work on a joint and not overheat the brass or melt a joint that was close by. Then I changed over to the chisel tip and used it to solder up a speed control and motor. The tip spread the heat evenly over the various surfaces and gave me very clean and strong solder joints.

BOTTOM LINE

The TrakPower TK955 is a high-quality piece that is perfect for hobby as well as maintenance that occasionally comes up around the house. The iron worked well for anything I had to solder, and I like the adjustable temperature that fits your needs. However, I am not a fan of having to insert a key to be able to change the temperature. Overall, the TrakPower TK955 is a superior unit and I'm happy to have it on my workbench. ✚

SOURCE

TrakPower; **horizonhobby.com**



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DREMEL LITE

Affordable precision from a new cordless rotary tool

BY MATT BOYD



MODEL Airplane NEWS APPROVED

Dremel is one of those brand names that has so throroughly dominated its market that it has become synonymous with the category itself—like Kleenex or Velcro. Although the word Dremel has been genericized to refer to any rotary tool, the ones with "Dremel" officially stenciled on the side have a reputation for quality that has earned them that privileged position. If you spend any time at all cutting, grinding, polishing, or etching small parts then you're already using a Dremel (official or otherwise) but for intricate work a standard rotary tool can be a bit of overkill, and being tethered by a power cord can be cumbersome. Dremel has a new model that addresses both, and it comes in at the surprisingly affordable price of just $50. They call it the Dremel Lite, and it is aimed squarely at the craft and hobby market so we figured we'd give one a try.

True to its name, the unit is indeed light. It's slightly smaller than your typical Dremel, with a squared off cross-section covered in soft-touch rubber grips. It includes a standard 1/8-inch collet, and can accept anything down to 1/32-inch. It's cordless too, powered by an onboard 4V Lithium-ion battery that is recharged using a standard micro USB charger (like your cell phone), which is included. Also included is a small box of 10 accessories (well, nine plus the box itself.) Common attachments such as a sanding drum, small and large felt polishing wheels with a threaded mandrel, a cone-shaped grinding stone, a 1/16-inch engraving cutter, a nylon deburring brush, plus a small tub of polishing compound and a collet wrench. This last is made largely irrelevant by a nifty feature called the EZ twist nose cap. The housing just below the collet unscrews and can be slid up to serve as a "wrench" to quickly loosen or tighten the collet without the need of a separate tool. All of those accessories plus the charger plug fit in the box, but annoyingly the cord that plugs into the charger does not.



The built-in 4V lithium-ion battery is charged with a conventional micro USB charger—just like your mobile device.

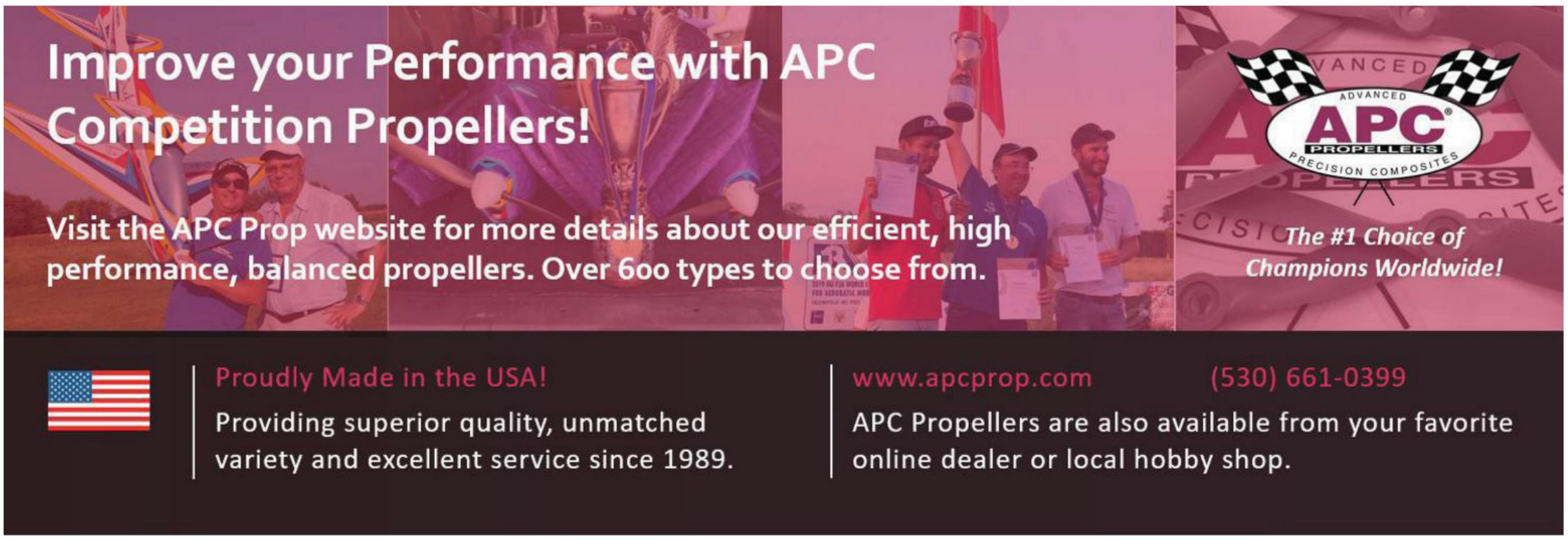


The Lite comes with a box of the most common attachments. The EZ twist nose cap unscrews and can be used to tighten or loosen the collet, making the wrench unnecessary.

As for actually using the Lite, its size, weight and cordless arrangement make it quite nimble. You can hold it conventionally or like a pencil with relative ease. Since it runs on just 4 volts it has less torque than a full-size Dremel, but for most applications its power is more than sufficient. It offers four fixed rpm settings rather than a continuously variable-speed switch, which is slightly limiting, but the intervals cover most needs. I wasn't sure how I was going to like the USB charger. A full charge takes approximately two hours and 45 minutes according to the manual but it did not take that long for me. And I like the fact that any of my roughly one zillion mobile chargers can juice up the Lite. The Lite also accepts the attachments from my other rotary tools. Those two details make it impressively versatile. If I were to change one thing about the Lite it would be to make the front of the housing narrower so it could get into tighter spaces that precision work sometimes requires, but other than that the Lite is just right for the job. ✚

SOURCE

Dremel.com



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ON THE ROAD

TEXT AND PHOTOS BY PAUL STENBERG

34TH ANNUAL LONDON BRIDGE SEAPLANE CLASSIC

A premier float plane event

Monty Welch's Coast Guard Albatros is truly a family project. The electric-powered flying boat was built by his wife Linda.



Each November, when much of North America has seen the first frost of the upcoming winter, there is one group of RC'ers who never worry about the snow. Members of the Desert Hawks RC Club of Lake Havasu City, Arizona are renowned for their love of seaplanes and offshore flying. With temps in the 70s and 80s, what better way to forget about the winter than to take part in this exciting and very specialized RC event at Windsor Beach State Park. The Annual London Bridge Seaplane Classic on the shores of Lake Havasu is considered by many to be the largest float fly in the country. And this year's event did not disappoint. Unlike the 2018 Classic, which was hampered by severe winds and 6- to 15-inch breakers on the shore, this year's attendees enjoyed perfect weather conditions for all three days of the event. Those who made their annual trek were extremely happy with the amount of flying that took place.

ON THE SHORELINE

The first day, Friday, dawned bright and sunny with almost no wind, and all six flightline pilots were eager to fly. The variety of aircraft is always impressive at the Classic. Regulars at the event describe it as being a pageant of aerial high-jinks with few equals. Hobbyists travel from all over the country to gather on the shoreline and showcase their scale seaplanes—to the great delight of the spectators. This year there were about 100 floatplanes of all sizes and shapes on display. The most common models were Cubs and Beavers.

As a counterpoint to the many floatplanes, there were several flying boat designs, such as the Grumman Widgeon and other sport scale designs.

The Desert Hawks RC Club always puts on an excellent show for the weekend. Each registered pilot gets a T-shirt, a commemorative event plaque, and two tickets for the Pilot Raffle. Zap Glue and House of Balsa were sponsors this year, so look for their products at your hobby shop and support them. The ample parking area at Windsor Beach serves as the main campground for many of the pilots and their RVs. The Desert Hawks provide a shuttle service to carry all the pilots, planes, and support equipment from the RV campground to the beach. They also man two recovery boats on the lake for those few unfortunate incidents or deadstick landings away from shore.

There really is so much to attract people to this event, including the stunning scenery, with the Arizona mountains in the background. Evenings at the Classic are just as awesome, with night flying in the grassy areas of the park and the aroma of barbeque dinners filling the air as groups gather to tell their stories and share their modeling ideas. For those interested in a little neon light action, a shuttle takes folks who are feeling lucky to a casino on the California side of the lake. And would you believe the original world-famous London Bridge crosses over Lake Havasu? The city's founder actually brought it over from London, England in 1968 as a tourist attraction.

Whether you have to walk, crawl, drive, or fly, gather up your favorite aircraft, add a set of floats and get to Lake Havasu City's 35th edition of the London Bridge Seaplane Classic. You will not be disappointed. What better way to spend a weekend than combining the sun, beach, RC flying, and new friends? For 2020 dates and more, go to deserthawksrc.org.


1


2



3


4



5













1 Marjoe Bunney of Las Vegas built this Sopwith Tabloid in 1998. It has a 108-inch span, weighs 46 pounds, and is powered by a Quadra Q-100.

2 An electric-powered and lightweight Flyzone Tidewater shown on its takeoff run.

3 Rudy Caceres makes another successful launch from the shore of Lake Havasu.

4 Giant-scale Piper Cubs are extremely popular for float planes. Lead flier Dave Sullivan and team put on a great show. Full-size Cub pilots could only dream that their aircraft could fly the maneuvers that Dave and his team could perform.

5 You never know what will show up. Here's a beautiful 40 percent scale Decathlon equipped with floats.

6 Just about anything can be equipped with floats and flown at this event. Unlike the previous year, the lake was as smooth as glass.

7 The original London Bridge was moved from London, England to Lake Havasu City 50 years ago in 1968. It has become a landmark for the city.

8 The event also had a very popular Pilot Raffle with plenty of prizes supplied by the sponsors.

9 Author Paul Stenberg poses for the camera between flights.

10 The beach was crowded all three days and everyone had a great time.

11 One of the many Cubs in attendance. This one is 1/4-scale with a 109-inch wingspan.

30th Anniversary Schneider Cup Re-enactment



Bob Heitkamp built this 1/3-scale 1927 Supermarine S-5 and Dave Sullivan flew it at the reunion. It was also one of three Schneider Cup racers.

The 2019 Classic was also the 30th anniversary of the first of these re-enactments. A special display tent was included to house several of the Schneider Cup racers at this year's gathering. Also in the tent was a comprehensive exhibit of the full-size Schneider Cup history and memorabilia. For years, the Desert Hawks have supported the historic Schneider Cup racers, and have even held four races in the past. The Desert Hawks and event chairman Bob Martin started the event. The first re-enactment was featured in the March 1990 issue of *Model Airplane News*, as reported by John Sullivan. The 1989 Schneider meet was a combination of racing and fun flying. Both static judging and speed trials were held the day before the three-day competition.

The event saw a total of 21 entrants, all world-class giant scale. Each pilot was given three chances of upwind and downwind runs and, unfortunately, several did not finish. The top scale finisher was a 1/3-scale 1927 Supermarine S-5 built by Bob Heitkamp. Bob earned an impressive combined score of 86 out of 100 points. Ken Bundt won the speed run with his 1/4-scale Supermarine S-6B. +



This photo, taken at the 1989 Re-enactment, shows the 1927 Supermarine S-5 built by Bob Heitkamp. It took top honors in static scale judging. (Photo courtesy of Bob Martin)



This Curtis R3C-2 is one of the Schneider Cup racers that also competed at the first annual re-enactment. The full-scale racer was flown by Jimmy Doolittle in the 1925 Schneider Cup race. The model was built by the team of Larry Tate, Jerry Lieche, John Hanks, and Bob Martin in 1988. It has an 88-inch wingspan, weighs 39 pounds and is powered by a Sachs 4.2ci gas engine.



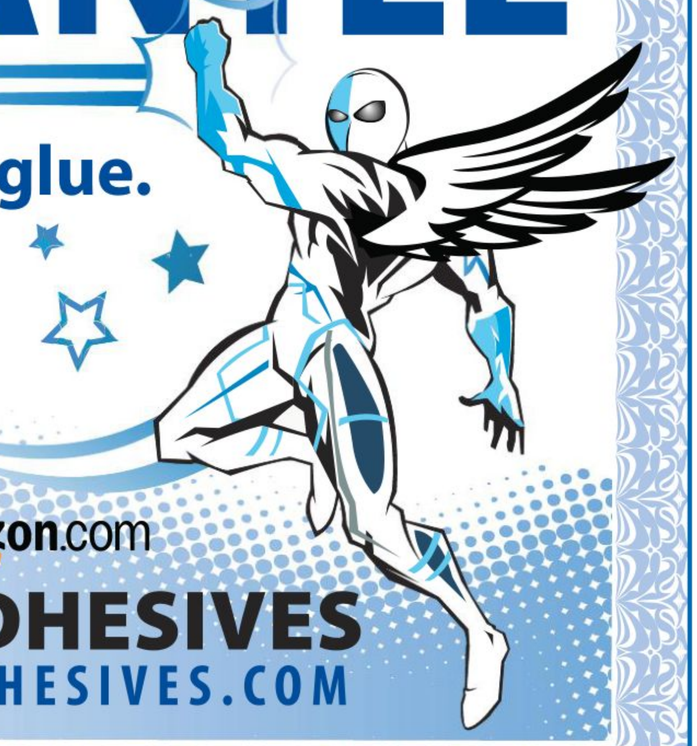
Some of the promotional materials for the 30th reunion of the Schneider Cup re-enactment series at Lake Havasu.



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FIELD & BENCH
REPORT

BY GERRY YARRISH | PHOTOS BY MATT BOYD & GERRY YARRISH

Hobby Zone/Arrows RC

BIGFOOT

Out-of-the-ordinary bush plane with great performance



I have flown a few of the new sport flyers from Arrows RC and have found them all to be exceptional performers. Intended as a “do-it-all” multipurpose sport flyer, the Bigfoot has sturdy good looks, resembling a modern-day bush plane. Obviously, it gets its name from its big tundra tires, which open up options for all sorts of grass flying fields. Whether you fly at a local park or a school’s athletic field, when you get the Bigfoot into the air, you’ll quickly find that it has trainer-like stability and is easy to maneuver. With its functional flaps you can fly low and slow, and it even has molded vortex generators on the wing so there is a bit of short takeoff and landing (STOL) performance available as well.



The Bigfoot is a medium-size sport flyer you can keep in your car for lunchtime flying fun.

With excellent tracking and slow-speed performance, simply put, the Bigfoot is just a great flying airplane.

AT A GLANCE

MODEL
Bigfoot 1300 mm PNP

MANUFACTURER
Arrows RC (arrowsrc.com)

DISTRIBUTOR
Horizon Hobby (horizonhobby.com)

WINGSPAN
51.1 in.

PILOT SKILL LEVEL
Beginner to intermediate

ASSEMBLY TIME
10 to 15 minutes

RADIO REQ'D
6-channel

POWER REQ'D
3S 2200mAh to 3200mah
3S 25C LiPo

PRICE
$179.99

HITS

- Good scale looks
- Functional flaps
- LED lighting system
- Excellent flight performance

MISSES

- Paint around battery hatch flaked off



With its big tundra tires, the Bigfoot can fly from any convenient grass field.



The controls are crisp, giving the Bigfoot excellent response and handling.



Coming in for landing with flaps deployed, the Bigfoot needs just a little up-elevator correction.

UNIQUE FEATURES

Molded from rugged EPO foam, the Bigfoot comes with everything needed to assemble the model, including two wing panels that slide onto a carbon fiber spar tube, landing gear and tundra tires, and screw-on tail surfaces. In fact, all that's needed to put the Bigfoot together are nine screws: four to attach the wing, two for the tail surfaces, and three for the main landing gear. Lift struts are also included, which are secured to the fuselage with wire clips that look a lot like RC car body clips. I especially like the pre-installed landing, navigation, and strobe lights.

The Bigfoot is a plug and play airplane, and requires a 6-channel transmitter and receiver, and a 3S 2200mAh to 3S 3200mAh 25C LiPo flight pack battery to make it flight ready. It comes with the motor, speed control, and all six 9-gram servos, all factory-installed. The aileron and flap servo linkage comes installed, while you'll have to install the rudder and elevator linkages yourself. An 11x7 plastic propeller and spinner are also included. It takes only a few minutes to put everything together. The only thing you will need to glue is the scale radio antenna, which fits into a recess in the wing. Because it is EPO foam, you can use regular medium Zap CA adhesive.

IN THE AIR

For our first flight, editor Matt Boyd and I headed to the local soccer field with a couple of battery packs. With its big tundra tires, the Bigfoot had absolutely no trouble at all taxiing into position and taking off. Using the 2200mAh pack, the model took only about 10 to 15 feet to become airborne. It was just a bit breezy, but the Bigfoot had no problem gaining altitude in the windy conditions.

GENERAL FLIGHT PERFORMANCE

Stability: Having a fairly long tail moment, the Bigfoot is nice and stable—not at all twitchy. All the control surfaces provide excellent flight response.

Tracking: The Bigfoot tracks equally well in both level flight and during turns and banks. Even while flown at low rates, all controls feel solid.

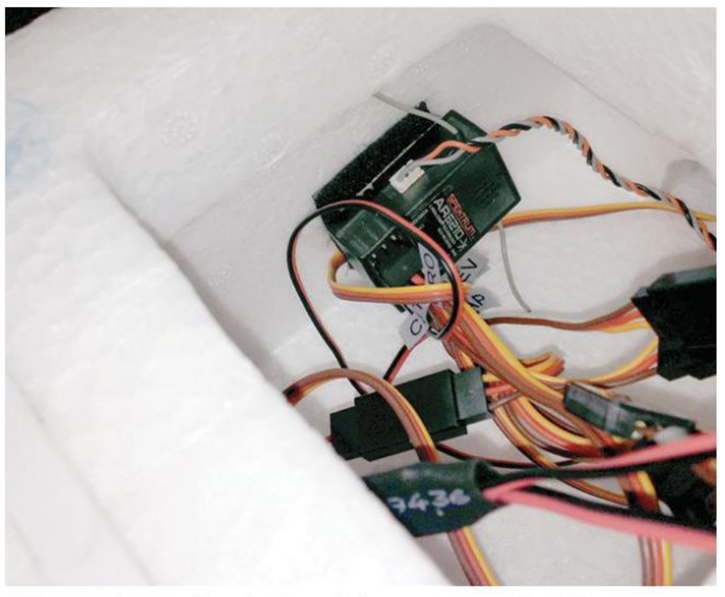
Aerobatics: With a fully charged battery pack, the Bigfoot is capable of any sport aerobatics you care to try. Power is more than adequate for loops and rolls from level flight,



The spinner and propeller have to be installed, but it takes only a few seconds. The supplied propeller provides excellent flight performance.



The LED navigation and landing lights that come installed are a great bonus.



All you have to do is add your own battery pack and receiver. I used the Spektrum AR6210 affixed to the side of the radio compartment with a piece of Velcro.

and you can even flip it over on its back for good inverted flight control. Just a little down-elevator is needed to maintain altitude.

Stall and glide performance: At altitude, I throttled back and started feeding in up-elevator to maintain level flight. The Bigfoot slowed down and remained responsive up to the stall. It has a mild, nose-down, straight-ahead break, which is very easy to recover from by adding power and releasing the up-elevator input. The Bigfoot also has nice spin performance and predictable recovery.

PILOT DEBRIEFING

Over all, the Bigfoot is a great flying sport scale performer, and with its flaps controlled with a three-position switch, you can really have fun with steep approaches. Very little trim correction is needed with the flaps deployed, and it is really easy to flare and do sport landings exactly where you want them. Half flaps is perfect for all-around slow flight and takeoffs, while you can crank in full flaps for impressive steep approaches for really short runouts!

TEXAS TAILDRAGGER

The Cessna 150 is one of the most popular small airplanes ever produced, and the very first 150 flew in 1958. A successor to the Cessna 140 tail-dragger, the most obvious difference was that the 150 had tricycle gear, making it easier to learn to fly with than the tailwheel design of the 140. While many thousands of pilots learned to fly in the 150, many pilots longed for the tail-dragger experience of the Cessna 140. This brought about the Texas Taildragger modification as a retrofit to the 150M in the mid-1980s. To make the airplane even better, the original Continental O-200 100hp engine was often upgraded to the Lycoming O-320 150hp engine, which dramatically improved climb performance.

In a nutshell, the modification removed the nose gear and its steering linkages, the main gear was moved several feet forward to just under the lift strut attachment points, and the fuselage below the rudder was reinforced to accept a tailwheel assembly.



(Photo courtesy of Ken Stoltzfus.)

The Cessna 150 with the Texas Taildragger modification is a very popular choice for bush pilots.

GEAR USED

RADIO
Spektrum DX9 with AR6210 Spektrum receiver (spektrumrc.com); six 9-gram servos (factory installed)

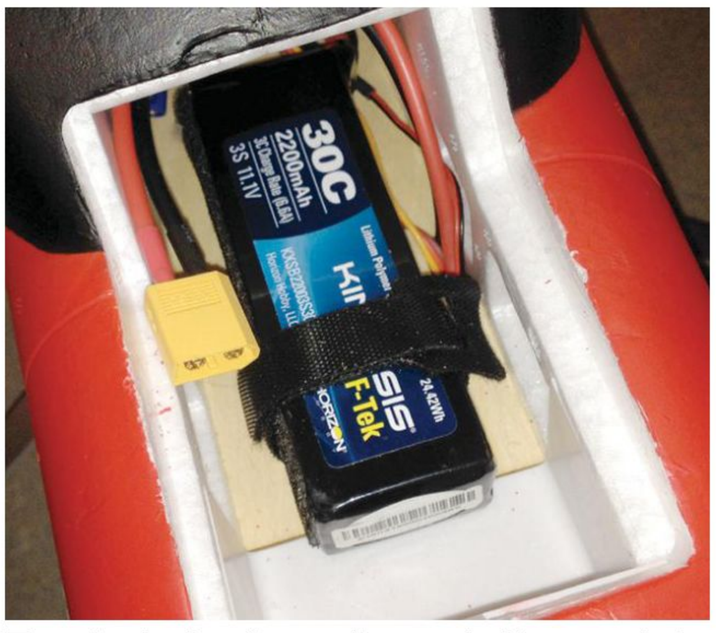
MOTOR
3536-850kV brushless outrunner and 30-amp controller (installed)

BATTERY
Kinexsis 2200mAh 3s 11.1v LiPo (horizonhobby.com)

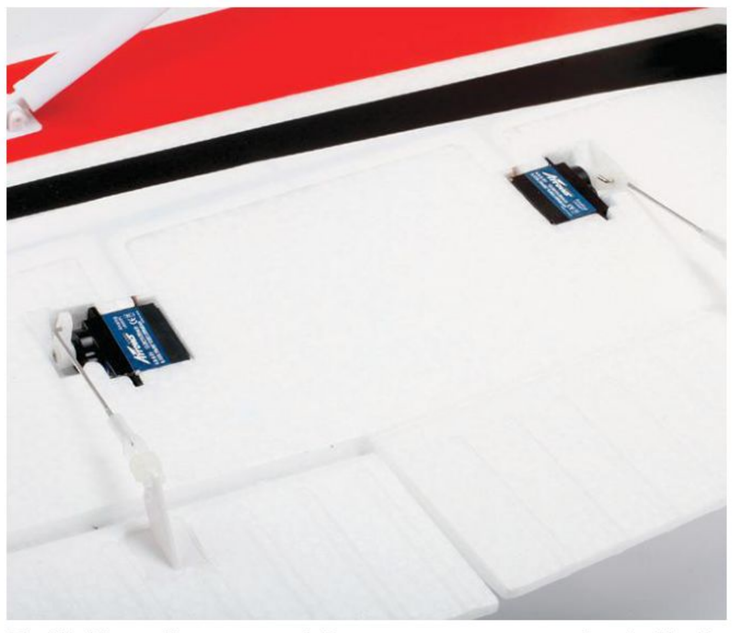
PROPELLER
11 x 7 (included)

BOTTOM LINE

The Bigfoot is an all-around great flying sport model that can be flown from any grass field. While we were test-flying the model, several glider pilots were at the field as well. In no time they came over to check out our test model. They were impressed with its size and performance, and they thought it would make an excellent tow plane for small to medium gliders. Check off another box for this multitasking bush plane! ±



There's plenty of room for any battery pack. I used a Kinexsis 2200mAh LiPo pack with an adaptor to match the speed control's XT60 connector plug.



Both the aileron and flap servos come installed in the wing with the linkage attached.



The rudder and elevator servos are located in the tail.

FEATURE

TEXT & PHOTOS BY THE *MODEL AIRPLANE NEWS* CREW

FIRST FLIGHT SUCCESS

Expert tips make it easy to earn your RC wings



There's nothing like the feeling of making your first solo flight with an RC airplane. With practice and some help from an experienced instructor, you'll earn your wings in no time.

When you first see someone flying a beautiful scale airplane, whether it is a precision aerobatic plane or a giant-scale warbird, it really gets the blood flowing! You might think you would never be able to do it, but that would be incorrect. All that separates you from those RC experts is experience. Learning to build a model airplane and then flying it simply requires some guidance and practice. It's really not all that hard once you put your mind to it.

With so many easy-to-build and fly trainers and sport planes available now, this is a perfect time to get started. From electric-powered park flyers to engine-powered sport airplanes, the amount of bench work is minimal. Many model airplanes even come out of the box completely ready to fly without any assembly required. "Plug and play" is common in the hobby today, making it very easy to be successful. You'll find that the hardest part is deciding which model plane and radio system to choose. After that, you'll need a plan for getting your RC wings. Let's take a look at some of the basic techniques needed to be a successful RC pilot.



There is a lot to learn along the way. Check out a local hobby shop, and find other modelers and a local club.

GETTING STARTED

If you're the social type who enjoys talking about airplanes as much as learning how to fly them, then joining a local club is the way to go. Most clubs have meetings every month, and they provide the opportunity to get together with other like-minded folks. It's like group therapy for the aviation-minded. Most if not all RC clubs have a permanent flying field, and considering all the benefits members receive, the annual membership costs are relatively inexpensive. Being a club member, you'll quickly find out where local instructors tend to gather. Search out a local hobby shop as well, as this is where you'll find your airplane and other supplies. Overall, the club is a great way to make new friends and to find useful hobby resources.

Reading *Model Airplane News* is also a perfect place to start.

GROUND SCHOOL

Yes, a lot can be learned with the use of a flight simulator program like RealFlight, but nothing speeds your progress more than one-on-one time with an RC instructor. Having a pro to help you avoid those first few common mistakes will not only speed your flight training, but also might keep you from having to buy two, or even three, replacement trainer planes before you solo.

You can develop your own training plan, with each of your flights having a specific goal. Building on what you've learned from previous flights allows you to move on after you master the basics. Learn to taxi around first, then, after you and your instructor are comfortable with your control of the plane on the ground, you can progress to the takeoff, straight and level flight, turning left and right, and flying at slow airspeeds. While on the ground, you'll learn



Flight simulators like the RealFlight will help you get accustomed to flying RC models, but a simulator is not a substitute for one-on-one instructor time at the flying field.



With an experienced modeler as your instructor, you will learn much more quickly than if you try it all on your own.

BUDDY BOX



Today's buddy box systems are wireless, eliminating the old cable that connected the transmitters. Using a buddy box system is considered the best way to learn how to fly RC.

By far, the best way to learn how to fly RC is with a system called a buddy box. Older buddy box systems use a cable connected between the instructor's transmitter and the student's radio, but newer systems operate wirelessly. The buddy box allows the instructor to take control of your airplane simply by releasing a spring-loaded switch. Should you get into trouble, your instructor can quickly correct the plane and then give control back to you. Available from many radio manufacturers, buddy box training systems are often available from RC airplane clubs.

Until you are signed off for solo RC flight, the instructor will control the model during takeoff and then will fly it up to a safe altitude before transferring flight control over to you. Compared to using a single radio (where an instructor has to take the radio from the student's hands to regain control), the buddy box system is much easier and safer.

how to steer with the rudder and how to work the throttle smoothly. After you get the hang of flying, you can start to fly at lower altitudes so you get used to flying in the traffic pattern. Then, you'll begin working on your landing approaches. Throughout the process, remember that this is all about having fun! If you begin to feel stressed, let your instructor take over. You have to take a lot of small steps before you can run. A good tip is to always be aware of the wind direction and how it affects your airplane.

FIRST FLIGHT

As you gain experience and start to anticipate your model's responses and needed corrections, your instructor will give you more and more stick time until you're ready to solo. There is nothing more exciting than hearing your instructor say, "Go ahead, you take off this time!"

Takeoffs are actually quite easy. Most trainers and sport planes are designed to be stable, and when you fully advance the throttle, they will want to climb almost by themselves. Concentrate on maintaining a straight path, and apply the throttle slowly. If the plane veers off course, correct with a touch of rudder (usually, a little right correction is needed to keep going straight down the runway). As the model gets light on its wheels, pull back slightly on the elevator stick; the model's nose will come up, and the plane will become airborne. Keep the wings level with small inputs of aileron, and let the model climb out at a shallow angle. Do not let the model jump off the ground at a steep angle. If that happens, don't panic—just ease off the elevator stick. If necessary, apply a little down (push the stick forward slightly), to keep the model on a steady, shallow climb angle.

You will learn to fly the traffic pattern, and as you improve, your instructor will have you fly at lower altitudes until he or she is comfortable with your command of the plane. Without your even being aware that it's happening, a good instructor will talk you through the landing pattern and get you lined up for your first few attempts. You will be reminded to control the airspeed with your elevator (model nose high or low), and adjust your descent rate with the throttle. Once you've nailed that very first landing, it will only be a matter of time before you solo and can fly your airplane unassisted.

A practical choice for a first model is a sturdy trainer/sport plane like a "stick." Stick-type models are available from several manufacturers and they come in various sizes. You can find them with glow power or electric power systems.

Molded-foam powered glider designs also make great trainers. The Sky Scout from Hitec, with its pusher prop setup is a very rugged design that helps prevent damaged propellers during rough landings.

E-flite's Apprentice S is another excellent trainer. Available as a ready-to-fly with the radio system included, it also features AS3X flight stabilization and SAFE technology that makes it almost crash proof.

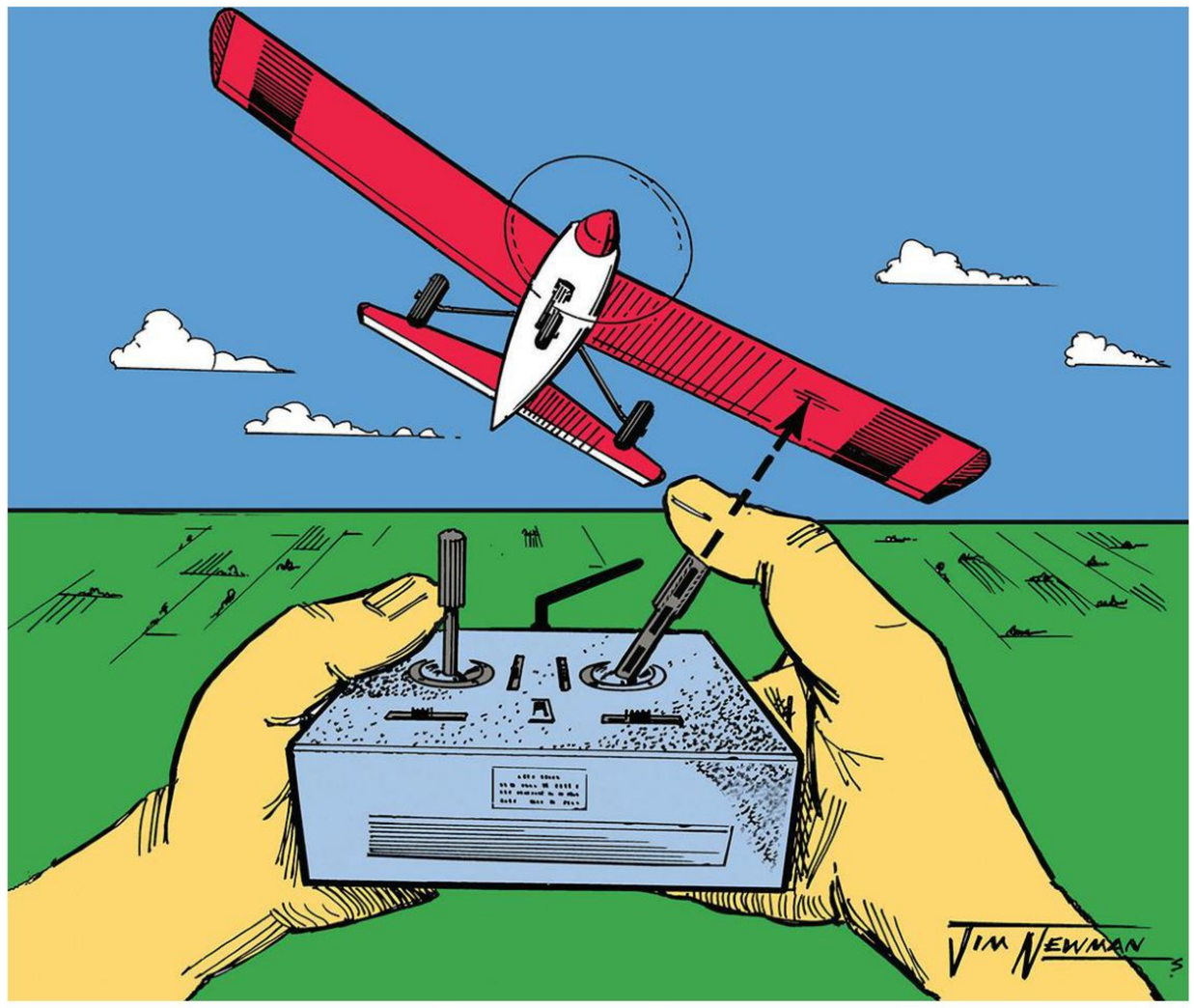
The Bigfoot sport plane from Arrows RC (reviewed in this issue) makes an excellent trainer. Even with its tail-dragger configuration, it is very easy to control on the ground.

RADIO GEAR

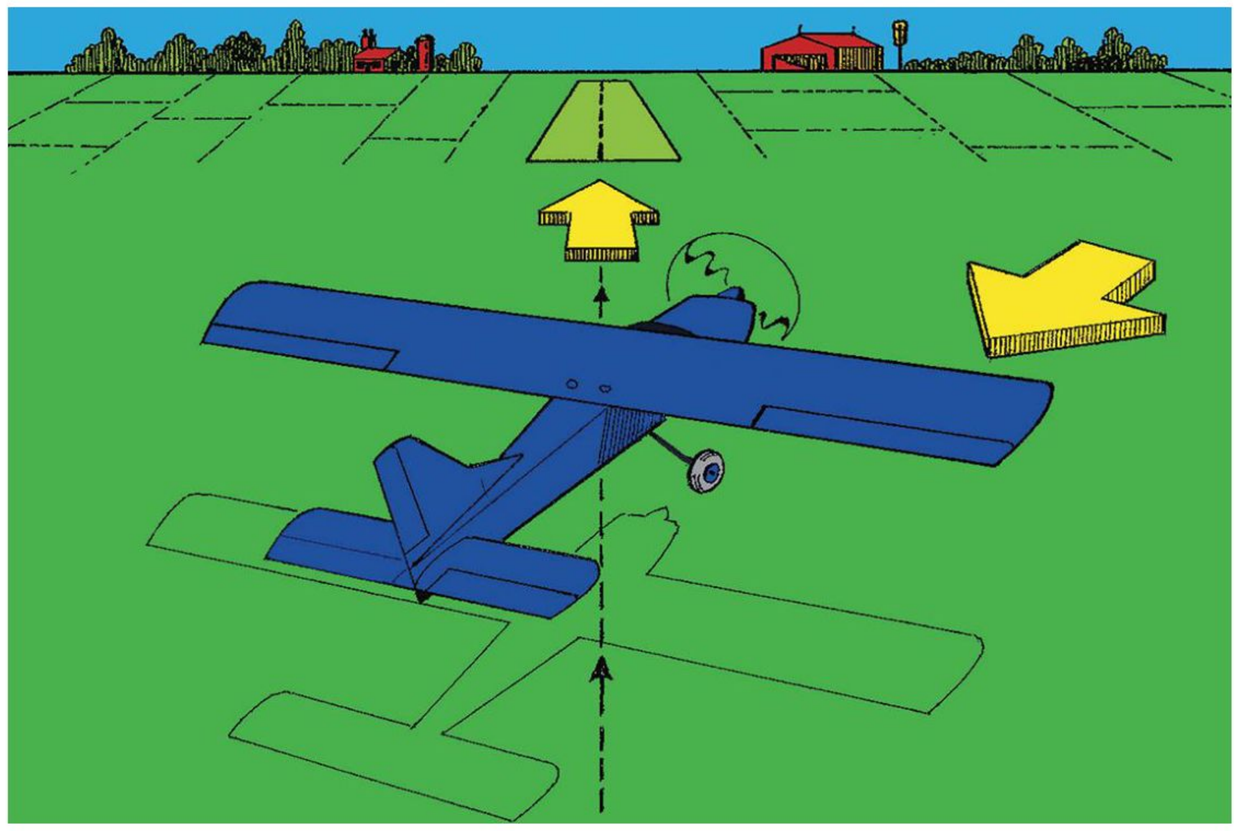


For the beginner, it's best to start with a ready-to-fly (RTF) airplane that comes complete in a package including the radio and everything you'll need to fly your plane. This guarantees that everything will work the way it is supposed to. If, however, you are looking to stay in the hobby for the long haul, the purchase of a standalone radio system is a good investment.

A standard full-house aileron-equipped plane requires four channels to operate. The basic controls are the throttle, rudder, elevator, and the ailerons. Once past the basics, you'll want to think about adding more functions, such as flaps and possibly retractable landing gear, so a 6-channel radio system gives you flexibility for future development. Programmable computer radios are also very popular because of the amount of adjustments and control mixing you can do with the various channels. The basic features include dual rates and exponential, servo reversing, servo-travel adjustment, and basic mixing. Computer radios today are very affordable, so consider them an investment for your future needs. Today, most radios come without servos, so when you buy your radio separately, you'll need to consider the size, number, and type of servos your particular model needs. Your instructor can help you get properly set up.



A trick to keeping your wings level when the model is facing toward you is to move your aileron stick as shown in this illustration. This is called "propping up the lower wing panel."



After you learn the basics, you will want to continue your flight training so you can learn more advanced techniques, such as compensating for crosswinds (large arrow). Here you see the model crabbing into the wind to keep its flight path (course) lined up with the runway.

BOTTOM LINE

Like anything else, to excel at flying you'll need to practice and stay with it. It is an investment of time and effort. In the end, the satisfaction you'll feel when you take off and land by yourself will make it all well worth the effort. You'll be a properly trained RC pilot with the whole world of RC aviation to enjoy. Whether you want to fly warbirds, racers, or aerobatic airplanes, training and the mastery of requisite skills is necessary to be successful. ✢

FIELD & BENCH
REPORT

TEXT & PHOTOS BY ANDREW GRIFFITH

Hangar 9/Horizon Hobby

KI-43 OSCAR 50-60CC ARF

A giant-scale warbird with the manners of a well-behaved sport plane



Often mistaken for the Mitsubishi A6M Zero, the Nakajima Ki-43 Hayabusa (translated: Peregrine Falcon) was operated by the Imperial Japanese Army Airforce. While similar in design, the Zero was operated by Imperial Navy pilots and differed in several design points and operational areas.

"Oscar" was a code name assigned to the Hayabusa by Allied Forces. The Ki-43 was lightweight, fast, nimble, and easy to fly, and it had a distinct performance advantage over most of the Allied fighters because of its lightweight construction. The downside of saving weight however, meant that there was little armor to protect the pilot and vital systems, and a lack of self-sealing fuel tanks brought many Oscars down with just a few hits from heavily armed Hellcats and Corsairs that could absorb much more battle damage.

AT A GLANCE

MODEL
Ki-43 Oscar 60cc ARF Combo w/ landing gear and DLE-61

MANUFACTURER
Hangar 9 (hangar-9.com)

DISTRIBUTOR
Horizon Hobby (horizonhobby.com)

TYPE
Giant-scale ARF

WINGSPAN
88 in.

PILOT SKILL LEVEL
intermediate

ASSEMBLY TIME
15 hours

RADIO REQ'D
8-channel

POWER REQ'D
50 to 60cc gas or Rimfire 65cc electric

PRICE
$899.99 (ARF only); $1,599.99 (ARF, engine, air retract combo as reviewed)

HITS

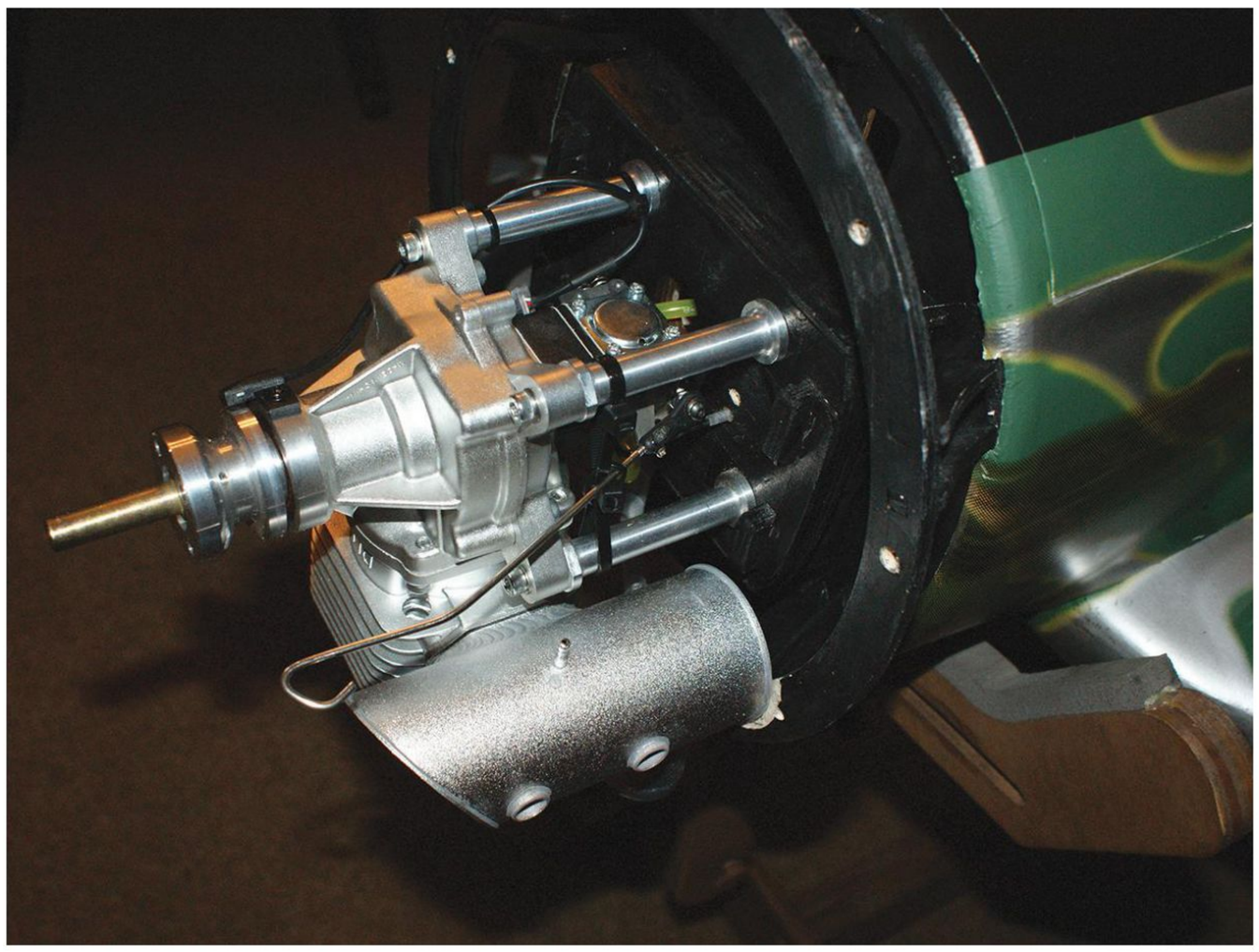
- Unique scheme with printed covering
- Sport plane performance
- Lots of power system options

MISSES

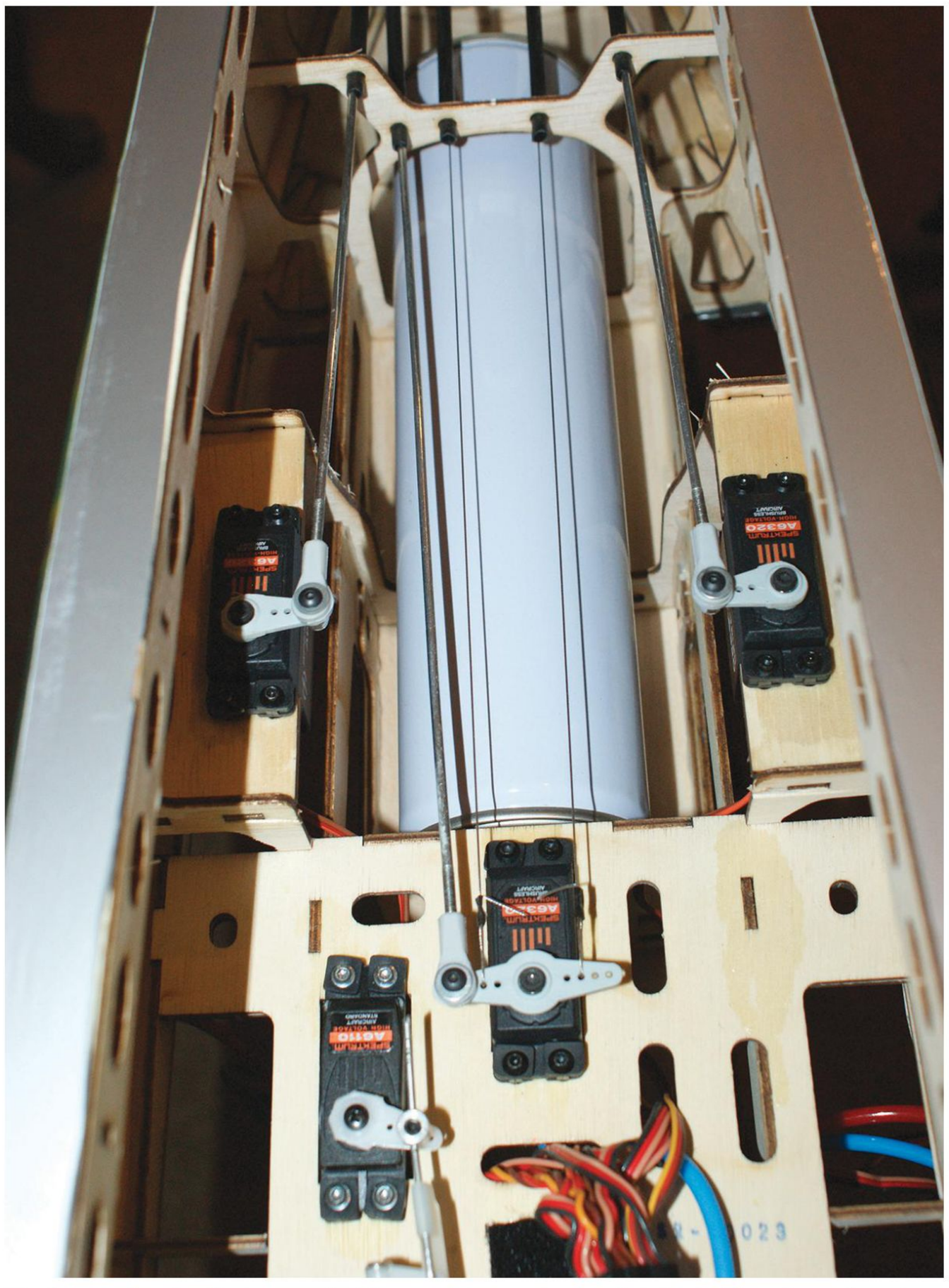
- Aileron hinge holes are not a snug fit



Reviewer Andrew Griffith looks pleased with this giant-scale addition to his hangar.



The DLE 61 engine with stock muffler fits well inside the cowl and is a great power match for the Oscar.



The large retract cylinders are fed from a generously sized air tank. Also shown here is the rudder servo with the pull/pull connections used for the tailwheel steering.

Hangar 9 recently introduced a 60cc version of the Oscar, which is available in a variety of combinations to make required components less costly. I received the Oscar combo with the scale retractable landing gear and a DLE 61cc gas 2-stroke engine for review. A Saito radial engine is another combo option, and the model is available on its own as well.

The Oscar is a laser-cut balsa and plywood ARF, covered with an adhesive material with all of the markings, panel lines, rivets, and weathering details printed on it. Transportation is made easier by the two-piece plug-in wings.

The Oscar is a large model and assembly should be undertaken by those familiar with giant-scale building techniques. Despite its mean warbird exterior, the Oscar is well-mannered when it comes to flying, and intermediate pilots who are comfortable with larger tail-dragger aircraft could easily fly it.

UNIQUE FEATURES

The Oscar includes the usual primary flight controls plus flaps and retractable landing gear. The retracts included with the combo are air operated and include color-coded air lines, a servo-operated actuator valve, air tank, and the required quick-fittings to remove the wings. Like the full-scale Oscar, the tail landing gear is fixed. Installing the retractable landing gear is straightforward. The hardware provided is of excellent quality, ensuring a smooth installation.

The control surface hinges, including the flaps, need to be installed during the assembly process. Plastic barbed pin hinges are provided, and I installed them with 30-minute Z-Poxy. Proper alignment is paramount for smooth control surface movement, so take your time and work carefully. Heavy duty ball links and robust rods combine with double-arm G10 control horns to form a very robust control system. Instead of bolting the servos to the servo covers, the servos are attached directly to the wing structure, which I find to be a more secure installation technique.

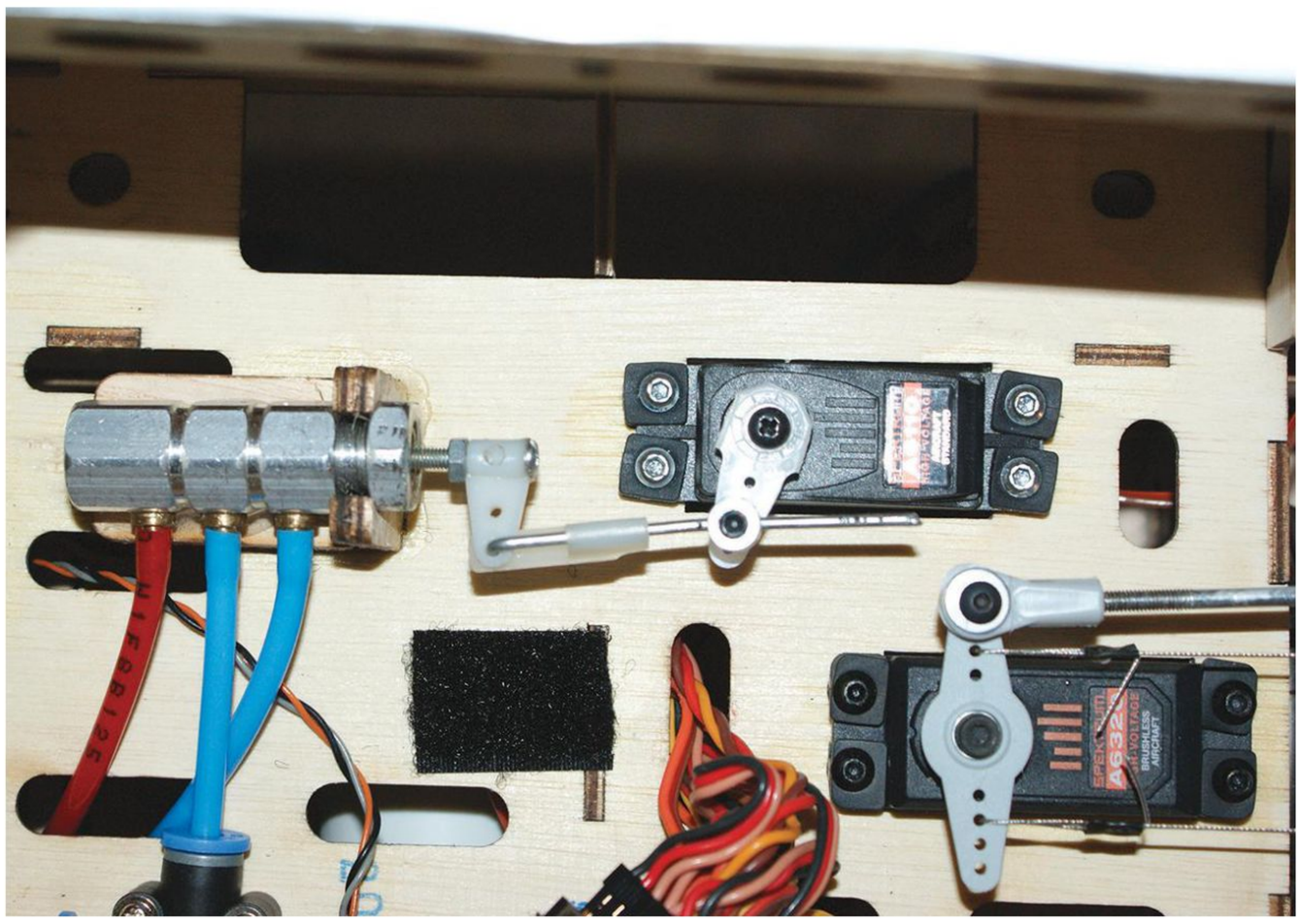
The Oscar includes several molded plastic and fiberglass parts. The tailwheel fairing and hub caps are molded plastic and the cowl is painted fiberglass. The cockpit tub and instrument panel with recessed instruments are provided and already fixed in place. A molded pilot figure is included, but I went off the script here with a Warbird Pilots WW II 12-inch Japanese pilot figure that includes a flying scarf and parachute harness. He looks authentic and is worth the upgrade.

There are no decals included with the Oscar. As mentioned before, all the markings are printed on the covering. You will want to use

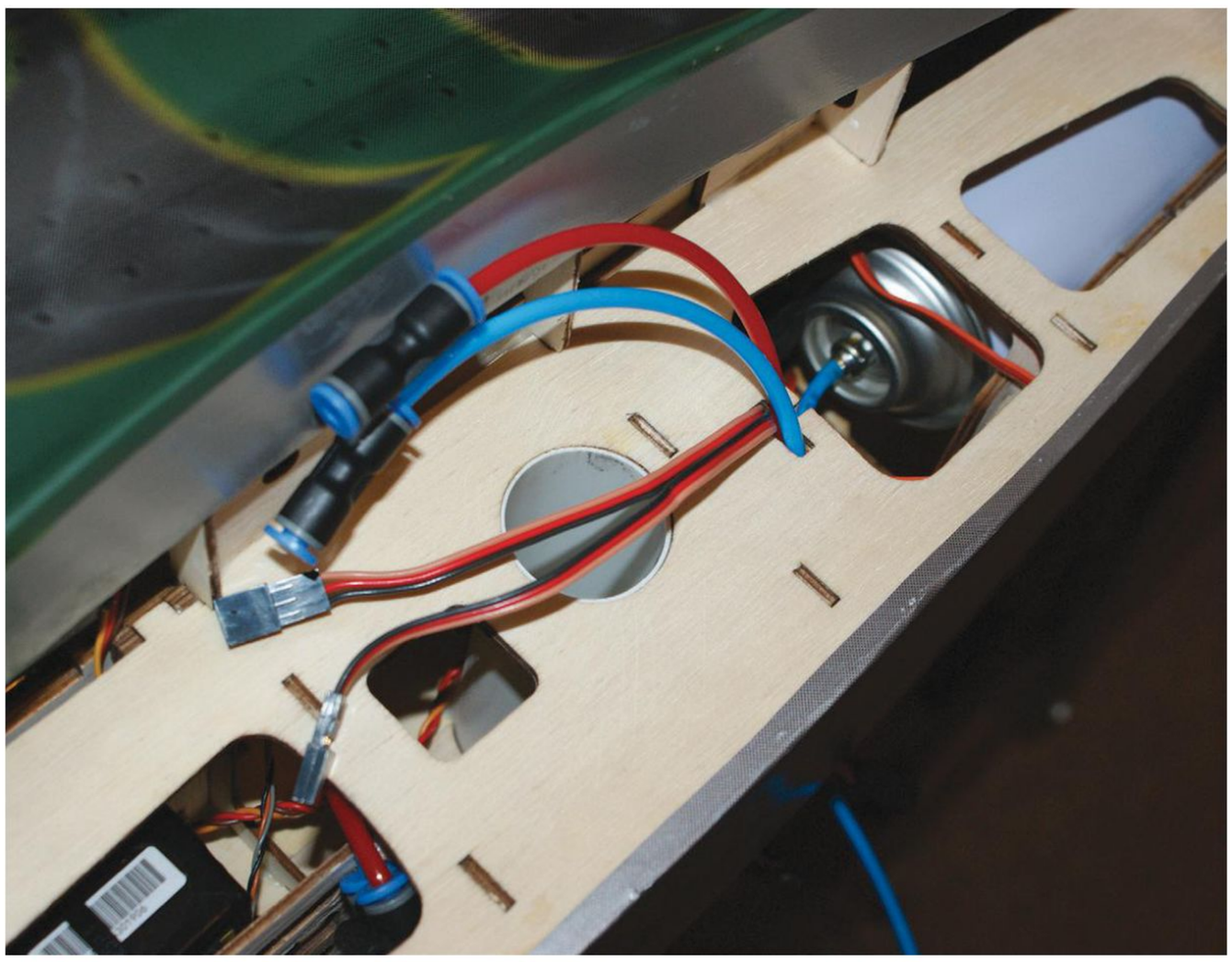
care during postflight cleanup with the printed covering.

The Oscar supports a variety of power options from electric, 2-stroke gas, and even a Saito 90 radial. I used a DLE 61 and stock muffler to power my Oscar, and installed a Falcon WW II propeller with the provided bulbous spinner. Falcon has a 3-blade propeller that would also look great, but that would require sourcing an appropriate spinner. Engine installation is easy following the provided instructions, and the hour I spent jazzing up the dummy radial a bit was well worth the effort.

The only issue I ran into while assembling the Oscar was during the aileron hinge installation. The holes were drilled a bit more generously than I was comfortable with, so during installation I used a mixture of 30-minute Z-Poxy and microballoons to thicken up the mixture and fill in the gaps.



The air valve takes some care to set up so that it's not being overdriven by the servo, but the finished product is a robust installation.



Each wing uses two color-coded air connections (one for up and one for down) and a flap and aileron servo extension.

IN THE AIR

Field assembly requires a stand, but the wing bolts, servo extensions, and air lines are easy to access and connect. The large tires should operate well on grass runways and the wide main gear stance means the Oscar is stable on the ground, but should be taxied while holding full up-elevator to guard against nose-overs.

Takeoff was smooth with some rudder correction required, and the Oscar picked up speed and took off quickly from our paved runway. Some right aileron and down-elevator trim were required on the first flight. When the gear is retracted, the Oscar picks up speed and accelerates with authority.

Due to the large wheels and frontal area, the Oscar drops speed quickly when the gear and flaps are extended for landing. With throttle used properly to establish the sink rate, the Oscar touches down on the main gear and slows nicely as the speed bleeds off once the throttle is cut on touchdown.

Stability: The Oscar is stable in flight, but truthfully, it feels a little light for a warbird as it was pushed around a bit when the wind picked up. I might move the batteries back and add some nose weight to bring the weight up a bit.

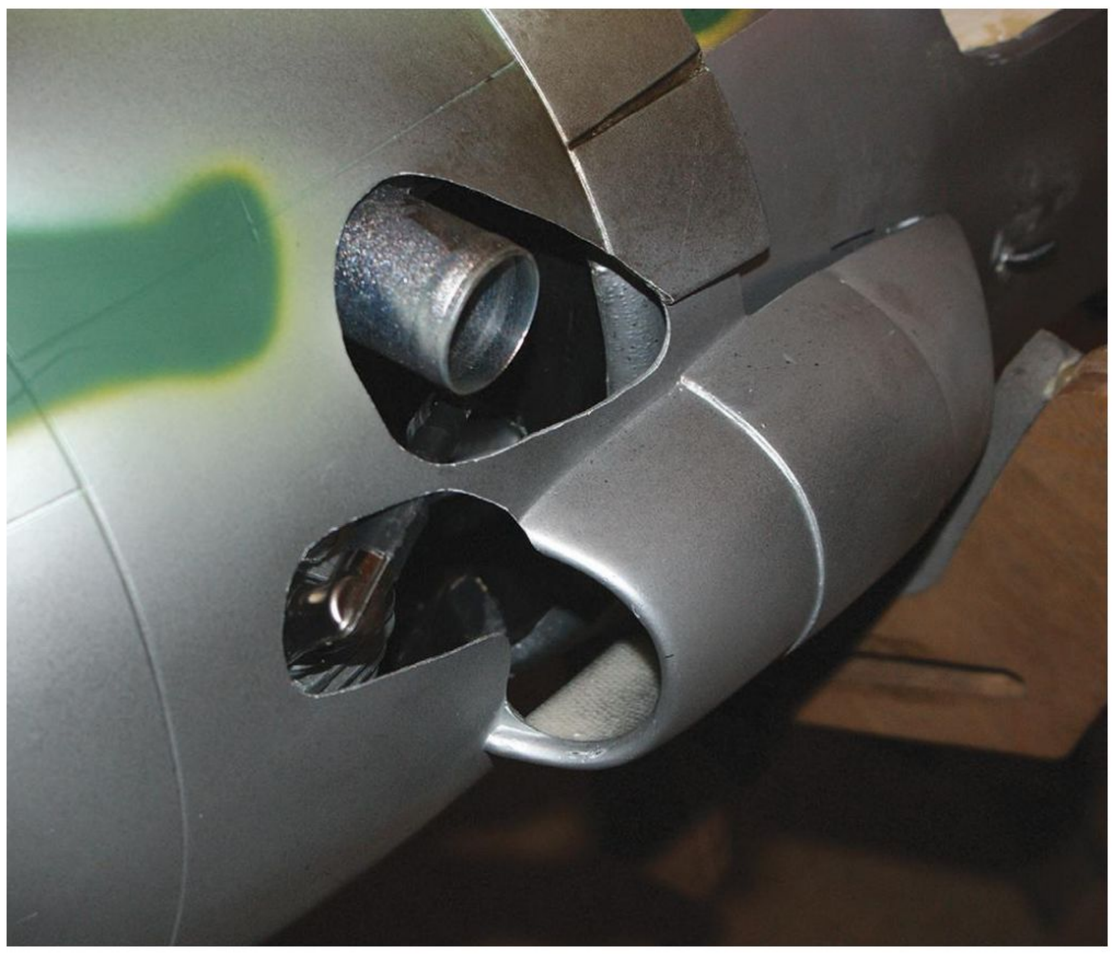
Tracking: The Oscar tracked well through most of the maneuvers that I put it through. It isn't a pattern plane but it holds the line. Knife-edge requires some aileron correction or it will try to roll out.

Aerobatics: The Oscar does all the requisite warbird maneuvers, and the classic rounded outline of the wing means it looks sharp doing them. Large loops, smooth rolls, wingovers, split-S maneuvers, and Immelmann turns all show that the Oscar model is as nimble and fun to fly as its full-scale counterpart was.

Glide and Stall: The thick airfoil, large wing, and relatively light weight of the Oscar combine to make it extremely well mannered. It will fly jaw-droppingly slow before it stalls, and even then it just drops the nose and resumes flying with no hint of dropping a wing.

PILOT DEBRIEFING

The Hangar 9 Oscar simply looks fantastic in the air. It may be a giant-scale warbird, but it has the manners of a well-behaved sport plane. Nine, 10, or 11 channels are required, depending on whether you opt to add an ignition kill, choke servo, or both. Despite being a large model, radio programming is a snap using the wing type and tail type menus in my DX-20. The Oscar is a keeper, and you can be sure to see mine flying at any warbird event around Florida and Georgia this coming season.



Some cutting is required to provide an exit for the side-mounted muffler, and to clear the spark plug connection.



The wing servos are mounted internally to the superstructure in the wing and covered with hatches providing very secure servo attachment.



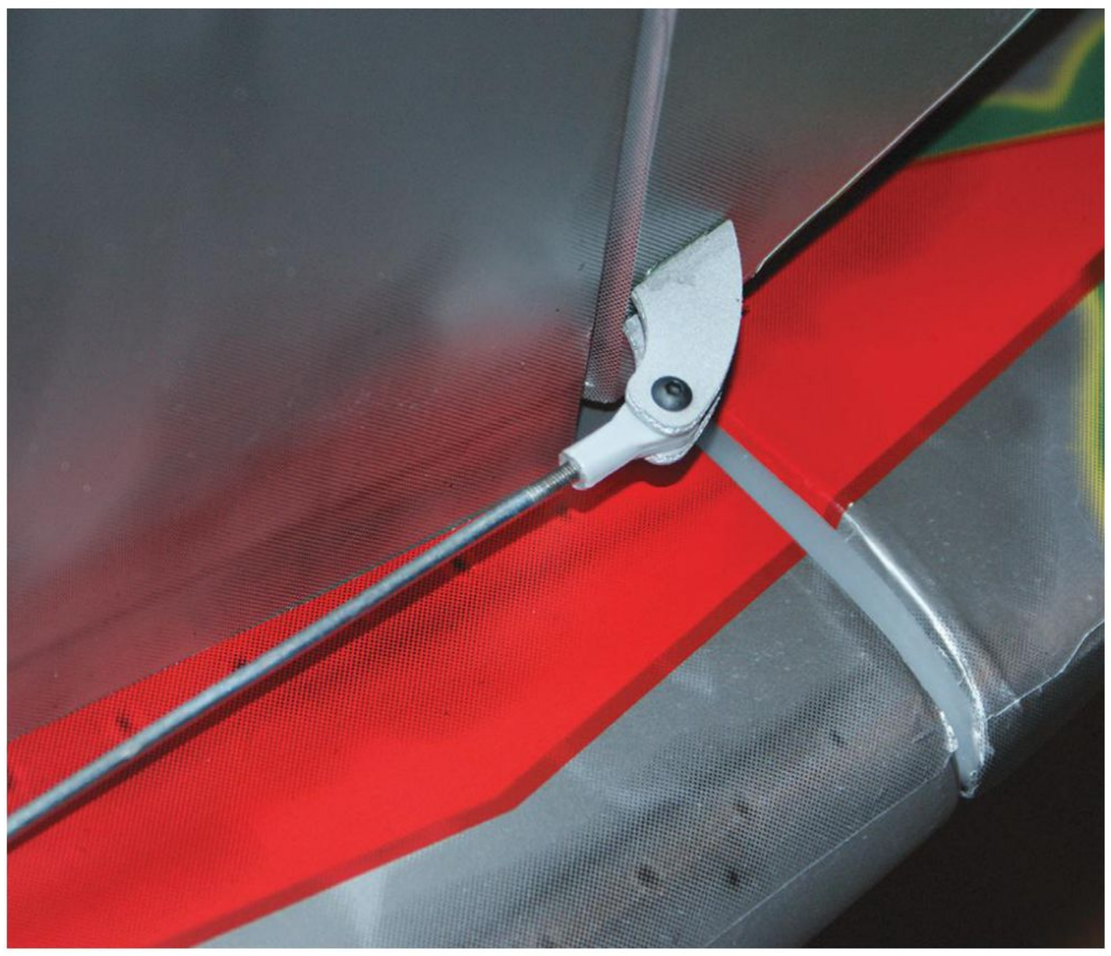
I used a wood Falcon WW II-series prop and the provided bulbous 2-blade spinner. The dummy engine can be jazzed up a bit with just a little bit of extra effort.



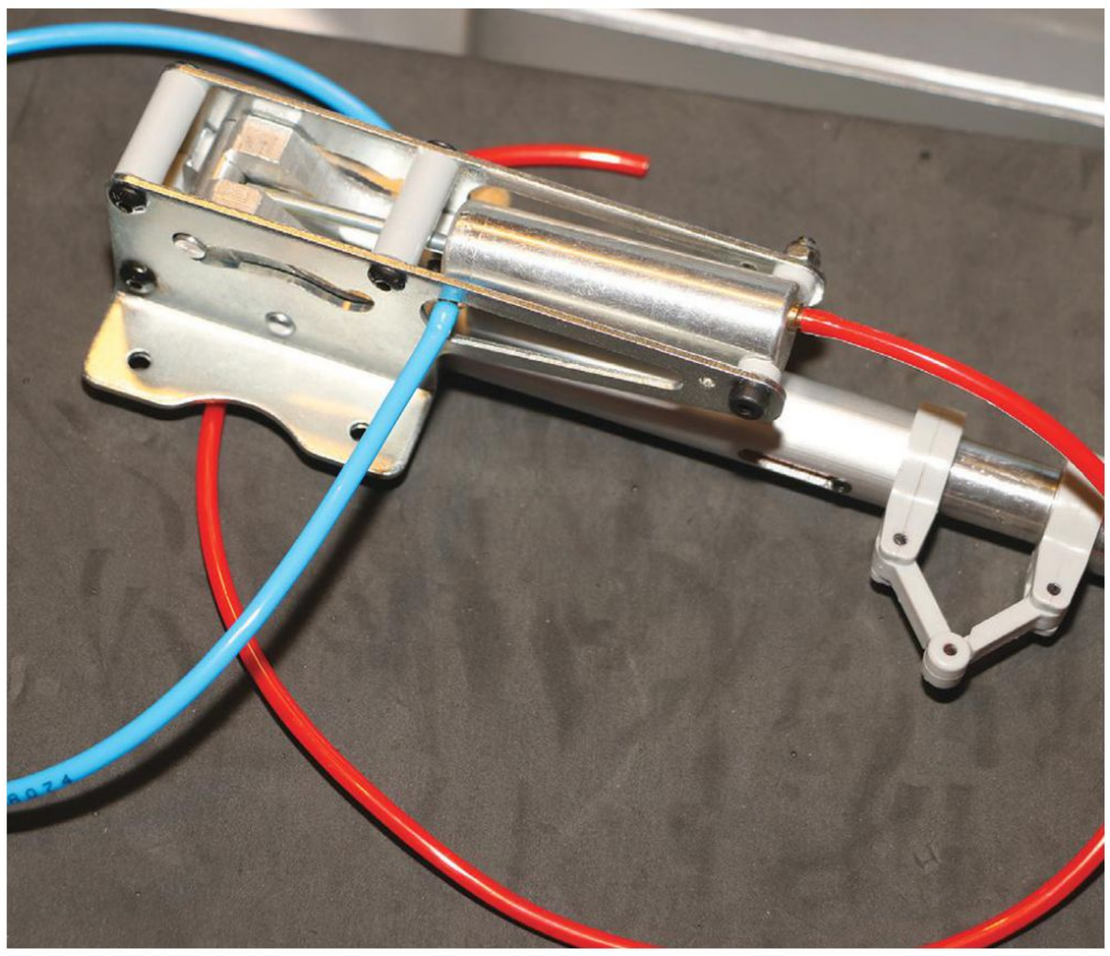
The interior includes an instrument panel and other details. I elected to add a Warbird Pilots full pilot figure in WW II dress, including a scarf and parachute harness.



The Oscar is very easy to land. With the flaps and gear down it slows down nicely and settles on the main wheels.



A slop-free control system is provided that uses heavy duty rods, ball links, and G10 fiberglass double-arm control horns. The control horns are painted silver to match the covering.



The retracts included with the combo are air operated and include color-coded air lines, a servo-operated actuator valve, and an air tank.



GEAR USED

RADIO
Spektrum DX-20 w/ AR9030T receiver

ENGINE
DLE-61 with stock muffler (horizonhobby.com)

FUEL
Ethanol-free gas with 40:1 Red Line 2-cycle oil

PROPELLER
Falcon WW II series 23x10 (falconpropellers.com)

BOTTOM LINE

The manual that comes with the Oscar is excellent, with plenty of detail and photographs for each step. It does take a while to build, and demands careful building practices and attention to detail to ensure that the finished product is a safe flying model. It took me about 15 to 18 hours total to assemble and finish the Oscar, but nothing involved is very difficult for anyone with some building experience. The hardware is bagged for each step, but while the bags are not labeled, most of the required parts are obvious. +

FLIGHT TECHNIQUE

TEXT & ILLUSTRATIONS BY DAVID SCOTT

MASTER THE CROSSWIND LANDING

Best practices and advice for dealing with wind

High-performance aircraft, including turbine jets, require proper landing technique to minimize stress on the landing gear.

Since the early days of RC flying, pilots have been giving landing advice, particularly if there is any sort of wind involved. However, some have recently been getting it backward when they state that during a normal landing, the ailerons should be used to keep the wings level and the rudder should be used to steer the plane as it approaches the runway. Trying to correct deviations greater than a few degrees with the rudder has, in fact, led to hundreds of full-scale fatalities and countless crashed models over the years. While this misplaced advice might be good for business for some (it leads to more replacement fuselages and airplanes being sold), it's extremely wasteful and largely avoidable with proper instruction.

When listening to sport fliers, it's obvious that the overemphasis on rudder during landing is due to the assumption that expert pilots use rudder a lot in general, especially to counter wind during aerobatics. Since a landing in wind supposedly requires more skill, the belief is that the key to good landings must lie in mastering the rudder like the pros.



The reality is that the pros primarily use the ailerons to line up and correct deviations during the approach to landing whether there's a crosswind or not. If there's a stiff crosswind, they will then use the rudder to smoothly "kick out the crab" right before the wheels touch, and then obviously continue using the rudder to steer after touchdown.

COURSE CORRECTIONS

It is true that a pro will sometimes use tiny amounts of rudder during the landing approach to correct (hide) small deviations off of the centerline. However, if the deviation is more than a few degrees, it's understood that correcting with the ailerons (i.e., banking the wings), is the most effective way to get back on course. As we say in full-scale aviation, "Use the ailerons to control drift (movement side-to-side), and use the rudder to align the fuselage parallel with the centerline at touchdown." One exception is when it becomes necessary to mix or coordinate rudder with the aileron to prevent adverse yaw while making course corrections, such as when landing a flat-bottom airfoil trainer at slow speed.

Pilots who try to use the rudder to correct deviations greater than a few degrees during the approach will run into the issue that the rudder tends to have a marginal effect: the plane will immediately yaw when rudder is applied, yet the initial response is a skid rather than a course change. This is particularly true when the airplane has a semi-symmetrical or fully symmetrical airfoil and not a lot of dihedral. As a consequence, pilots will

Figure 1

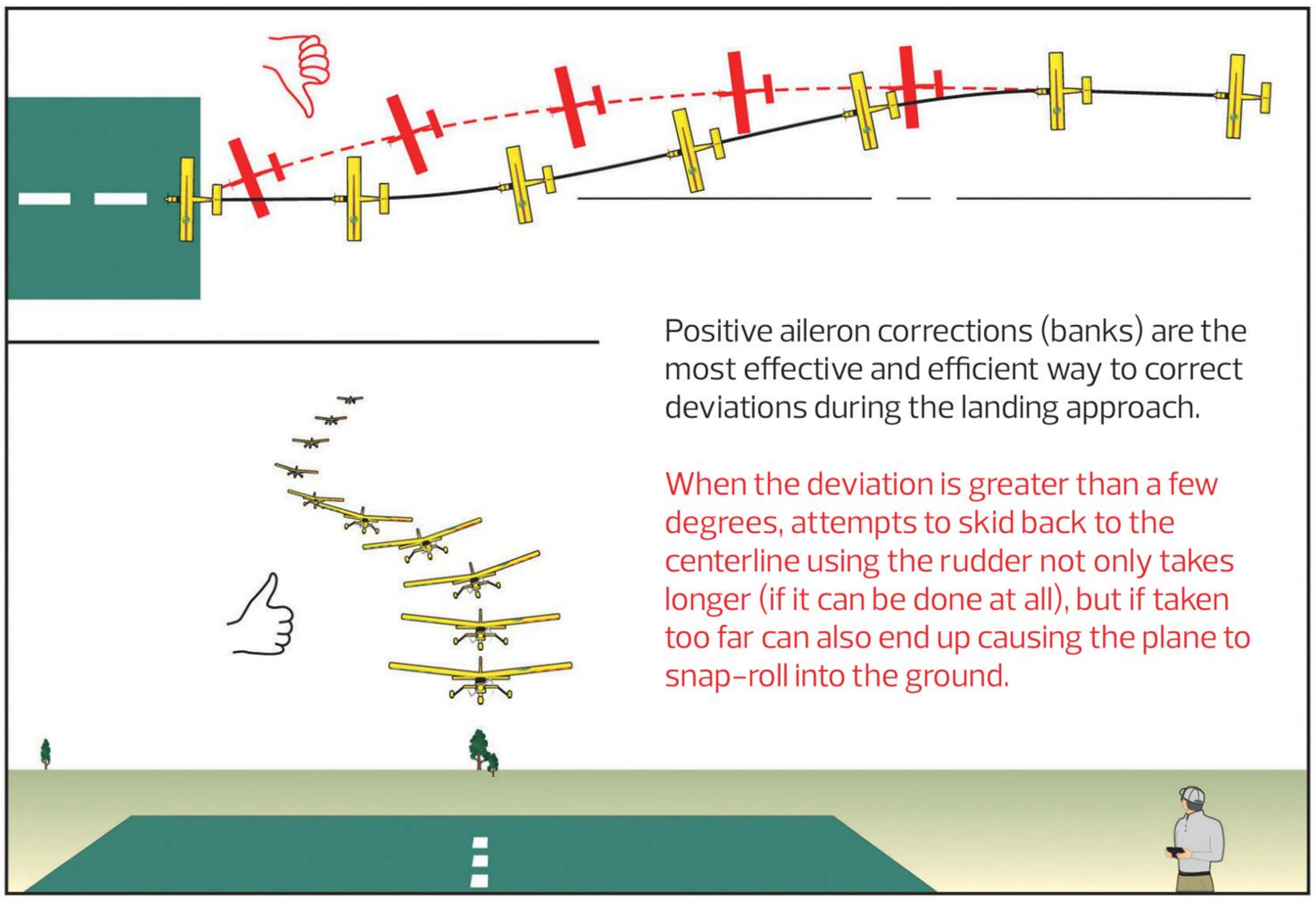
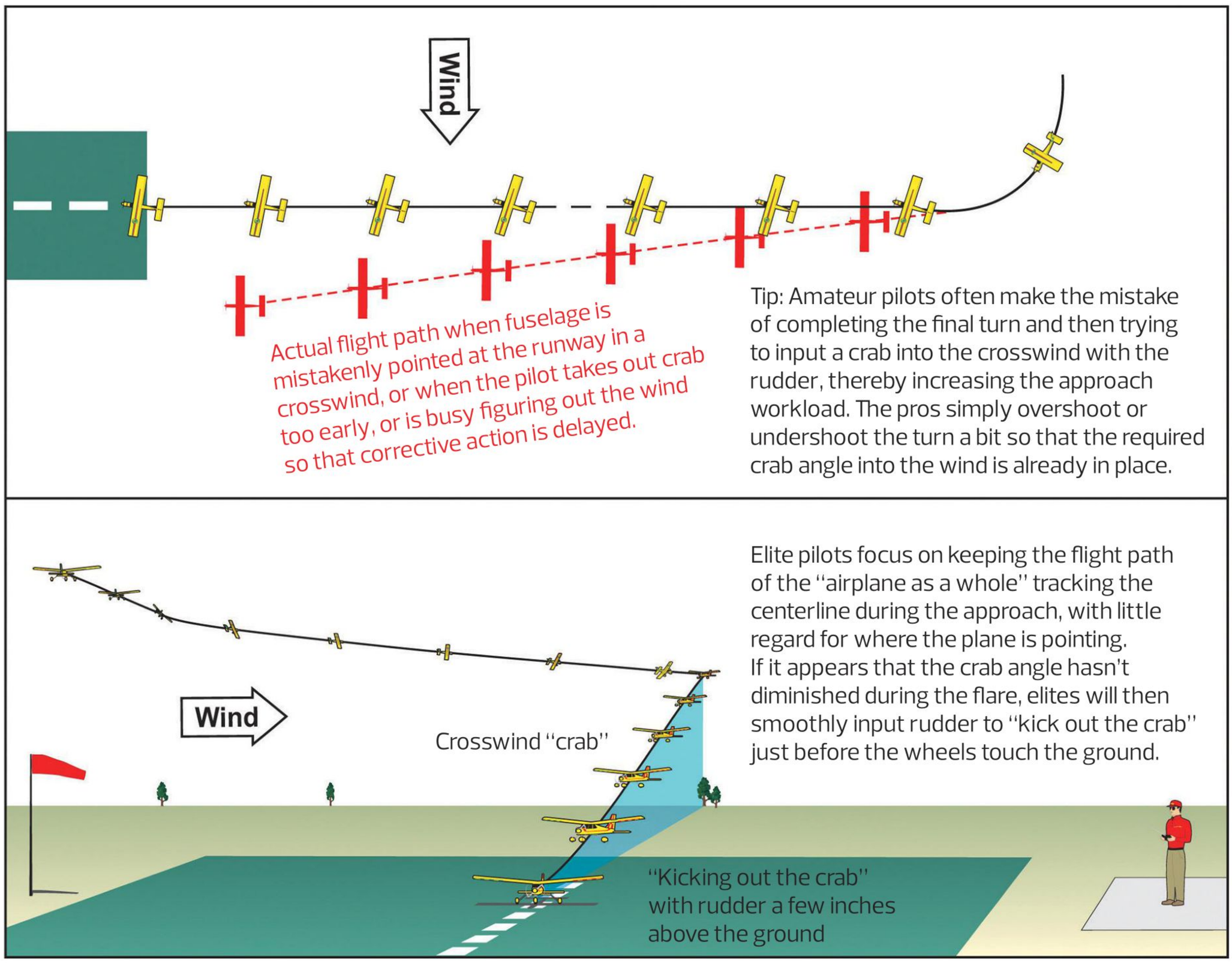


Figure 2



In short, the main reason elite pilots are able to maintain a straighter centerline approach is that they don't concern themselves with why the plane is drifting left or right. They simply recognize it immediately and correct before anyone notices—no different than what you would do on a calm day.

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CONVENTIONAL TRANSFORMER	TECHNOLOGY	ADVANCED INVERTER POWERFUL & EFFICIENT
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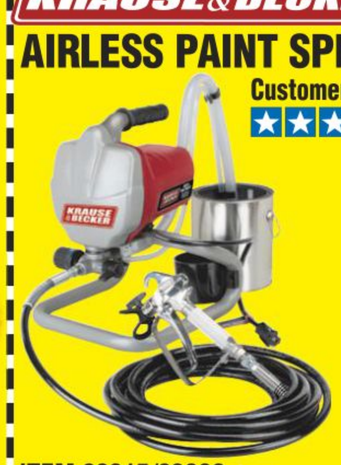
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RAPID PUMP® 1.5 TON LIGHTWEIGHT ALUMINUM FLOOR JACK

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ITEM 67514

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LIFETIME WARRANTY

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TYPE	ITEM
SAE	69043/63282/42304
METRIC	69044/63171/42305

COMPARE TO HUSKY $17.97 MODEL: HCW10PCSAE

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3/8" x 14 FT., GRADE 43 TOWING CHAIN

Customer Rating ★★★★★

- 5400 lb. capacity



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18" x 12" MOVER'S DOLLY

Customer Rating ★★★★★

- 1000 lb. capacity



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TAILGATOR SUPER COUPON

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900 WATT MAX. STARTING 2 CYCLE GAS POWERED GENERATOR

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often resort to inputting more and more rudder, especially if the plane is headed toward the pits or an obstacle. In addition to scrubbing off speed, the combination of the larger rudder input while also holding in up-elevator is the perfect recipe for a tip-stall and snap-roll into the ground (typically blamed on a gust of wind). Sadly, this experience reinforces in peoples' minds the necessity of keeping the wing level close to the ground and using the rudder to steer, when the reality is that a small bump of aileron (slight bank) quickly remedies most deviations and prevents having to resort to larger inputs.

As a rule, elite pilots view the rudder as a refinement used to fine-tune maneuvers, whereas the ailerons are used when a more "positive" or immediate response is called for. For example, when landing into a stiff headwind, rather than continuing to fly into the wind, an airplane would rather take the path of least resistance and slide off to the side. It is therefore crucial that every deviation (drift) be corrected immediately, since any lag will result in the deviation becoming exponentially greater. The same can be said during a crosswind landing if the deviation is downwind. In short, the principle effect of wind is not that it causes a lot of deviations, but that it will exaggerate deviations that would have been minor, or would have been afforded more time to correct on a calm day, hence the necessity of positive aileron corrections when flying in wind. Of course, this is one of the main reasons that airplanes without ailerons tend to be much harder to land in wind.

CROSSWIND LANDINGS

There are two main schools of thought about the best way to set up a landing in a crosswind. The first is the wing-low "side-slip" approach, in which a pilot attempts to prevent wind drift by keeping the wings banking into the wind while cross-controlling the rudder to keep the fuselage aligned with the runway centerline. However, akin to balancing a marble on a bowling ball, probably fewer than one percent of RC pilots have the skill to attempt this. (It's easier in full-scale aviation because heavier airplanes are more stable in wind and thus easier to slip). Furthermore, as the majority of expert pilots know, it's often a waste of time and mental energy to side-slip before getting near the ground because, due to the influence of the terrain and surface friction, the winds are constantly changing the closer the plane gets to the ground. Consequently, while it's always good to anticipate what is coming next, a pilot won't actually know what wind corrections will be needed until shortly before touchdown.

The pros—the ones who make everything look easy—use the easier approach of allowing the airplane to crab into the wind until shortly before touchdown. In reality, expert pilots pay little attention to where the plane is pointing or how much it is crabbing during the approach. Instead, our only concern is keeping the airplane as a whole tracking the centerline and executing a perfect flare. We will then smoothly kick out the crab right before the wheels touch while continuing to counter any drifting with the ailerons as needed. The great thing about RC is that our vantage point outside the airplane makes it easy to see when the wheels are about to touch, and thus exactly when to kick out the crab.

The best solutions are usually the simple ones, expert pilots don't pay much attention to whether the wings are banked into the wind or care which wheels touch the ground first, only that we distinguish ourselves by touching down smoothly and perfectly tracking the centerline. If the upwind wheel happens to touch down first while we're making the necessary aileron inputs to keep the airplane over the centerline, that's fine, but maintaining the centerline and smoothest possible touchdown are always our primary concerns.

TOP PRIORITIES

Another reason highly proficient pilots don't get too caught up worrying about wind is the fact that the crab angle will often diminish or disappear completely within a foot of the ground due to the surrounding terrain and surface friction retarding the wind. Thus, those who arbitrarily start correcting for wind might actually cause a deviation, not prevent one! In case you're wondering, the reason why more emphasis is placed on wind corrections in full-scale is because the fuselage and tail are much higher compared to our models, so they tend to be more affected by a crosswind during landing. Furthermore, if you're on the fence about this because your local guru has a habit of parroting a different technique, you might ask him to demo it for you, and then don't be surprised if his plane suddenly develops a problem that prohibits him from flying.

As hard as it will be for some to believe, the best pilots effectively approach a landing as if there is no wind, only paying attention to keep the airplane as a whole tracking the centerline, irrespective of where it's pointing. Then, if we observe the plane is crabbed into the wind as we are about to grease the centerline, we'll use the rudder to smoothly kick out the crab.

Keep in mind that unless the crosswind is quite strong, it rarely does any harm to touch down in a crab as long as the touchdown is smooth. Far more airplanes are damaged because of overcorrecting after misjudging the centerline and poor flares than due to crabbing at touchdown. Pilots will do far better to concentrate on touching down smoothly on the centerline before worrying about trying to correct the crab. Once that has become routine, learning to "kick out the crab" will become second nature. Conversely, those who can't consistently touch down smoothly on the centerline truly have no business trying to add rudder to their landings!

THE TAKEAWAY

There are always exceptions to the rules, and the variables can be as wide-ranging as the wind and planes themselves. However, as long as your priorities are in order, you'll find that everything else fits into the category of fine-tuning your already good landings, rather than keeping you from what is most important. Good luck!

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INVITATIONAL TOURNAMENT

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TEXT & PHOTOS BY GERRY YARRISH



Gas Engine Setup

Installation tips to keep your powerplant happy

When it comes to that first test flight of your newly finished giant-scale warbird (or any gas engine-powered model), you can increase your chances for an incident-free experience by correctly installing and setting up your powerplant. As with most things related to RC warbirds, neatness counts. Here are a few tips for making your firewall forward work like a pro's.

HARDWARE AND FUEL LINES

It goes without saying that you do not want to take any shortcuts while building your warbird. So start off by using the correct hardware for the job. If you have an ARF, check the quality of the attachment bolts and nuts as well as the engine standoffs, if required. If the hardware isn't up to your standards, get some replacements from RTL Fasteners. I often replace metric hardware with standard SAE versions. Inside the fuselage behind the firewall, if I have relatively easy access, I use plastic insert locknuts with large fender washers in place of blind nuts. Using a hex driver outside and a box-end wrench inside, I snug the engine attachment nuts and bolts, check the engine alignment and offset, and then tighten them up. If you prefer the blind nuts, be sure to use a little threadlocker so the hardware doesn't come loose. There is a good bit of vibration in this environment, so do periodic checks as well.

When it comes to the fuel system, be sure to plumb your fuel tank with gasoline-compatible fittings and stopper. (Sullivan Products is a reliable source for everything that's gasoline rated.) For the sake of consistency, I make the fuel systems on all of my gas-powered airplanes the same. I use a two-line setup and I install a T-fitting in the main fuel delivery line to the engine for my filler line. I use a Fuel Dot to seal the end of the filler line. Most of the time, I use a long filler line so I can pull the line out of the side of the fuselage to fill and drain the tank; the dot being held in place with an O-ring-equipped support fitting.

To ensure a clean supply of fuel to the engine, I add a fuel filter to the filler line. This prevents anything harmful from getting into the tank. I also add a filter to my fuel supply can's outlet line. I run the vent line to the bottom of the fuselage. This line forms a loop on top of the fuel tank so there is room for overflow. I secure the loop with some Velcro straps.

ENGINE TEST RUNS

The pit area at the flying field really is not the best place to do engine setup adjustments, so I always adjust and test run my engines at home. The first thing to do is place a sheet of plywood under the model to minimize dust and debris while the engine is running. Secure the tail with a tail anchor suitable for big airplanes, or use a strong strap (a dog leash will do) and a strong tent stake. As an added precaution you can always ask a flying buddy to help out and steady the airplane.

I do all the test runs with the cowl removed, making it easy to access the carburetor for needle-valve adjustments. For safety, use a heavy-duty engine starter. Fill the tank, and switch on your radio gear. Make sure you adjust the end points for the throttle servo so that the servo moves the throttle linkage and throttle arm the full range of the throttle. I fully shut the carburetor to the "engine kill" position and then place the throttle and the throttle trim to full down position. Then, I adjust the full open position of the throttle with the trim set at the half position. This produces good transition and a positive shutdown when you want to kill the engine. (And don't forget to add a kill switch for your ignition.)

Use a digital tachometer to check the engine rpm. Check your engine's operation manual and add the appropriate propeller recommended. Be sure to tighten the prop bolt(s) and then start up the engine. Let the engine warm up in a high idle for several minutes before advancing the throttle and doing any adjustments.

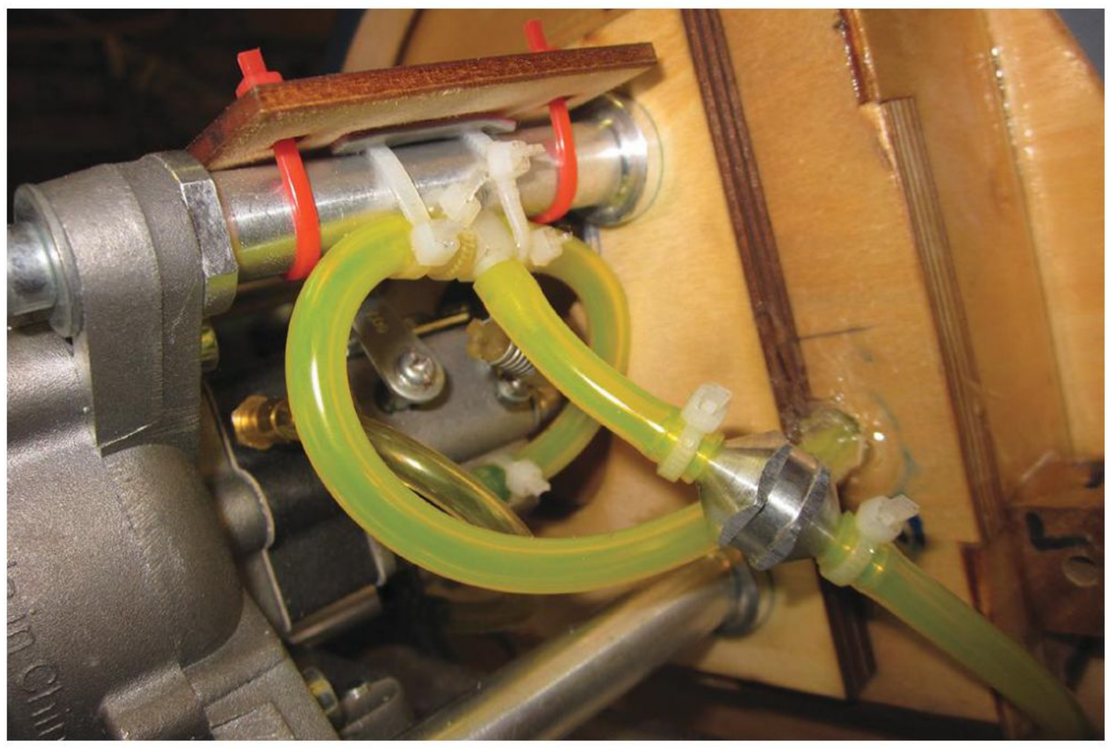
Check the idle by letting the engine settle down to a low rpm, then advance the throttle smoothly to full power. You should have a smooth transition without any bobbles or burps. If there are any, then the mixture is too rich. Lean it out, a little at a time, until the transition is smooth and steady.

Next, check the high-end revs. Lean the mixture until you don't notice anymore increase in revs. At this point, start to richen the mixture slightly so you get a 200 to 300 rpm drop. Then go back to idle and check the transition again. If everything is smooth and steady, you are good to go!

ENGINE COWLING

The last thing to take care of is fitting your engine cowl around the engine. Make sure you have clearance around the exhaust pipe(s) and that the spark plug wire does not chafe on the cowl. Be sure you have easy access to the choke linkage, and trim the front of the engine cowl (or the dummy radial engine) so that airflow is directed around the engine cylinder. If your cowl has too much airflow (in) and not enough air exit area, it could cause your engine to overheat. The standard rule is to have twice as much air exit area as air inlet area.

Doing your homework correctly and making your engine tweaks at home will pay off at the flying field. Have fun!



Be sure to properly secure your engine installation and make sure everything is tight. To avoid chafing of your fuel lines, secure them with cable wraps so they can't move around.



Take your time and set up the throttle servo and linkage so you get the full range of travel from full off to full throttle.



Placing a large sheet of plywood under your warbird while test running the engine will keep flying dust and debris to a minimum.



Securely install your engine cowl and trim the air inlet and exit openings to maximize cooling airflow airflow around and through the engine cylinder fins. Be sure to test run your engine with the cowling installed before your test flight.

CONSTRUCTION

TEXT & PHOTOS BY PAT TRITLE



FORD TRIMOTOR

A classic 1920s airliner that's a real showstopper

My 1/20-scale Ford Trimotor has a 46 3/4-inch wingspan, which works out just right, since 6-inch propellers are scale size, and are just what the E-flite 250 outrunner motors require with a 2S LiPo battery. It features plug-in outer wing panels, with the wing center section (with the nacelles and landing gear) remaining in place on the fuselage. Only the aileron servo leads need to be disconnected for transport. Control is full-house 4-channel with four servos. Power comes from three E-flite 10A speed controls and a single Thunder Power 1320mAh, 2S LiPo pack.

SPECIFICATIONS

MODEL: 1/20-scale Ford Trimotor

TYPE: 1920s Airliner

WINGSPAN: 46 ¾ inches

POWER REQ'D: three E-flite outrunner motors

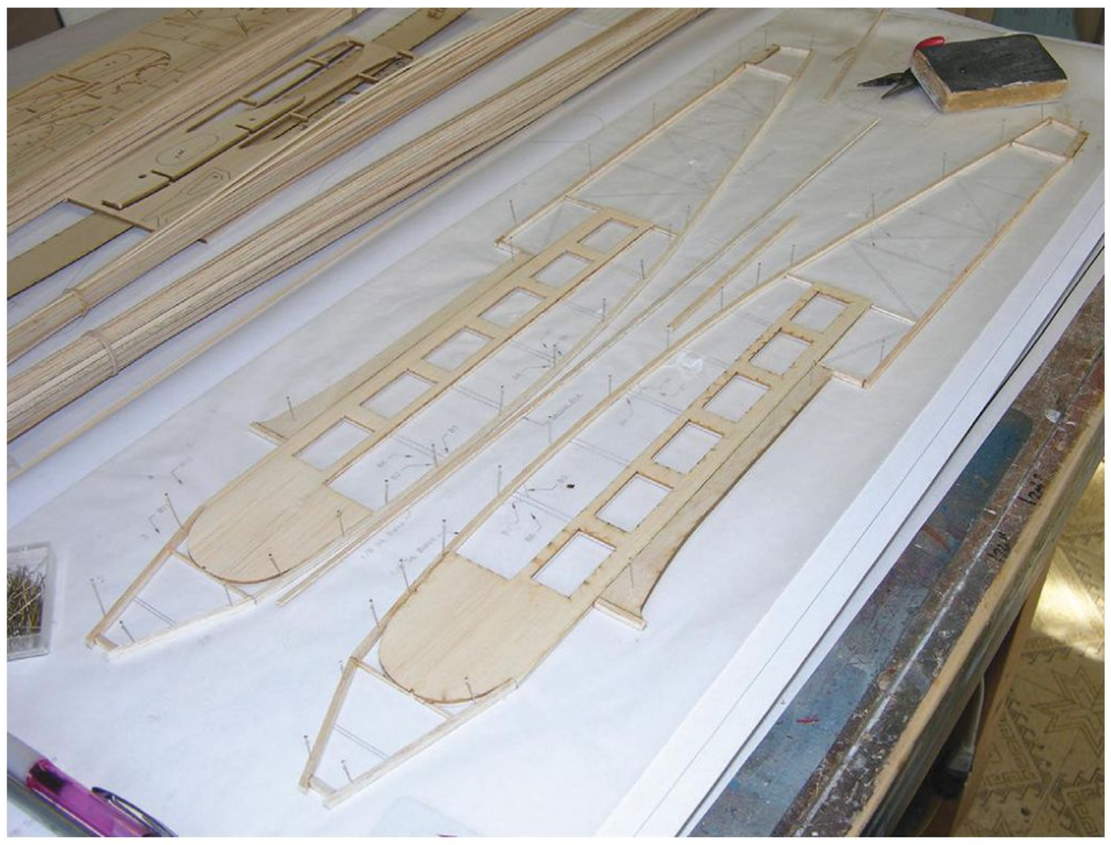
RADIO REQ'D: 4-channel (rudder, elevator, aileron, throttle)

GEAR USED

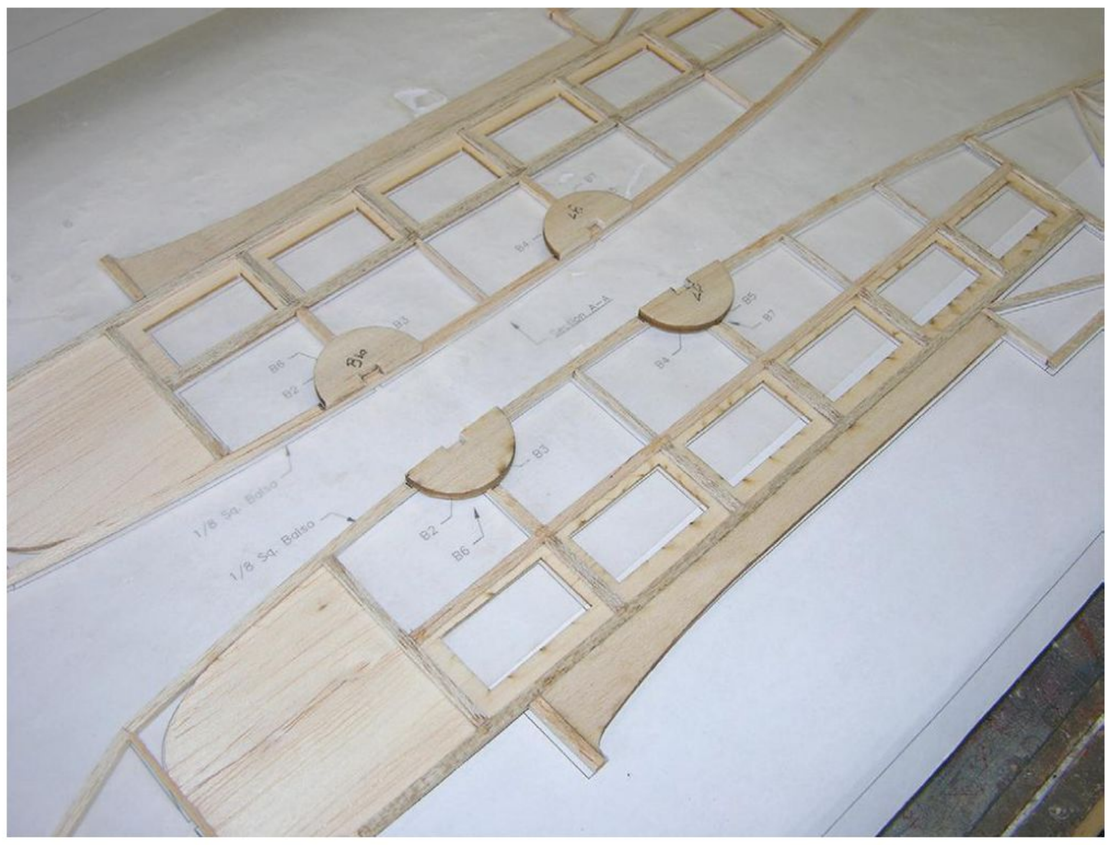
MOTOR: three Park 250 outrunners w/three E-flite 10A speed controls

PROP: three GWS 6-3 DD

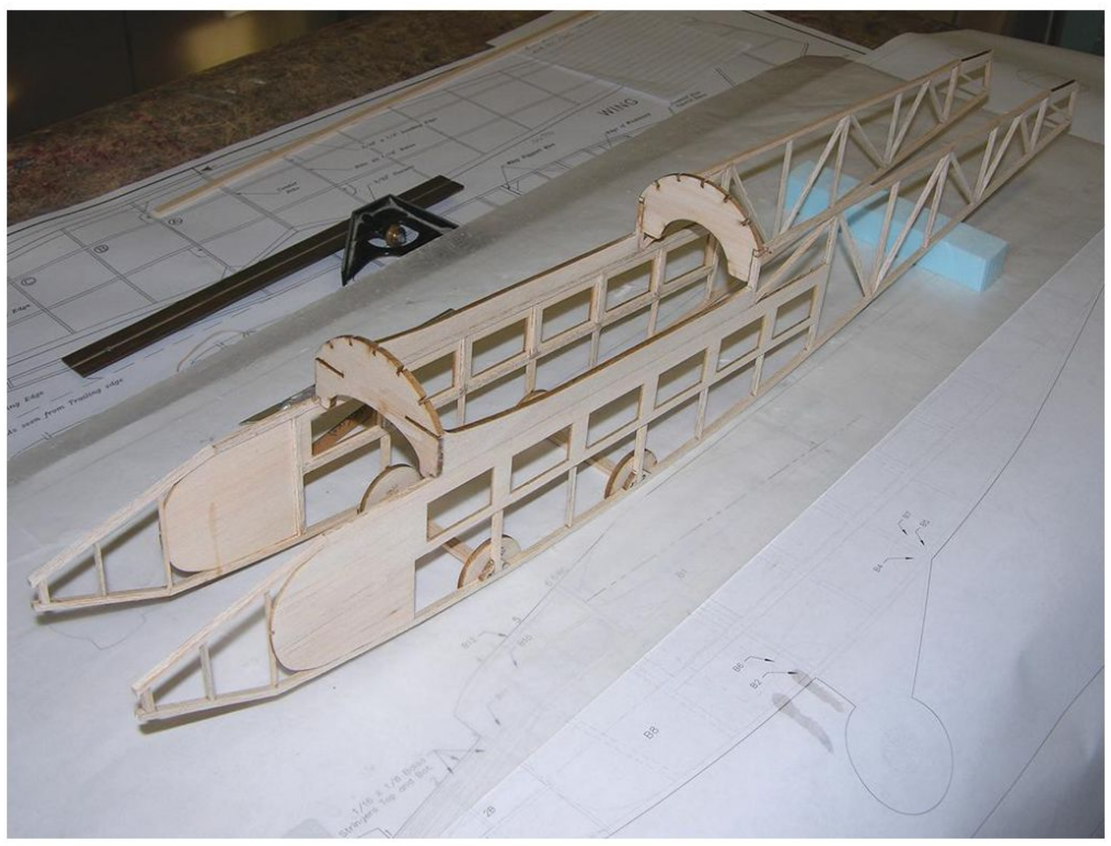
BATTERY: 2S 1320mAh LiPo



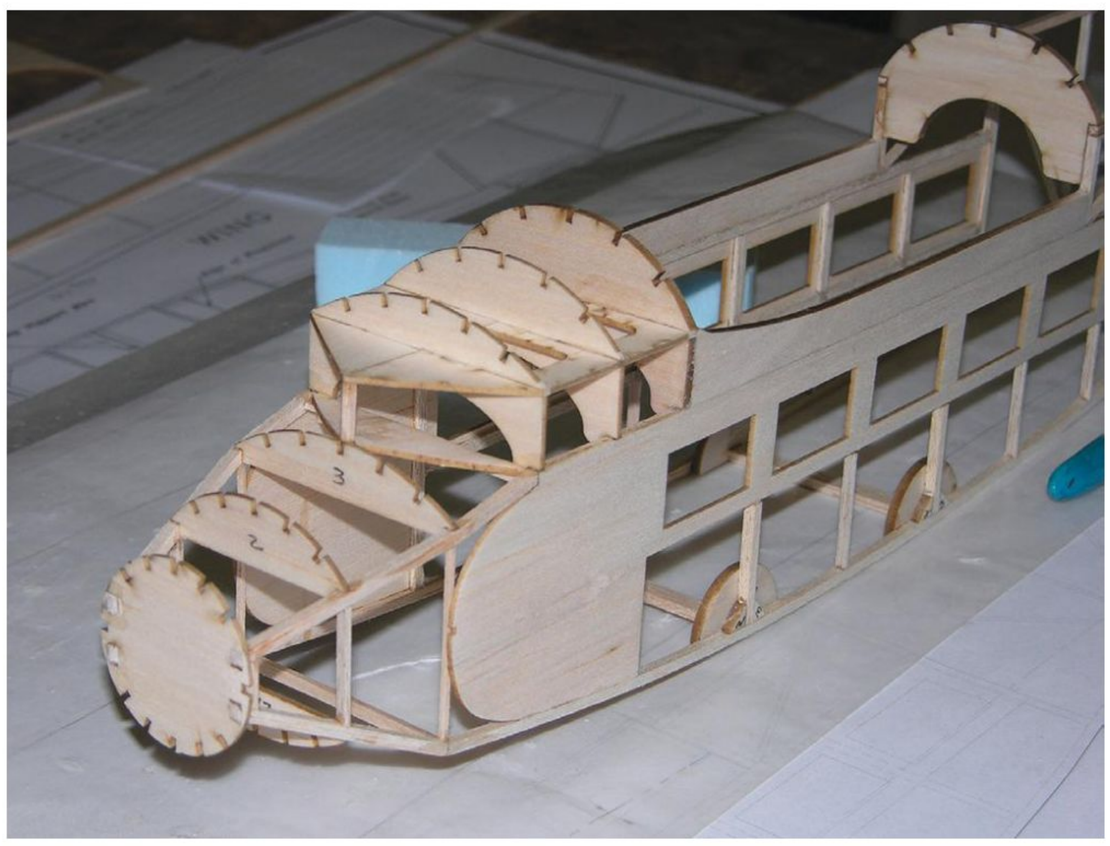
The fuselage sides are built over the plans. The sides have the window frames built in, so they are dedicated left- and right-hand sides.



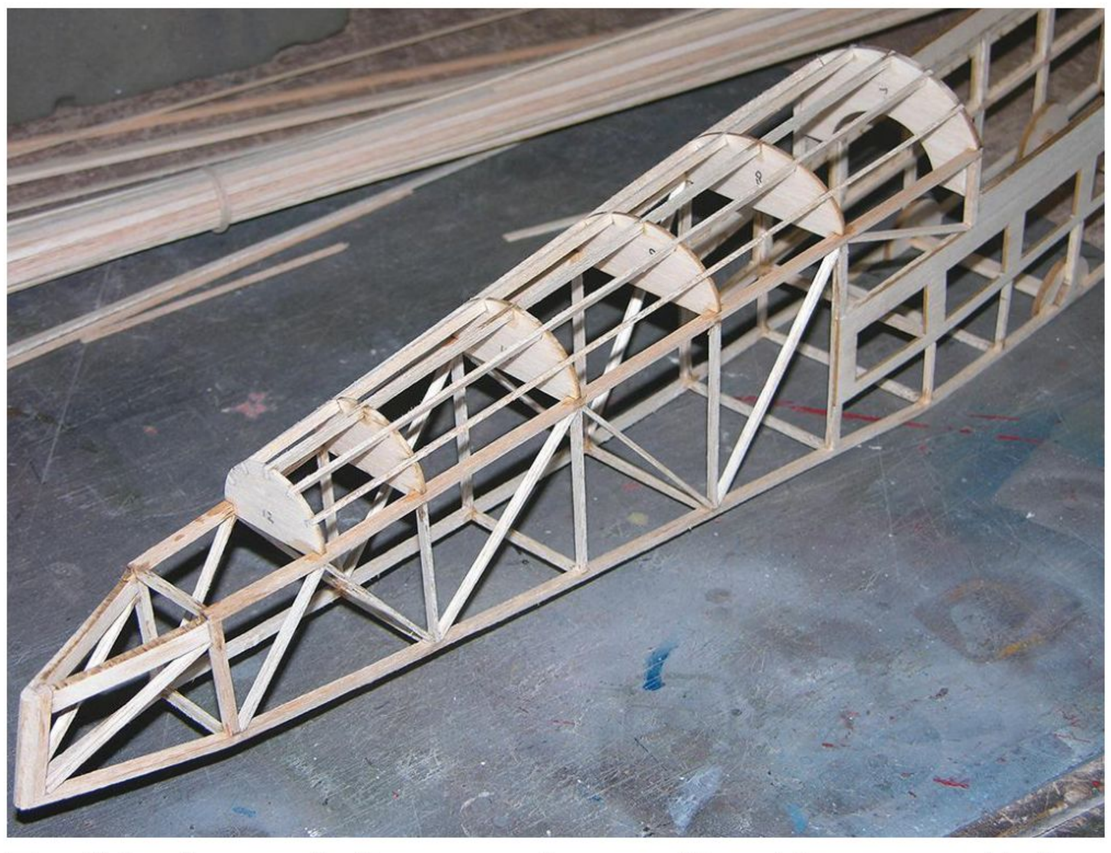
Glue the landing gear mount gussets to the inside of each frame after you've completed the basic frame.



Join the side frames beginning with the landing gear mount beams and the top cabin formers at each end of the wing saddle.



The cockpit assembly is built up and then glued in place on the main fuselage frame, then the remaining formers are added.



The aft top formers, bottom cross pieces, and top stringers are added, and then the tail ends are pulled together and joined to complete the basic structure.

CONSTRUCTION

Begin with the fuselage side frames. They feature built-in window frames, and so are dedicated left- and right-hand assemblies built directly over the plans. Join the sides over the top view drawings using the wood sizes and formers shown. Then, after you've joined the frames, remove the frame from the board and add the stringers. Build up the cockpit assembly and glue it on top of the fuselage. Add the stringers and the balsa block, then carve and sand to final shape forward of former 4.

Install the servo mount beams, and screw the servos in place. Add the elevator pushrod tube using a Sullivan #507 tube, supported at the front and a couple of places in between with PRSO Standoffs to stiffen the tube and prevent it from flexing under load. Build the tailwheel assembly using the detail drawing provided, then lash it to the tail post. Secure with a drop or two of thin CA. (Temporarily installing the steering cables to mark the exact exit locations for future reference.)

TAIL SECTION

Build up the rudder and elevator assemblies directly over the plans as shown. Shims under the leading and trailing edges center them on the ribs. When complete, sand to shape and cut the hinge slots. The hinges are made from strips of CA hinge material. Do not glue the hinges until after the parts are covered.

Pin the tail assemblies in place on the fuselage and run in the rudder cables. Note the exact location where they exit the fuselage for reference after you've covered the fuselage.

OUTER WING PANELS

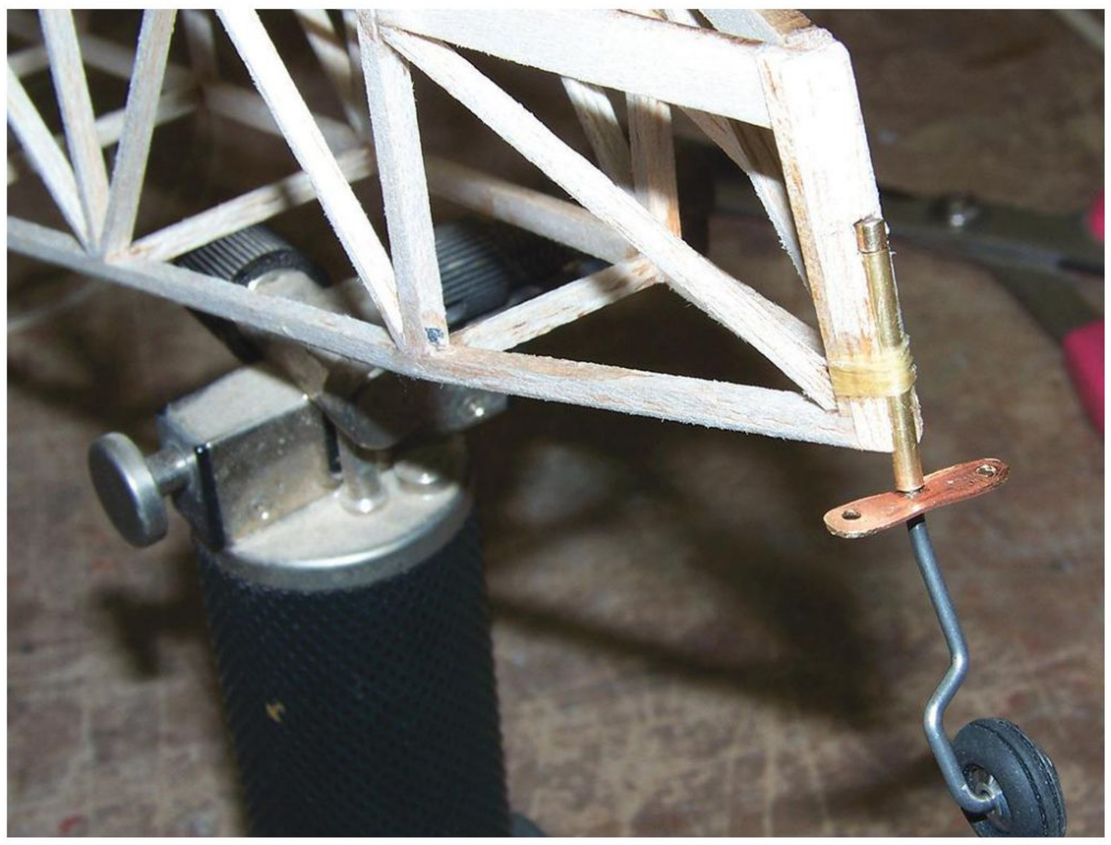
Make the wingtip bowing forms from foam board using the pattern provided. Make up the bows from two laminations of balsa. Build the outer wing panels directly over the wing framing plan. Add all the ribs and AS1 and glue in place followed by SM2 and SM3. Make up the leading edge using the pattern provided and the trailing edge inboard of the aileron and glue in place. Fit and glue the wingtip bows in place followed by the WTG and ABG gussets. Then add the balsa diagonal bracing and the wing joiner tubes using either brass tube or carbon fiber rods.

When the first panel is finished, remove it from the board, carve it, and sand it to final shape. Repeat the process to build the other wing. Then build the aileron assemblies over the plan and sand to final shape. Don't glue the aileron hinges in place until after you've covered the wings. Glue the servos to the mounts with silicone caulk and run in the extension leads.

CENTER SECTION

Glue the JD1 and JD2 doublers in place on ribs R3 and R4. Slip the R4 ribs in place on CSMS1 and CSRS2 and pin them in place over the plans. Glue the remaining ribs in place, followed by the leading and trailing edges. To complete the basic assembly, add the three WG wire guides, the diagonal bracing, and the aluminum joiner tubes. Remove the center section from the plans and carve and sand to your finished shape.

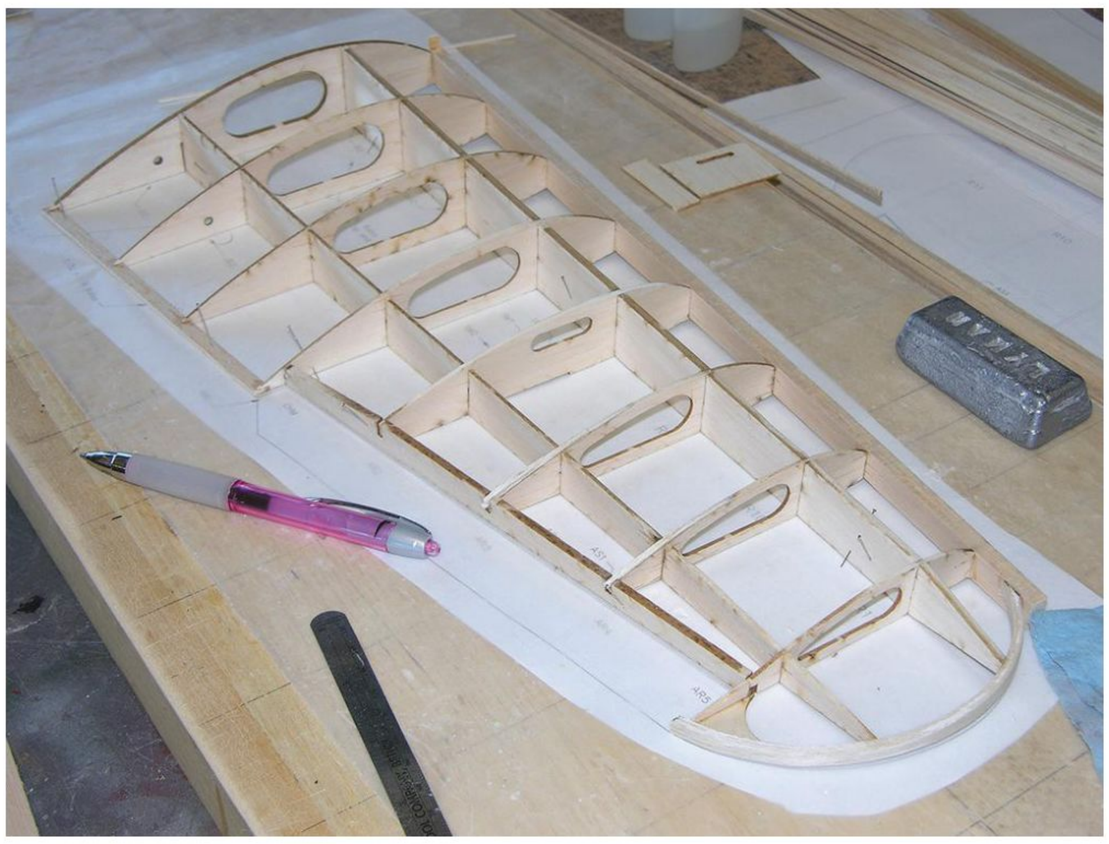
Glue the NM1A doublers in place on NM1 and glue the assemblies into the wing so that when sanded they will conform to the airfoil shape. Then glue the NM1 and SBM



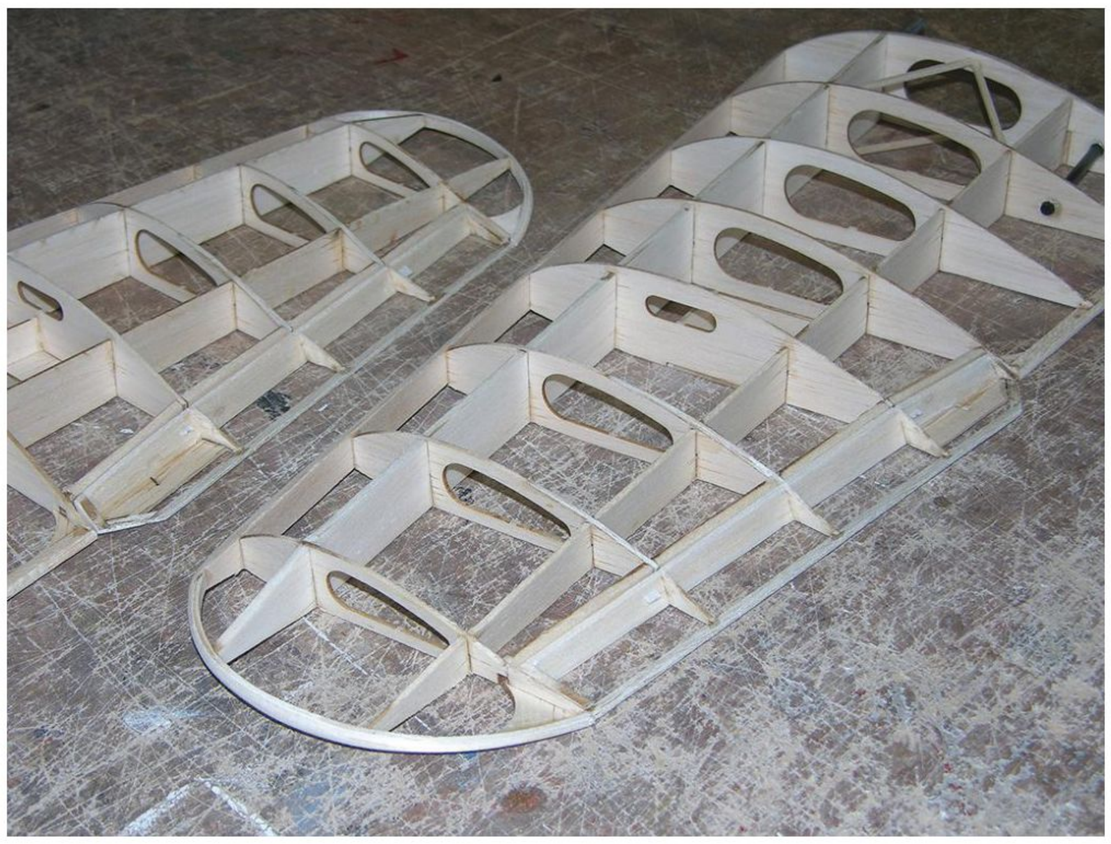
The tail post is notched to receive the tailwheel assembly, which is lashed to the frame and secured with thin CA.



The horizontal stabilizer/elevators are framed directly over the plans.



The outer wing panels are framed directly over the plans. The eggcrate design makes for quick assembly and a strong, light assembly.



When both the wing panels and aileron assemblies are completed and sanded to final shape, hinge and dry-fit the ailerons to the wing.

reinforcing blocks in place flush with the bottom of the ribs. Finally, sand the blocks to final shape to complete the center section assembly. Test-fit the outer panels onto the center section. You should feel a very slight interference fit as you slip the wings into place.

THE NACELLES

Dry-fit the N4 stringers in place on the N1, N2, and N-3 formers. Align vertically in both directions using triangles or machinists' squares and glue. Add the remaining balsa stringers and balsa strut mounting pieces. Be sure to make up left-hand and right-hand assemblies! Add the balsa tail blocks and sand to shape. Extend the motor wiring on two of the E-flite 250 outrunners using 18-inch-long, heavy duty servo leads. Feed the extended leads through the hole in the firewall and out through NF1. Next, cut the vertical wire landing gear strut and align as shown and glue in place.

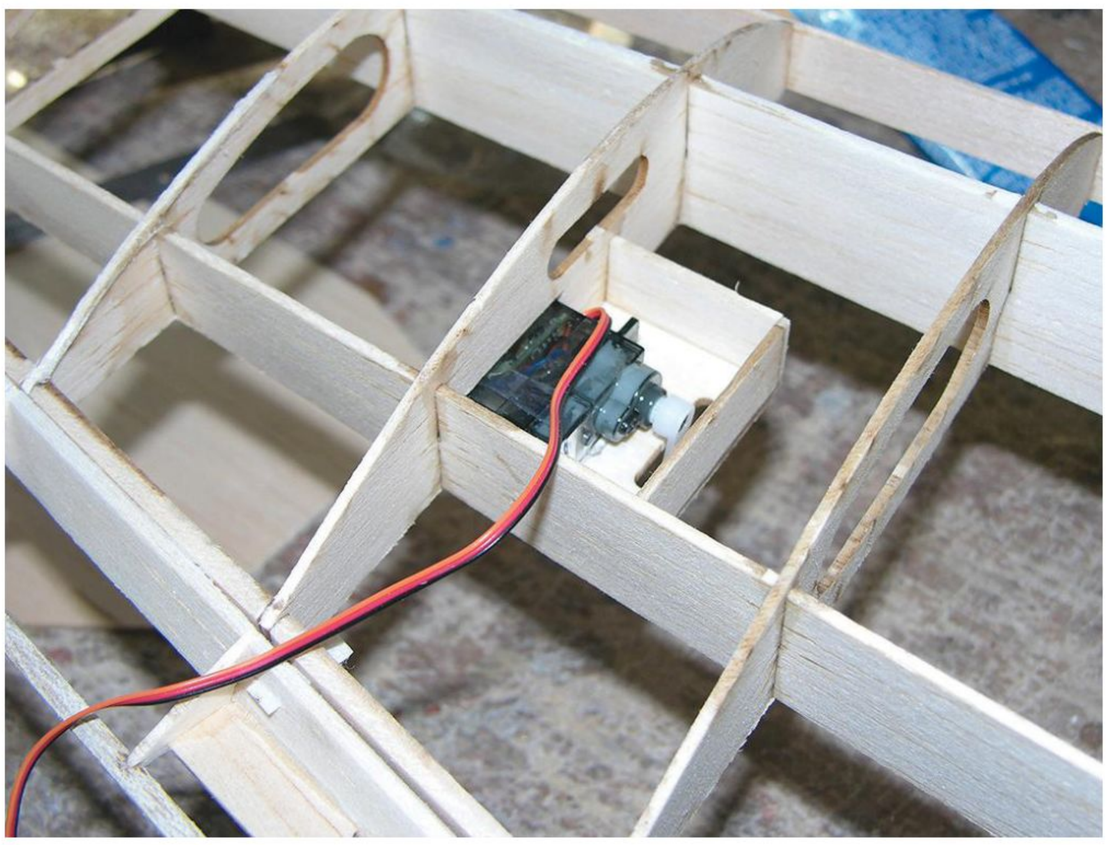
MOUNTING THE NACELLES

Cover both nacelles and the bottom (only) of the wing center section. Make up the two nacelle alignment jigs and the landing gear alignment jig from foam board using the provided patterns. Pin the nacelle jigs to the top of each nacelle, and then slip the landing gear strut into the inner hole in NM1. Fit the alignment jig over both landing gear struts and align so that they are vertical and parallel, then glue the strut into NM1.

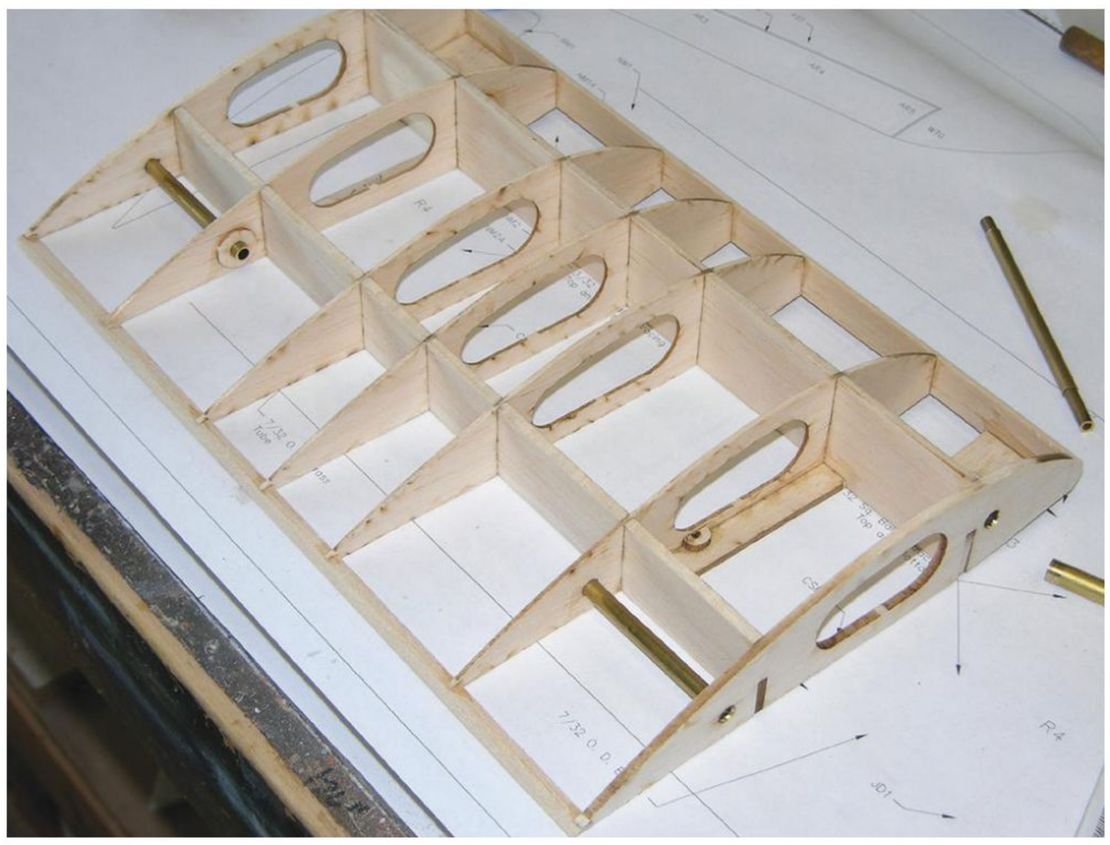
Bend up the remaining struts and fit them in place and glue. The struts might need a little fine tuning, so take your time to ensure the nacelles mount up straight and true. Now you can feed the motor wiring through the large hole in NM1 and feed the wiring through the wing and out through the outer WG wire guides. Run in the aileron servo Y-lead through the center WG guide while the center section is still open at the top.

COVERING

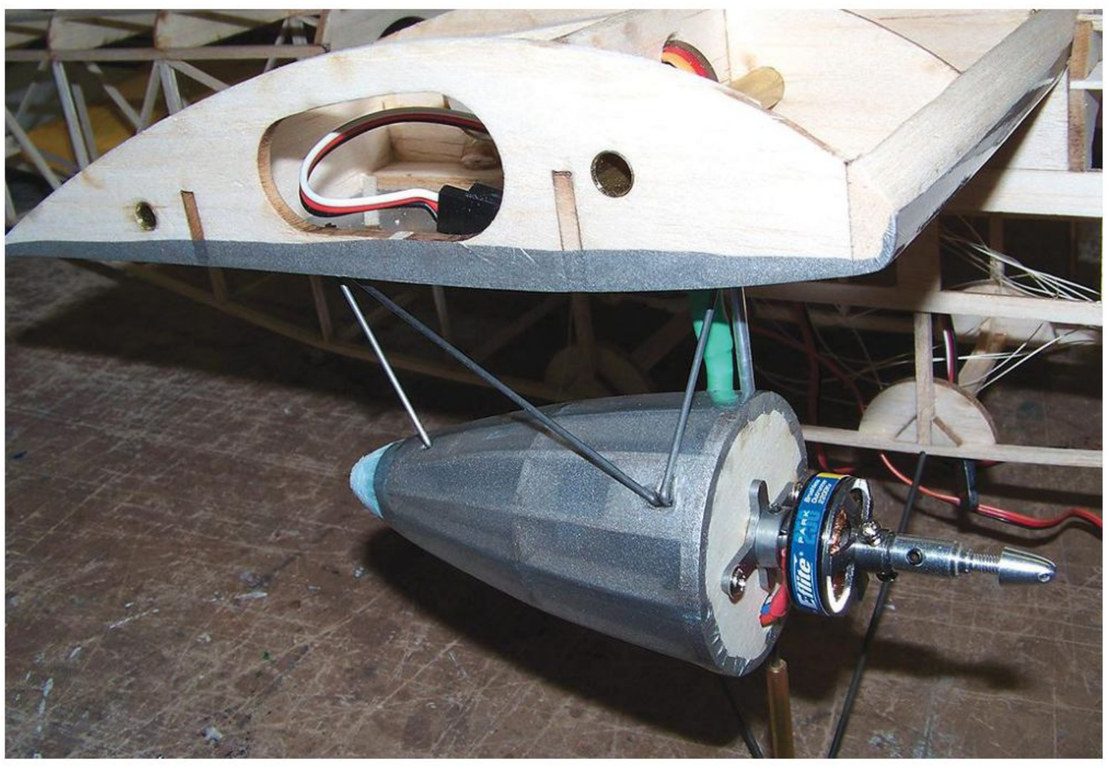
I used Coverite Microlite. Do not use standard MonoKote or UltraCote! They are too heavy and shrink too much for the structure. Once covered, add the desired trim to complete the process. Cover everything except the fuselage bottom; you'll need access to mount the main landing gear. While



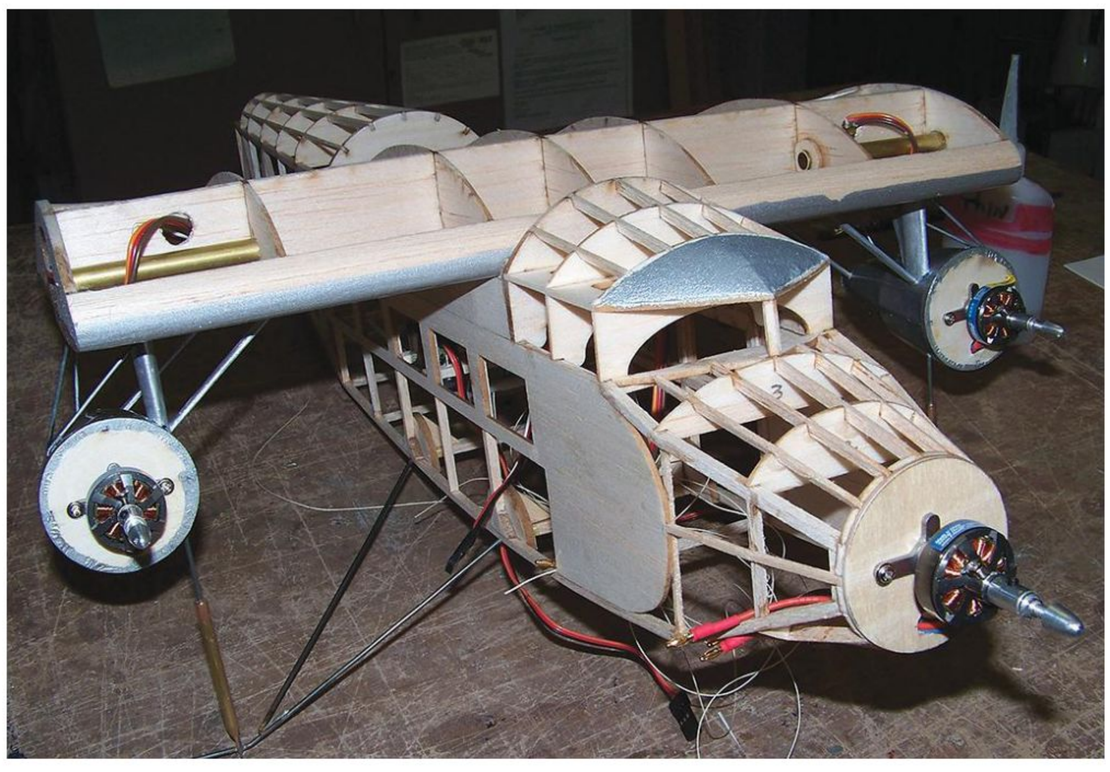
The aileron servos are glued into the wing using silicone caulk. Extension cables are used to bring the wiring out of the root rib.



The wing center section is framed directly over the plans, then removed from the plans and sanded to shape.



The nacelles are glued in place and all the struts are added to complete the mounting process. Take your time and be sure everything lines up correctly, as this operation sets up the thrust line for the outboard motors.



With the landing gear in place on the fuselage, the wing center section is aligned on the fuselage and glued in place.

you have easy access to the inside, fit and glue the cabin windows in place.

FINAL ASSEMBLY

Bend the front and rear main landing gear struts to shape and tape them in place on the mount beams. Make up the lower vertical strut sections from brass tubes using the provided patterns and slip them over the wheel axles. Fit the center section onto the fuselage and insert the vertical landing gear strut wires into the lower struts, then glue the center section in place. Now you can align and solder together the front and rear landing gear struts and lash them to the beams with Kevlar thread and glue everything in place. Finally, align and solder the lower strut to the axle at the bottom and to the vertical strut at the top.

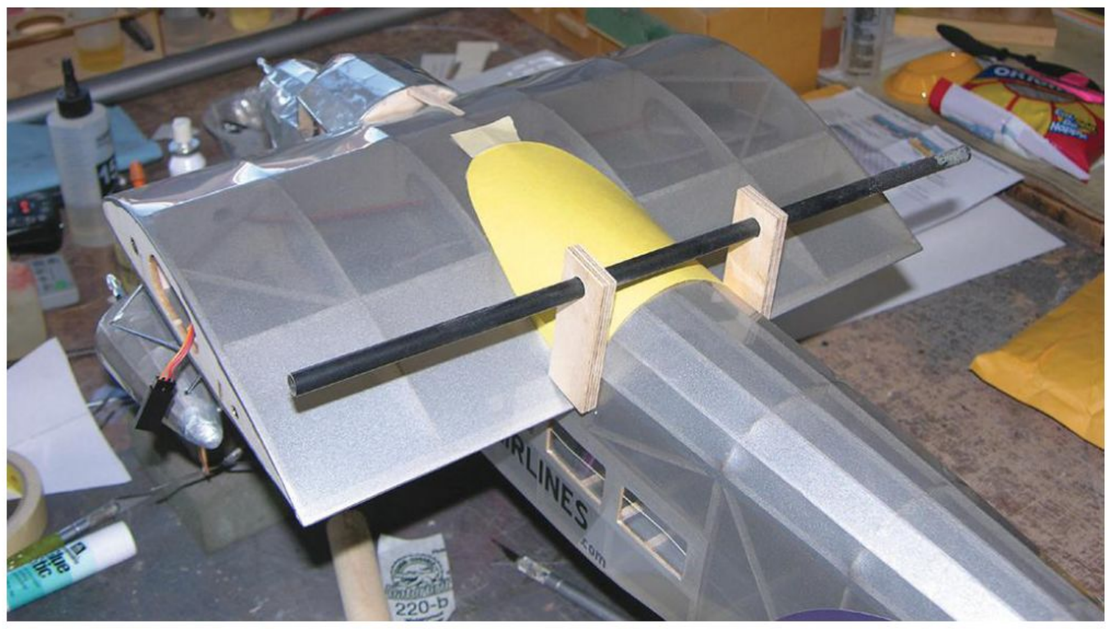
Make up the wing center section fairings from file folder paper, trim to fit, and glue in place with canopy glue and paint to match. Fit and glue the cockpit windows in place. Build up the dummy radial engines and detail to your desired level and glue them to the firewalls. I cut the dummy engine mounting tubes from Estes rocket tube. Trim the dummy engines for a snug fit over the tubes and tack glue them in place with canopy glue.

Wire the power system, connect the servos and set up the control throws as shown on the plans. Test run the motors (without the props installed) to ensure they all run the right direction. Build the battery hatch, then make the wheel keepers using the detail drawings provided, then add any remaining details you desire. With the model basically finished, position the battery to best accommodate the recommended center of gravity, then mount the tray in the fuselage and secure the pack to the tray.

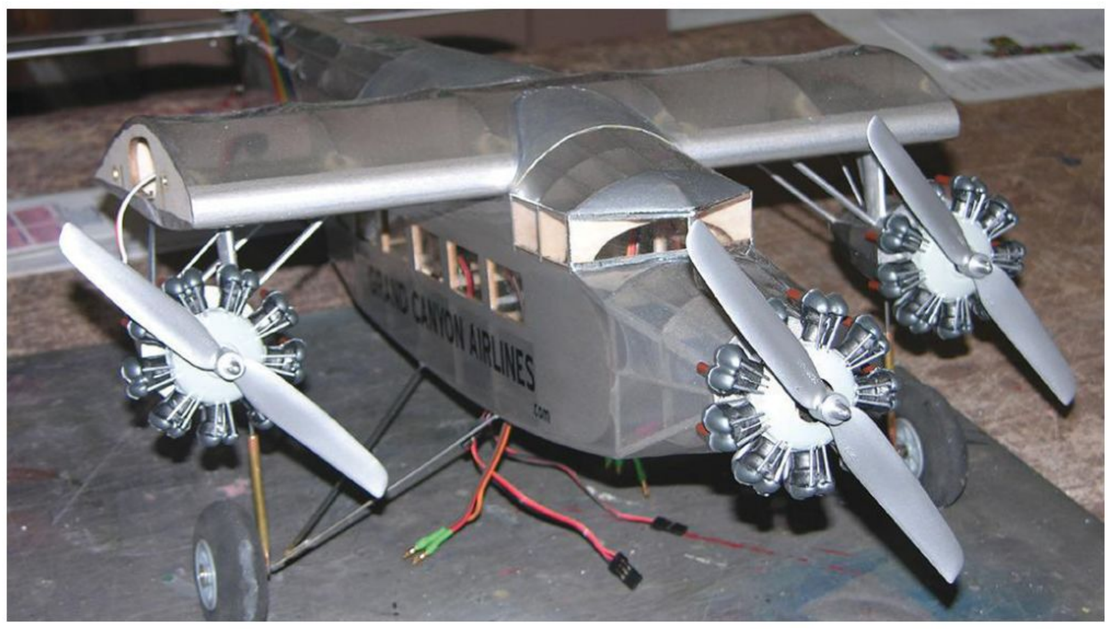
IN THE AIR

Ground handling on takeoff and landing is excellent; there's simply no tendency to ground loop. Keep your climbs nice and shallow and the turns gentle. Landings require a good bit of power on approach, so keep the nose down and the speed up a bit until the flare.

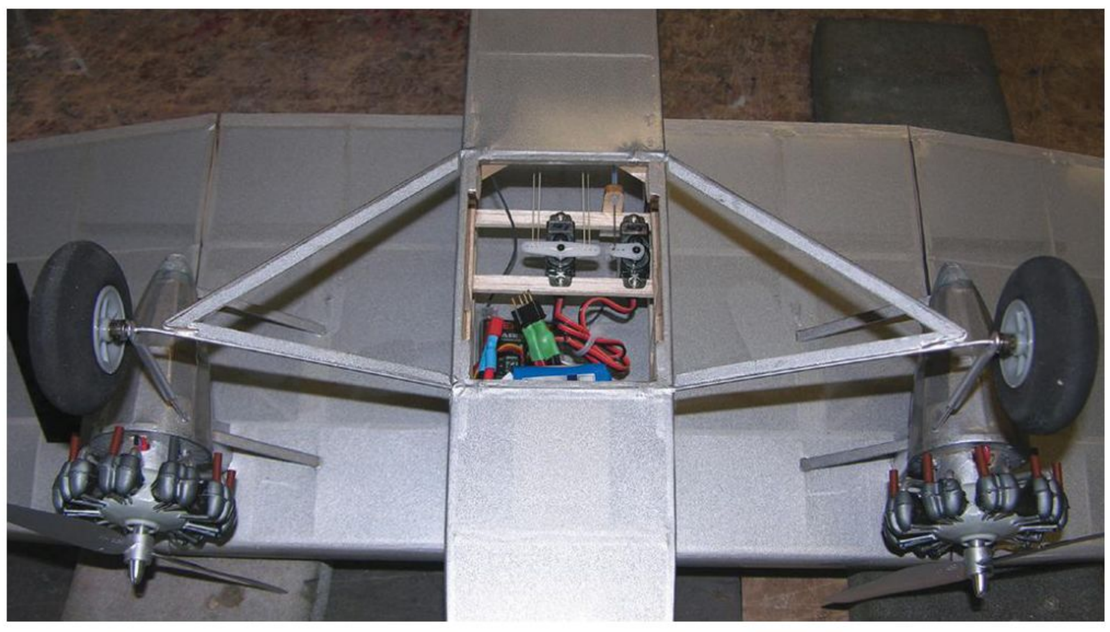
No, the model is not aerobatic. It responds nicely to input, but it doesn't get in a hurry to do anything. The ailerons create a good bit of adverse yaw, so the rudder is essential in turning the model.



The model is covered with Coverite Microlite and ready for your chosen color scheme. Here, the center section fairing, made of folder stock, has been cut to shape and then glued in place.



After the engines are detailed they are tack glued to the mounts using Pacer Canopy 560 glue.



The rudder and elevator servos are accessed through the battery hatch on the bottom of the fuselage. The battery is mounted on the tray with Velcro at the front of the opening.



In spite of its relatively small size, the Trimotor has a huge presence in the air and looks larger than it is. And with its smooth solid feel, it doesn't fly like a small model, either.

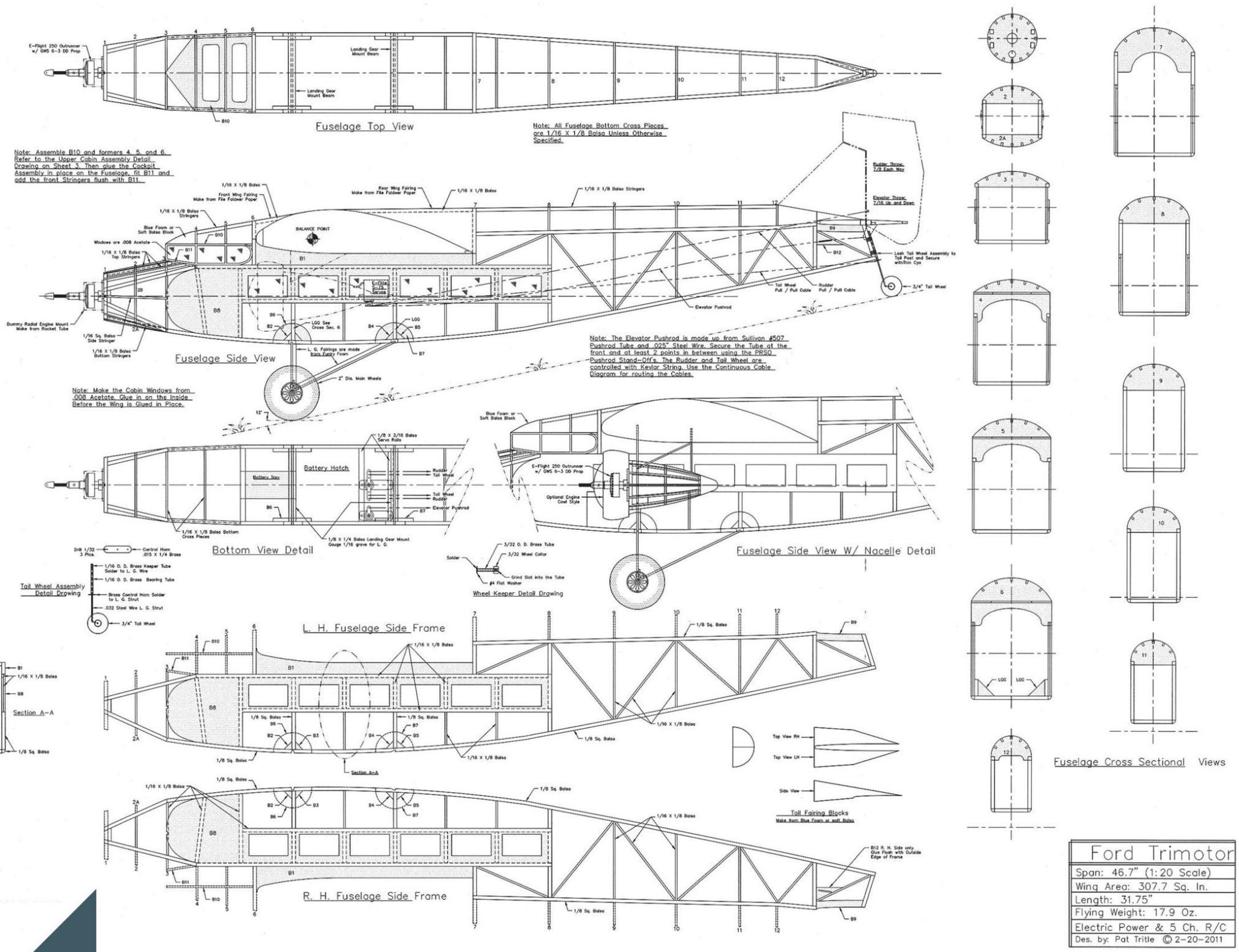


The finished Trimotor is all set up and ready to fly.



THE FORD TRIMOTOR

Designed by William Bushnell Stout, the Ford Trimotor was first flown on June 11, 1926. Manufactured by the Ford Motor Company, it was among the first true airliners of the era. Flown by nearly every airline in the late 1920s, it earned an enviable reputation for comfort and reliability. In all, nearly 200 Trimotors were built, with many still in service today.



X0912A | Ford Trimotor

Designed by Pat Tritle, the Ford Trimotor is intended for intermediate builders and fliers. It uses lightweight stringer and former construction, and laser-cut wood parts are available from manzanolaser.com. It is powered by three brushless outrunner motors. WS: 46.7 in.; L: 31.75 in.; Power: three 250size outrunners; Radio: 4-channel; LD: 2; 3 sheets; $27.95
Plans are available at AirAgeStore.com/ford-trimotor.html

BOTTOM LINE

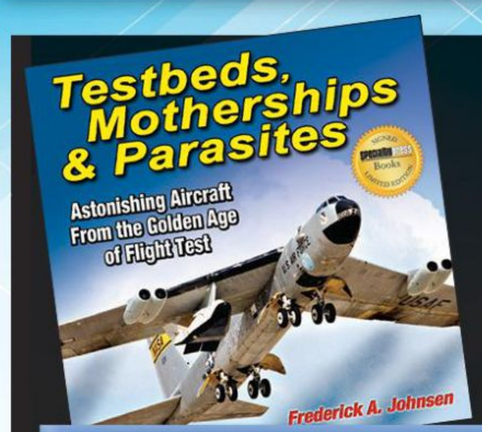
Not hard to fly, the Trimotor is an old airliner and a multi-engine airplane to boot, so it will need to be flown accordingly. When flown properly it is very majestic in the air, and in spite of its small size has a huge presence in the sky. I hope you enjoy your Trimotor as much as I do mine. ✢

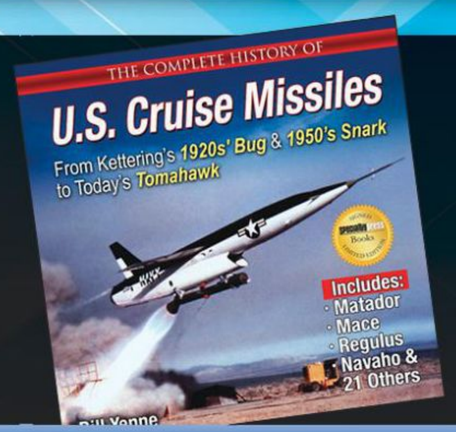
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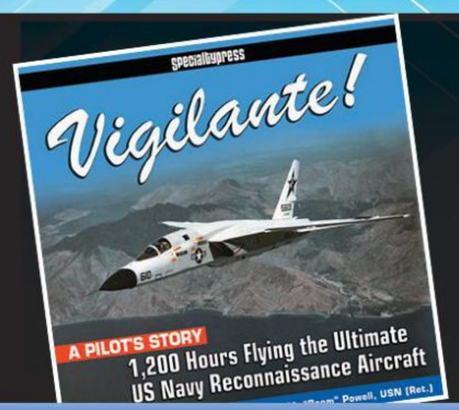
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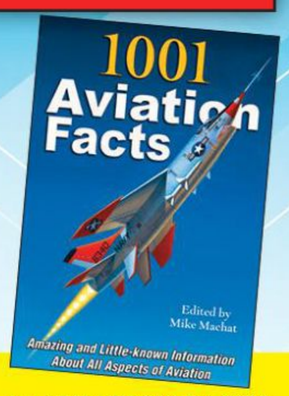
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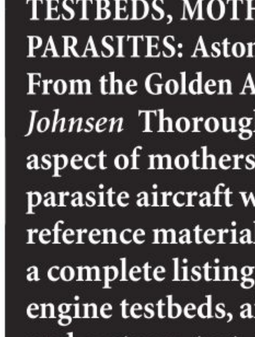
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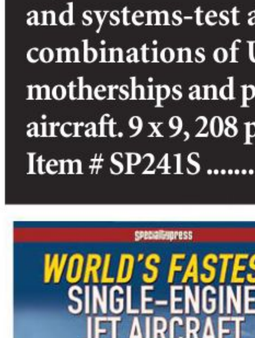
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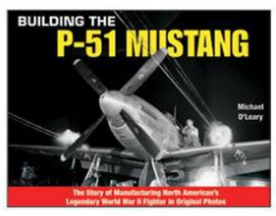
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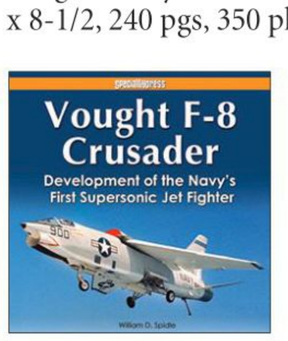
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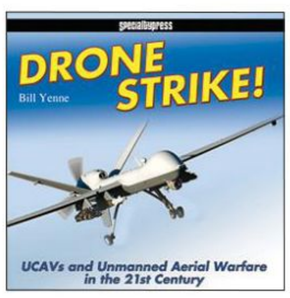
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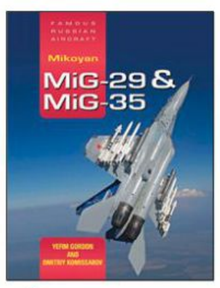
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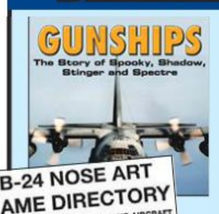
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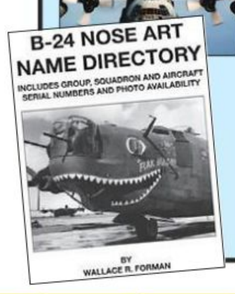


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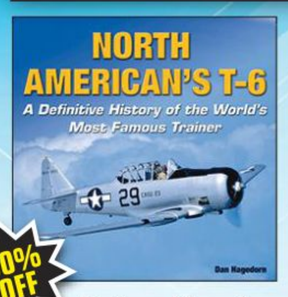
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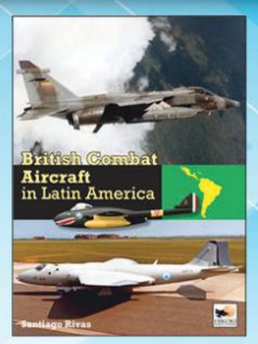
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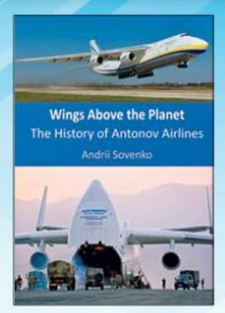
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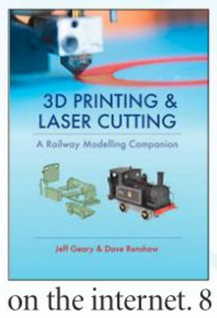
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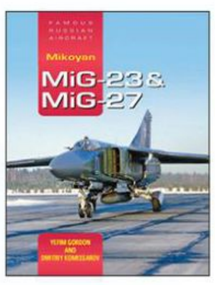
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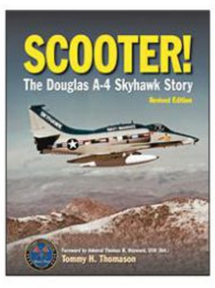
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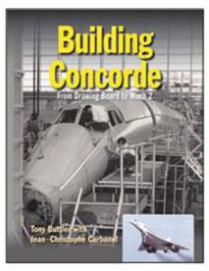
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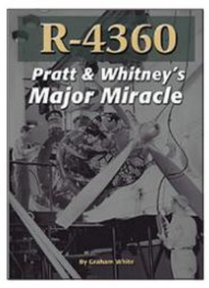
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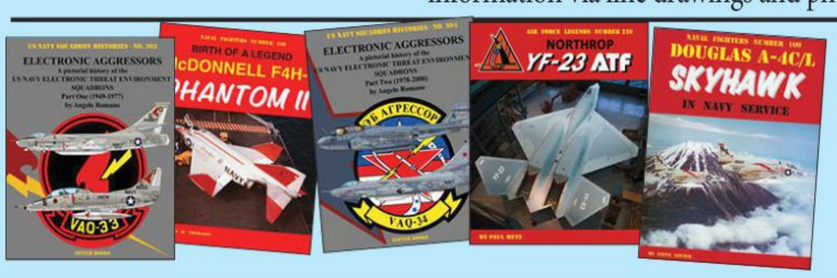
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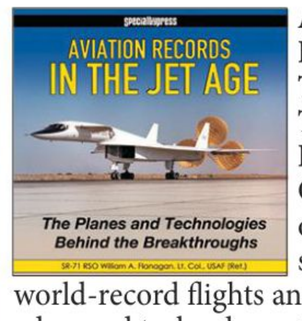
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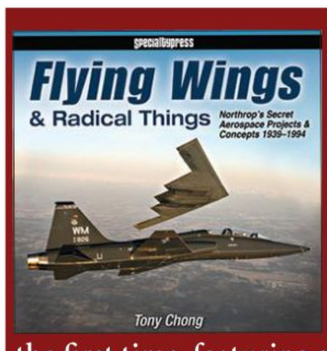
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LET'S TALK
GIANT SCALE

TEXT & PHOTOS BY JOHN GLEZELLIS

FUNCTIONAL SCALE RIGGING

Wires, struts, and attachment points explained



Before the 1930s, it was common for full-size aircraft to feature various forms of rigging wires and support struts to maintain structural integrity. Today, rigging is more commonly found in both experimental class homebuilt planes and light aircraft. This feature has also transitioned into the scale RC world, and chances are that if the full-size aircraft needed them, so does your model! Let's look at a few examples.

There are conventional high-wing airplanes like the Piper J-3 Cub and Pilatus Porter, where struts are used to connect the wing to the fuselage, and all for good reason. Without the wing struts, the wing can break off in flight. In the case of biplanes, interplane struts are designed to attach the upper wing to the lower wing; they are often located close to the outer wing panels. Then, the cabane struts connect the upper wing to the fuselage and the wing rigging (often referred to as "flying wires"), and are used to increase strength and tie the wings to one another as well as to the fuselage.



Here, Raymond Schmidt's Albatros D.V is a fine example of functional wing rigging ingenuity.

UNDERSTANDING AIRCRAFT FORCES

Throughout any flight, your aircraft must hold up to the various anticipated flying and landing loads. Some manufacturers simply design wing struts and flying wires for aesthetic considerations. In other words, they have engineered their airplanes to be strong enough that the struts attached to them are only for decoration, and have no structural importance. Some airplanes utilize fully functional wing bracing, since they don't have the internal structural strength to fly without them. Often, aluminum brackets hold the panels in position, and the flying wires tie all the components together. Some scale airplanes have airfoils that are so thin that flying wires must be used for proper strength. As you calculate your estimations of your airplane's flight loads, take into consideration the strength of your flying wires. These loads vary depending on how your aircraft is flown and the power-to-weight ratio of your plane.

What is the right flying wire strength for your aircraft? This depends. Is your airplane docile, or fully aerobatic? If you are flying a WW I Albatros or a DH Tiger Moth, your airplane probably won't see anything over a 4 G load. If, however, you have a 46 percent Ultimate biplane that weighs 45 pounds, it could see up to a 10 G load, possibly more. With large RC scale models, your aircraft will experience flight loads similar to its full-size counterpart.

The notation "G" represents gravitational force. With a big Hangar 9 Ultimate biplane that weighs 45 pounds, each flying wire (there are four flying wires per side) will take a load of 56.25 pounds. To get that figure, multiply the aircraft weight by 10 and then divide by the number of flying wires (eight). Knowing this, you should use 60-pound test wire or similar to rig your big Ultimate. It's always good to round the numbers up a little bit! If you are really going to be throwing your Ultimate around in 3D aerobatics, I recommend using 100-pound test wires. The weight penalty is next to nothing for using the larger gauge wires. Engines today put out a lot more power than in years past, and flying styles have changed considerably with the evolution of extreme 3D aerobatic flight.

WING STRUTS

Interplane struts basically keep the upper and lower wings of biplanes tied together and are supported by the flying and landing wires during flight. High-wing monoplanes feature wing struts that support the wing panels. There is always tension at the point where the struts are attached to the wing, and the mounting areas that the wing struts are secured to must be extremely robust. If a mounting area breaks and the wing strut breaks free from the aircraft, the plane will be lost. It is extremely important to use the proper building methods for both making flying wires (rigging wires), as well as wing struts and their attachment points.

RIGGING BIPLANES

I have seen some modelers opt to use solid wire for their wing bracing material. However, if you decide to go this route, keep in mind that some slack must exist. If the rigging is too tight with solid wire, the clevis that attaches the wire to the hard point in the wing may break. Simply stated, the wings must be able to flex to some extent. Personally, I am not fond of using solid wire. Not only is this method rather heavy, but it can also break over time due to engine vibration.

Sullivan Products offers a Universal Flying Wire Kit, which is designed for both wing and tail braces. The cable they supply is 120-pound test cable, and it comes with the requisite steel brackets and brass bearings that are typical for most applications. Take a look at this product, as I am sure it will be useful, especially if you are rigging an aircraft for the first time.

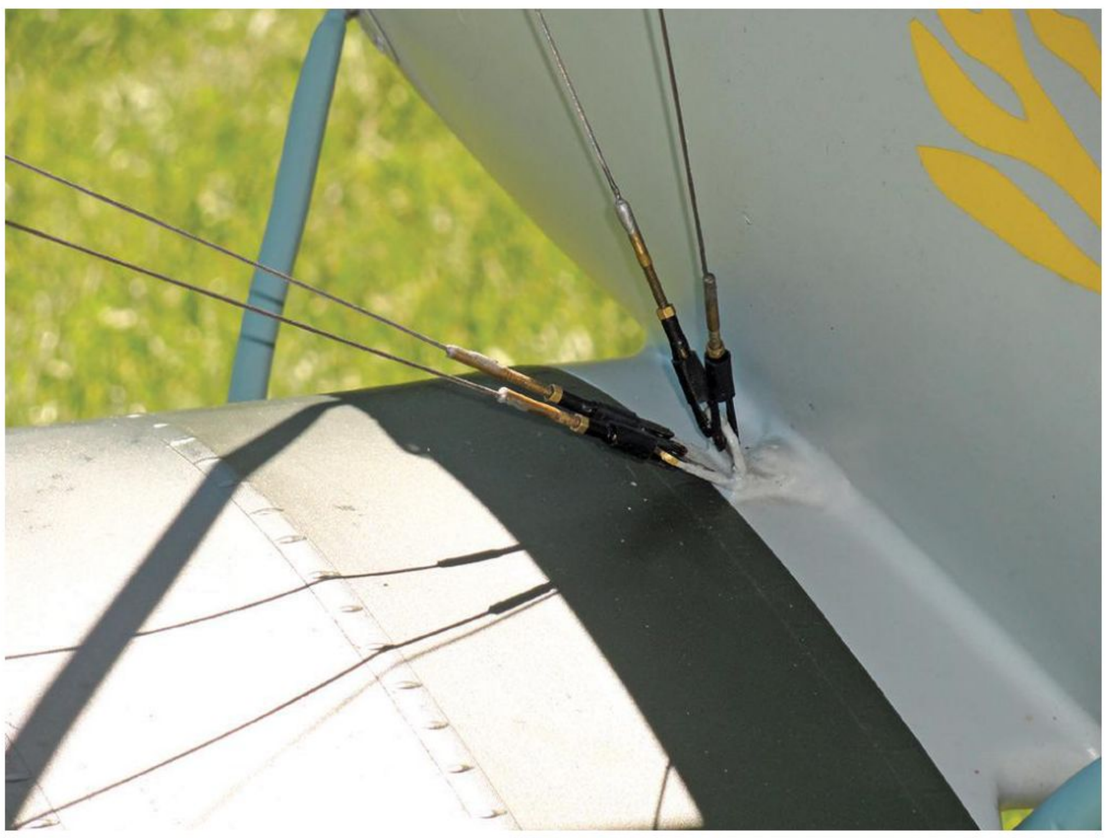
It is essential to have structurally sound areas to secure the flying wires onto the aircraft. For example, hardwood blocks that are located along a wing rib and tie into a spar of some sort would suffice. Then, you can secure a flying wire attachment strap to that location with either a wood screw, or a 4-40 bolt and a blind nut.



The cabane struts on a biplane support the top wing and secure it to the fuselage. The interplane struts that are located towards the outer sections of the wing panels connect the top and bottom wing together.



As you can see, the wing rigging is adjustable. Simply solder one end of the wire to a threaded coupler (available from Sullivan Products), thread the coupler into a clevis, and attach the clevis to a bracket, as shown in the photo.



Often, it may be necessary to make customized brackets to secure the wing rigging to, especially for scale applications. Flat aluminum plate, bent and cut to shape, is a very popular option.



My Pilatus Porter features aluminum wing struts that are bent to the proper angles, parallel to the area in which they will be secured. Then, the aluminum strut is sandwiched between two pieces of balsa, prepped, and covered to add the finishing touch.



The Pilatus Porter, just like the clipped-wing Cub, features wing struts that are mostly in tension. It is important to have structurally sound mounting areas where the wing strut attaches to both the wing and the fuselage.

Personally, I like to make my flying wires adjustable. To do this, solder each end of the wire to a threaded coupler that will then be attached to a clevis. Finally, attach the clevis to the flying wire attachment strap and you are done!

BIPLANE MAINTENANCE

I am always interested in seeing others' airplanes. Upon inspection, all the wing rigging should be taut. There should be no slack at all. During flight, especially with a biplane, if you notice that your control trims sometimes change, especially in roll, it could simply be that some of the rigging has loosened up. Check those rigging wires and tighten any loose ones. But don't simply tighten one cable, as this could twist the wings out of alignment. Always look at all the wires when you make adjustments to ensure they all remain properly rigged.

I recommend that you also occasionally check the wing incidence. As a side note, once all rigging is tight and you've retrimmed your aircraft, be sure to readjust your transmitter trims as well. Make your changes at the lowest value so that you can precisely trim the aircraft. Often, people apply trim changes in large increments, which makes it difficult to precisely tune an aircraft.

WING STRUTS FOR MONOPLANES

I often use my 3.2m Pilatus Porter as a glider tug and it has wing struts that are almost always in tension during flight. It needs really strong strut attachment points. Available from ICARE, the Porter came with struts that were built in a traditional fashion. Each strut has a piece of sheet metal sandwiched between two pieces of balsa. However, the ends of the sheet metal are angled so that they are parallel to the attachment area. These ends are then drilled so a bolt can secure the strut to the wing, and on the other end, to the fuselage. I roughened the aluminum with 80-grit sandpaper, cleaned it with some rubbing alcohol and a paper towel, and then used 30-minute epoxy to bond the wood to the aluminum. After the glued cured, I shaped the balsa to an airfoil shape to match the full-scale aircraft.

Another method of making struts is to use streamlined hollow aluminum struts. Available from both Balsa USA as well as K&S Precision Metals, these are bolted to supporting brackets and are very strong. Balsa USA also offers preshaped basswood wing struts that you can modify to accept sheet metal attachment tabs at either end.

HARDPOINTS

The mounting areas on both the wing and the fuselage must be strong enough to handle the forces that the struts exert. I use 6-32 mounting bolts on my Pilatus Porter to secure the wing struts, and the attachment plates are made from thick plywood that is properly supported all around. Just as with the wing rigging mounting locations, use hardwood and be sure that the mounting area is extremely rigid.

JACK'S CLIPPED-WING CUB



A regular Top Gun contestant, Jack Buckley has flown his 1/3-scale Reed clipped-wing Cub for several years now. One of the subtle, not very noticeable features of his Cub is the use of scale fittings and rigging. Jack commented that he didn't think anyone has done a proper Reed clipped-wing Cub for Top Gun, not in 1/3-scale anyway. So he made sure that everything with his Cub was done scale, even the setup of the wing attachment to the fuselage and wing incidence. Jack made up all scale hinging from stainless steel, so the model has a very accurate outline throughout the wing panels, rudder, and elevators. These are the areas that often lower the static score points. His scale control surface hinges were made from steel tubes and threaded bolts brazed together.

For power, Jack selected an O.S. 300 twin cylinder engine with dummy engine cylinders molded off the O.S. 300's cylinders. He also modified the castings so they look just like the real engine. Jack's Cub weighs in at 33 pounds, covered and painted with scale Stits fabric and Poly-Tone paint. Jack reports that his clipped-wing Cub "flies super!"

Jack says, "My Cub is sort of scratch-built but with some parts borrowed from a Balsa USA kit along with some construction ideas borrowed from the Bob Nietz plans for his classic 33 percent scale Piper J-3 Cub." (Plan no. GO0005, available from *Model Airplane News* at AirAgeStore.com.)

FINAL THOUGHTS

As with any building task involved with your model's construction, always take your time and do the job correctly. If you are unsure about the structural integrity of your aircraft, seek the advice of a fellow modeler, or feel free to send me an email at MAN@airage.com +

SAL'S
SCALE VIEWS

TEXT & PHOTOS BY SAL CALVAGNA

RC GOES HOLLYWOOD

The Long Island Skyhawks fly for "The Lafayette Escadrille"

Darroch Greer, the co-producer of the documentary, came to the Long Island Skyhawks' flying field and filmed much needed action footage to complete the documentary.

There are many activities associated with our RC modeling clubs that keep the interest and fun in our hobby. But once in a great while, something really special comes along. Such was the case this summer with my club, the Long Island, when we were asked to participate in the making of a full length motion picture. The producers needed us to fly some of our giant scale WW1 aircraft for their documentary, "The Lafayette Escadrille."



The Lafayette Escadrille logo used by the U.S. volunteer unit in 1916.

The actual Lafayette Escadrille was a unit in the French Air Service made up mainly of American volunteers who were under French command. The unit was named after the Marquis de Lafayette, a French volunteer and hero of the American Revolutionary War. One of the reasons the Escadrille was formed was to have their efforts recognized by the American public and hopefully result in foregoing neutrality and joining in the fight. Eventually 224 Americans joined the unit; 51 died in combat, 11 died in non-combat roles, 15 became prisoners of war and 11 pilots became aces. The documentary focuses around the initial 38, 11 of whom would lose their lives during the conflict. All strongly felt they were serving in a just cause.

The Skyhawks involvement in the documentary began in an unspectacular way with someone who knows someone who knows someone else who contacted me about the availability of specific types of large scale WW I aircraft. As it happened, our club possessed most of what the film makers needed to finish production, and the club was happy to accommodate. The producers had already videoed some of Peter Jackson's amazing WW I collection in New Zealand and photographed some of Javier Arango's collection in California. What they lacked to complete the documentary were as a few video sequences of aircraft performing aerial maneuvers.



The documentary's poster.

LIGHTS, CAMERA, ACTION!

Though it can be fairly windy at our field on Long Island, we were able to schedule a two-day shoot at our club field. On September 26, 2019 we started filming early in the morning to take advantage of the sun's position. The weather was spectacular and to start off, the producer wanted a Fokker Eindecker to fly in a dive straight at the camera from just out of the sun and then to bank away at the last moment. We did this over and over again, at least a couple dozen times with different Eindeckers and from different angles. It was a lot of fun to do and even more fun to just watch. At one point we mounted a small video camera on one of the models as it chased another airplane in dogfight fashion. We even flew some head on shots for added drama.


A pair of Eindeckers (built from a Balsa USA and SR Batteries kit) set up for their roles in the film. Each aircraft took turns diving straight at the camera before veering off out of the frame.


In the air, the Nieuport 11 flew beautifully.

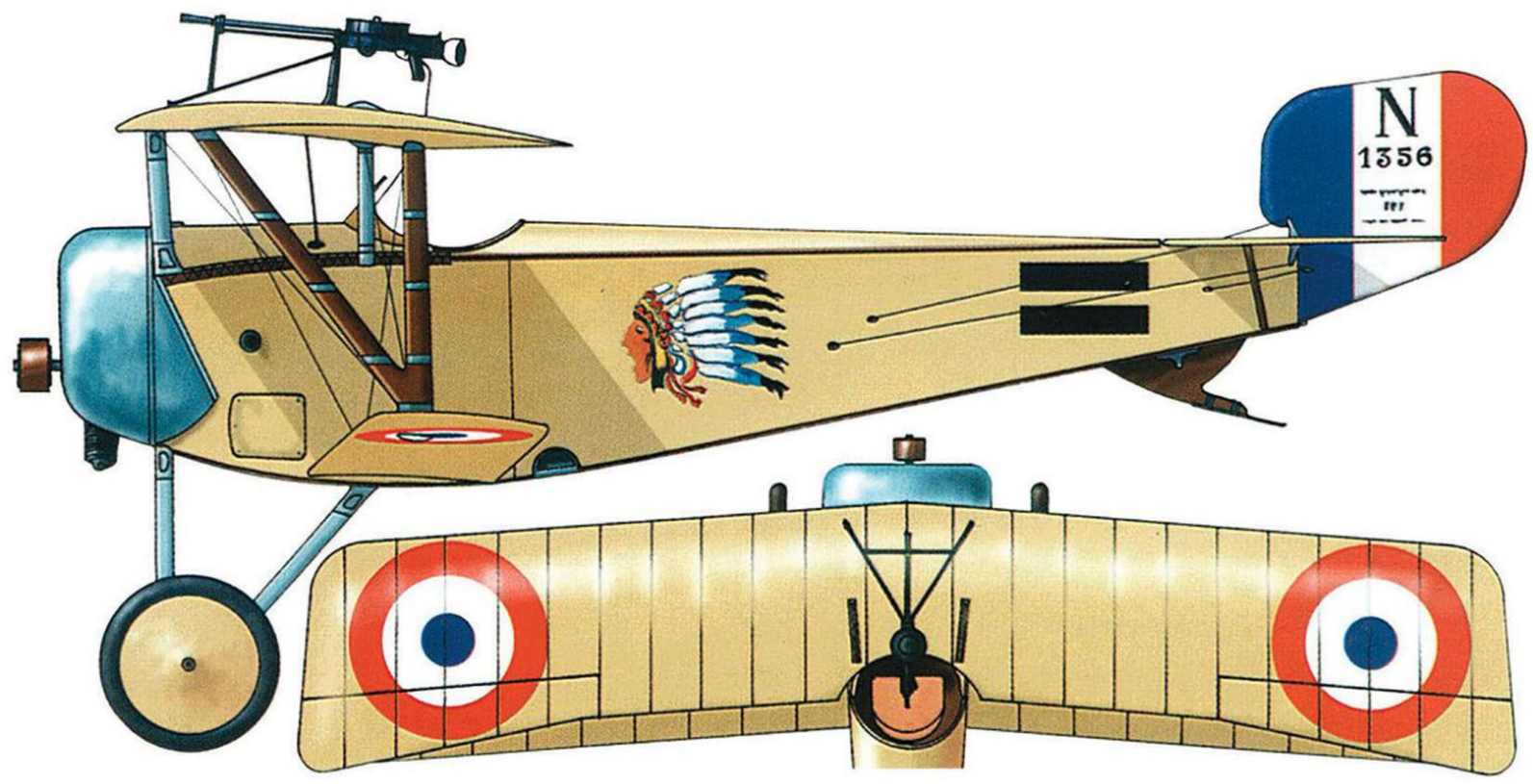


French General Yvonne Gautx poses with some of the posters and decorations from the USAF Museum.

We flew many sorties that first day and with the weather cooperating, there was no need for a second day of shooting. The production crew had everything they needed to complete their film. The filmmakers were so happy with our support that they made a donation to our club and invited us all to a cocktail reception at the premier screening of the documentary to be held on Veterans Day weekend at the U.S. Air Force Museum in Dayton, Ohio.

Attendees at the premier included descendants of the original pilots, a retired four star French Air Force General, and other dignitaries. After the two-hour movie, the filmmakers thanked all of those who had assisted in the making of the film, including the members of the Long Island Skyhawks. In addition, we were all treated to a VIP tour of the Museum, which is a must-see for any aircraft enthusiast.

All the members of the Long Island Skyhawks were extremely pleased to have taken part in this amazing salute to the Lafayette Escadrille. We all feel that in a small way we helped tp preserve the history and bravery of these courageous pilots and patriots. ✢



The producers needed a model of a Nieuport 11 in the Lafayette Escadrille, so I repainted one of the models from the club's squadron of scale WW I models.



Here the freshly repainted Nieuport is readied for its first flight.

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HANGAR TALK

TEXT & PHOTOS BY DAN LANDIS

Simple Rivets on Film Covering

Add to your ARF's realism factor



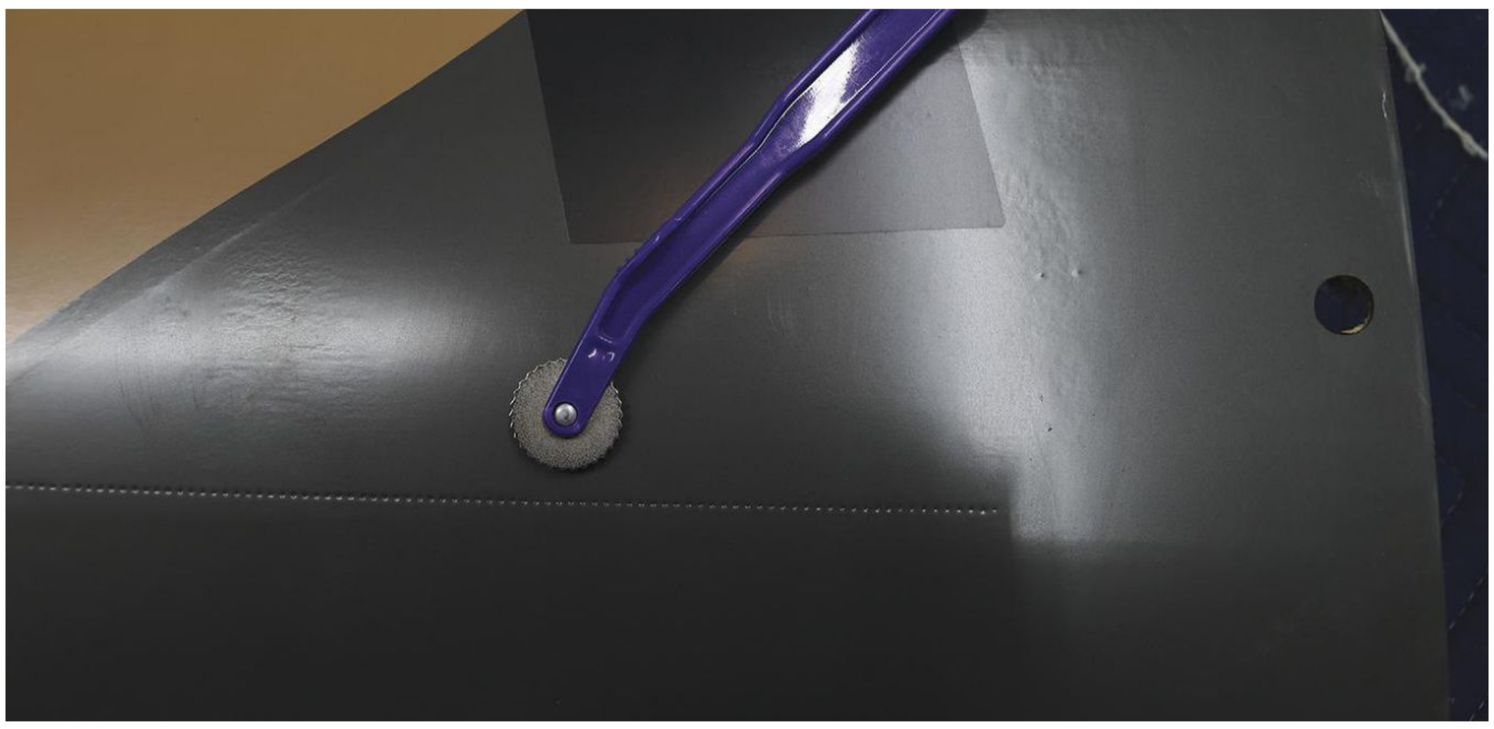
Adding panel lines to a film-covered ARF is fast and easy when you have the right tools.

I thought I would share a quick and easy way that I have found to put rivets onto MonoKote or other plastic covering. Anytime I happen to be in a craft store, I always look around to see what I might be able to use on a model (you never know what you might find!). Well, I found this nifty little pizza cutter-looking tool. I'm not sure what it is really used for; instead of being a cutting blade it has rounded points all the way around.

So, on to how I use this to make rivets. It's super easy! Just find a three-view of the airplane you want to replicate and mark where you want the rivets to go. Then hold a straightedge in place and roll away. Only apply light pressure, as you do not want to make any weak spots in the balsa; you just want to mark the covering. It's that simple!



Panel lines really dress up an ordinary ARF.



Tracing wheels for sewing patterns like this one are readily available at craft stores. Lightly rolled over film covering on a model, they can create realistic panel lines. Use a straightedge to keep your panel lines even.

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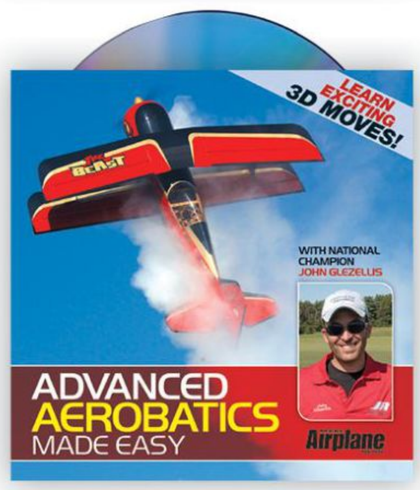
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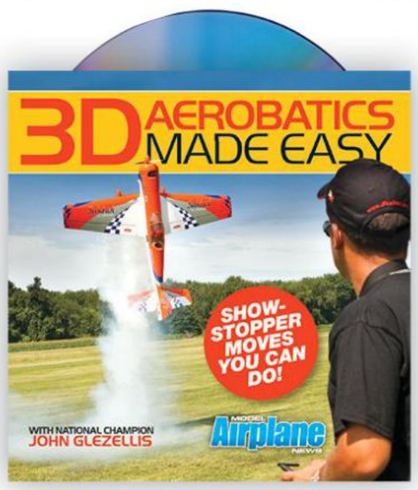
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