



Mirror finish

An incredible paint process for an amazing airplane

BY JULIE K. BOATMAN

Some might say we're taking the long way around with this year's sweepstakes airplane.

We had two big plans in store for the 1977 Cessna 177B Cardinal that we're refurbishing for you—the first involved a complete disassembly of the airframe. The second was a meticulous paint process that would start early in the project. With both work packages, we sought to find out exactly what squawks might lie under the paint and behind the inspection panels.

Tony Dias, owner of Advanced Aircraft Refinishers (AAR), a brand-new corporate-aircraft refinishing facility at the Griffin-Spalding County Airport in Georgia, signed on to our ambitious program: to put each piece of the airplane through the paint process separately. With more than 280 parts we'd removed from the airplane to address—from the wings to the smallest brackets and sleeves—he could have easily shaken his head and said “no way,” but that's not Dias' way, as we found out. No one paints an airplane like we did—but no one gets the same stunning results.

Most airplanes (after they've left the manufacturer's original paint booth) get

painted as a whole, with only control surfaces removed. It's easier, saves time and labor, and gets the job done adequately. But if you look closely, you'll see gaps in the paint in places where the wings and stabilizers attach to the fuselage, as well as around fairings and other out-of-the-way areas hard to reach on an assembled airframe. Since paint (and the primer and conversion coatings beneath it) is protective against corrosion and other evils, getting the paint into every corner does more than just look good.

Because most of the work on the Cardinal is being accomplished at Griffin, we could start the paint process early enough to achieve our sky-high goals. Dan Gryder, our field project manager, of The AvNet, began taking pieces over to AAR in December 2006 to commence the first step (as shown in the following pages): stripping.

In time for the Sun 'n Fun Fly-In in April, Dias' team had the airplane completely trimmed out (the final step). AAR will detail the airplane again this fall before it comes your way—so you can fly your Cardinal with a spectacular finish.



1 Stripping

The parts went to AAR to be masked (for protection), after which a chemical stripper was applied. First to strip were the control surfaces, and because of our unique approach we found a number of minor flaws in the metal that we could address. The wings, cowlings, doors, and—finally—the fuselage followed. Daryl Kowstoski applies stripper to the fuselage in AAR's aircraft preparation bay (in photo). Airframe experts from Air Wrench and from Classic Aircraft Maintenance inspected each aircraft component for potential problems no longer hidden by paint.

2 Etching/conversion coat

After technicians such as Jeremy Burch (right) cleaned the components with an alkaline soap to neutralize the metal's pH, they applied an acid-etch chemical and cleaned each part to further prepare the surfaces for paint. Next, they sponged on a chromated alodine coating, donated to the project by Custom Chemical Engineering. At this point, any additional bodywork was addressed, including lap sealing, a special process normally reserved for corporate turboprops and business jets in which a sealant fills each seam in the airframe for an ultrasleek finish.



Tools from the trenches

4 picks for your paint

- 1. Quality can vary widely.** Paint-shop staff can turn over quickly. Look at the latest job from a facility to get a sense of what to expect. Don't rely on photos.
- 2. Keep an eye on the logbooks.** The paint job itself is considered a minor repair; other airworthiness aspects may include balancing control surfaces (a major repair), replacing N numbers, and updating the weight and balance.
- 3. Plan for future repairs.** The shop should provide you with touch-up paint, since the color mixed for your airplane may vary slightly from the same color mixed on a different day.
- 4. Mind the budget.** Paint jobs are typically quoted in a fixed price, but you may need extra room in your budget for repairing any problems uncovered when stripping paint.

Who's behind us?

Advanced Aircraft Refinishers' Tony Dias

New Jersey transplant Tony Dias has worked for some heavy hitters in the corporate-aircraft refinishing business—and over the 23 years he's been in the business, he's formed some definite ideas of how things should be done, and how they should be done differently. He put these ideas into practice with the opening of his own facility, Advanced Aircraft Refinishers, at Griffin, Georgia, in November 2006.

AAR specializes in turboprops and business jets and is able to fit aircraft up to the size of a Beechcraft King Air 350 or Hawker 800 into the paint bay. With attention to bodywork such as lap sealing (to fill in seams) and exhaustive final detailing, AAR produces a top-quality finish to appreciate for years to come. Call 770/233-4600 or visit the Web site (www.advancedaircraftrefinishers.com).

3 Priming

Traditional zinc chromate primer serves as an additional protective layer, and it went on next. The two-stage epoxy primer (donated along with all aircraft paint by Aero Performance) creates a solid foundation for the base paint. AAR took another additional step at this point: Members of the crew applied a sanding surfacer after the primer dried and then sanded the parts to a glass-smooth finish. This way, no imperfections will mar the base paint. Primer shoots onto the fuselage (in photo) starting with the belly of the airplane.



4 Shooting the base coat

Before shooting the base coat, AAR went through a "lockdown" of the paint bay to ensure that all foreign objects and particulates were removed or filtered from the environment. Any dust can embed in the paint as grit. The Akzo Nobel Alumi-grip base coat in Matterhorn White went on in three layers to achieve a deep, high-gloss finish. You can see your reflection in the white base coat (in photo), even in the tail cone in the foreground.

CONTACT

Aero Performance

www.aeroperformance.com

Air Wrench

www.airwrenchinc.com

Akzo Nobel Aerospace Coatings

www.anac.com

Classic Aircraft Maintenance

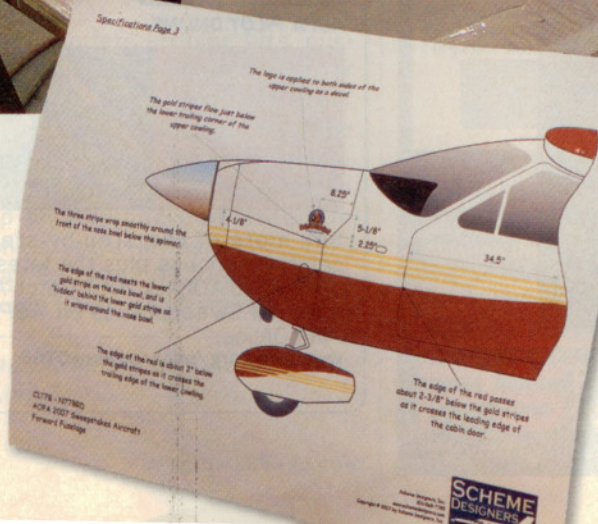
n522dr@hotmail.com

Custom Chemical Engineering

www.customchemicalengineering.com

The AvNet

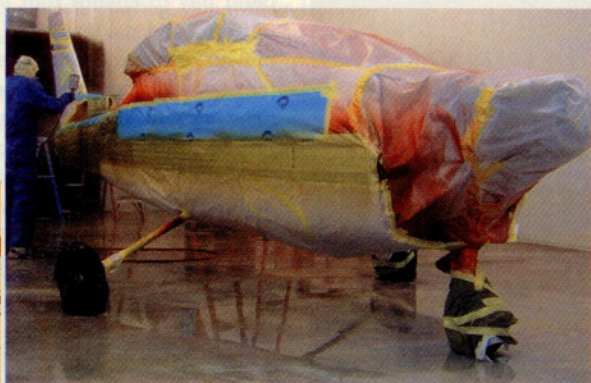
www.theaviatornetwork.com



Scheme Designers produces a detailed road map for applying the paint scheme.

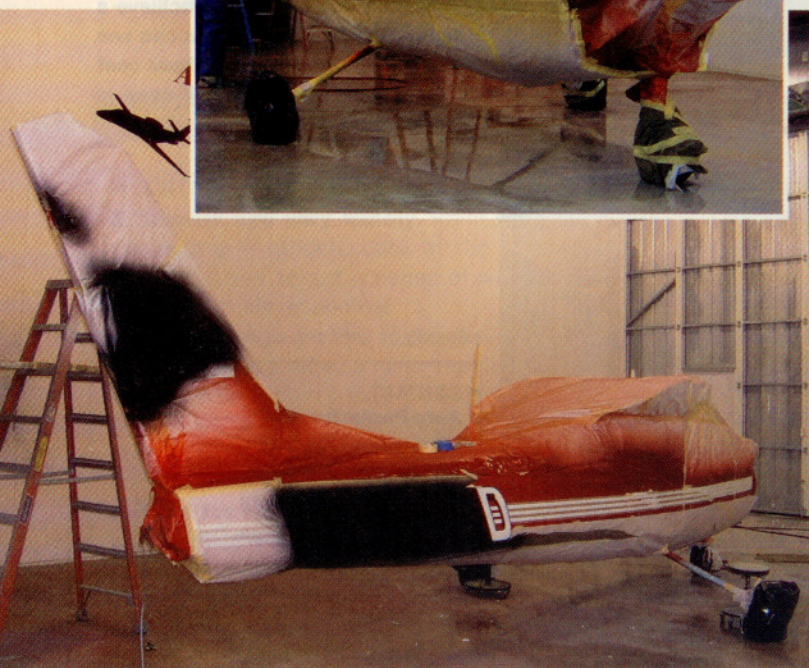
5 Masking

When the time came to mask the airplane for trim paint, we brought together the experts: Craig Barnett of Scheme Designers, who designed the Cardinal's striking scheme, and Paul Howes of Moody Aero-Graphics, who created the paint masks to aid us with application of the cardinal on the vertical stabilizer, as well as the gold striping, red slash, and multi-layered N numbers. Moody also provided the Catch-A-Cardinal logos for the cowl-ing. Howes (in foreground), Barnett, and Dias lay out the first stage of the mask on the Cardinal's fuselage.



6 Shooting trim paint

With the final striping laid out, Dias and crew were ready to shoot the first of three layers of trim paint. The trim colors—a deep flight red, metallic harvest gold, and glossy black—go on separately, and shape the stripes, N number, and swoosh. After each layer dries, the next one is applied. Final detailing takes another couple of days, as the team goes over the airplane with tools to clean up any seepage into the masks, and other minor imperfections. Although many aircraft take a clear coat to provide a glossy finish, clear coat will yellow over time with ultraviolet exposure, so we opt out of this step. With its mirror finish, the Cardinal has a long-lasting shine most aircraft owners would love to have.



INTERACTIVE ►

AOPA PILOT ONLINE

Mirror finish

An incredible paint process for an amazing airplane



See more of the step-by-step painting process plus the latest updates to AOPA's 2007 Catch-A-Cardinal Sweepstakes on AOPA Pilot Online.
www.aopa.org/pilot/sweeps0706



Featured contributors

Scheme Designers

Craig Barnett's first airplane was a 1964 Cessna 150; he currently flies a 1978 Piper Lance. His experience since 1980 as a pilot and aircraft owner inspired his current business, Scheme Designers, of Cresskill, New York, which provides custom design services to aircraft owners, manufacturers, operators, and airlines. His goal? To create a work of art—the airplane—for each client.

Barnett has provided paint schemes for AOPA's sweepstakes aircraft since 2000, gracing our Mooney, Beechcraft Bonanza, Piper Twin Comanche, Rockwell Commander 112A, and Piper Cherokee Six 260 with unique, engaging, and dynamic designs.

Scheme Designers creates a special Web site for each client, and uses this tool to develop the final scheme with the customer. Then Barnett provides detailed drawings and specs for the paint shop to use in its application of the scheme.

Contact Scheme Designers at 201/569-7785 or visit the Web site to view samples of the company's work (www.schemedesigners.com).

Moody Aero-Graphics

In 1988, a change to require 12-inch-tall N numbers on most civil aircraft spurred an Ocala, Florida-based graphics company to enter the general aviation marketplace. Paul Howes, owner of Moody Aero-Graphics, already flew his Cessna 182 on business and a Grumman Cheetah for fun—and, as he guessed, the requests for high-end graphics on aircraft would only increase in the next 20 years.

Moody offers striping kits, custom photographic images, interior and exterior placards, and paint masking, which we used to outline the paint scheme for the Catch-A-Cardinal. "One day we're going to wrap an airplane completely in graphics," says Howes.

Call 352/347-3330 or visit the Web site (www.moodyaero.com).

E-mail the author at julie.boatman@aopa.org.