Pat's easy-to-learn techniques produce great, war-weary results on aircraft.

Easy aircraft weathering

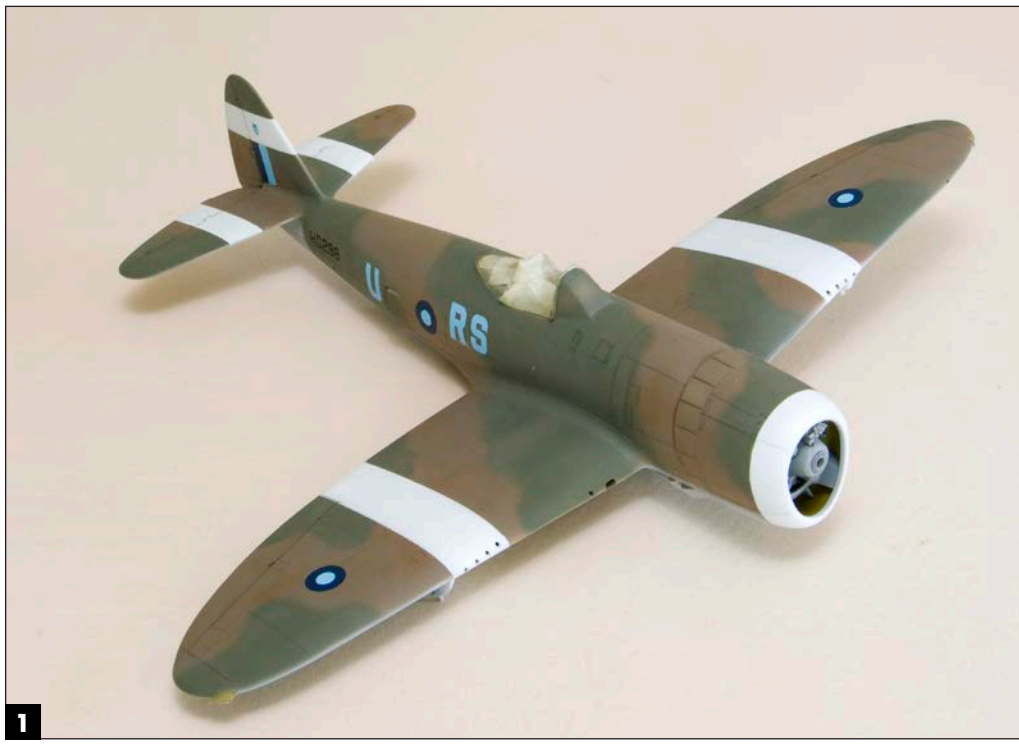
Add flight-time wear and tear to your models without using an airbrush

By Patrick Hawkey

I'm impressed by a model that looks "real." Realism in finish comes with the correct mix of smooth paint, accurate colors, and decals that look like they're part of the paint job. What truly makes a model look real is when it looks used. Squeaky-clean has its merits, but the model that's sure to generate attention and comment is the one that looks like it might smell of hot glycol or burnt kerosene. How does a high-time airplane come to look the way it does?

Some basic facts: Airplanes are machines and as such, they don't work without fuel and lubricants. For the most part, these items stay in their respective tanks and plumbing until they arrive at their destinations. But they don't always stay where they're supposed to, and when they escape there are visual cues. If they escape while the airplane is on the ground, gravity will pull them down to the lower extremities. They will flow downhill until they find an escape route, like a seam between two fuselage panels. There they will seep (or pour) out of the airplane, leaving a dark or discoloring mark. If these items leak while the airplane is flying, gravity will again pull them toward the ground (assuming the airplane isn't pulling Gs), but once they find their way outside the fuselage, the slipstream will force them across the surface in the opposite direction the airplane is flying. Again, oil, coolant, and hydraulic fluid will leave marks. The undersides of airplanes often look streaky as a result of loose fittings, blown gaskets, or just careless handling of the fluids that make them work.

The tops of airplanes are subject to both the people who work on them and the elements. This will eventually be reflected in a less-than-pristine finish. Of course there will be a significant difference in the look of an airplane that spends its down-time in a hangar versus one that sits in the open with a tarp over its engine. The harsher the climate and the harder the airplane is worked, the more used it will look. The top surfaces are exposed to a much wider variety of abuses than the underside, therefore a wider variety of visual markers will result.



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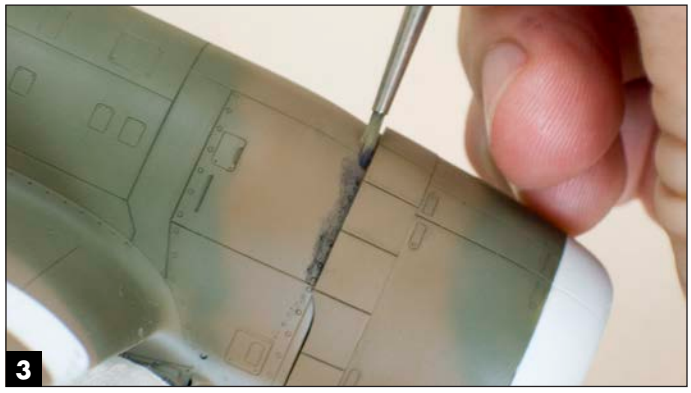
The first step is the paint job, which I tackle without any pre- and/or post-shading. The thing that strikes me over and over in studying photos of tired-looking warplanes is the unevenness of their finishes. To simulate a patchy, uneven look on the Thunderbolt, I put on a base coat of both the brown and the green. Then I'll alter both colors – lighten or darken them somehow – then mottle their respective base coats some. I go a little heavy here and a little lighter there. The idea is just to break up the evenness of the paint job. The model at this point has been painted this way and a dark gray "sludge wash" has been applied to the control surface separations and the cowl and forward fuselage. It has also been given a good coat of clear flat.

To illustrate, let's consider a typical World War II fighter. Crewmen climbing over it will wear on the paint and leave dirty footprints. The two most fussed-over areas of this fighter are the engine and the guns. If the guns are in the wings, significant activity will take place around their access panels, but there wouldn't be much reason for the ground crew to go beyond that point. It's likely that gun lubricants would get on the armorers working there and possibly on to the airplane itself. This is much more likely around the engine. And with radial engines in particular, spewing oil is often considered normal. If you work on your own car, you know what your hands look like after just a little engine work. Imagine the hands (and overalls) of the guys changing plugs on a fighter. You can be fairly sure a percentage of that grime will be transferred to the cowling panels. If these panels are a bit stubborn about being reinstalled, "persuasion" likely will result in chipped paint. And of course the airplane will need to be fueled. Most of the fuel will end up in the tanks, but there may be overflow and spillage. This can certainly affect the surrounding painted surface.

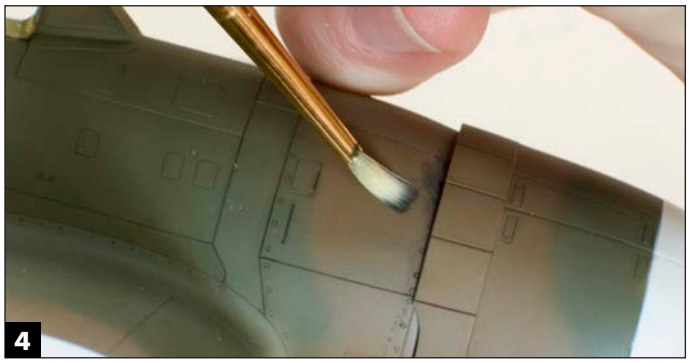
THERE MAY BE OVERFLOW AND SPILLAGE, TOO

Where your car's work experience is measured in miles on the odometer, an airplane's life is measured in hours flown. Let me demonstrate my typical approach to modeling and weathering a multi-hour aircraft on a 1/48 scale Royal Air Force Thunderbolt II based in Burma. This well-used combat machine would have spent most of its time out in the open and in tropical latitudes, neither of which would have been conducive to a pristine finish.

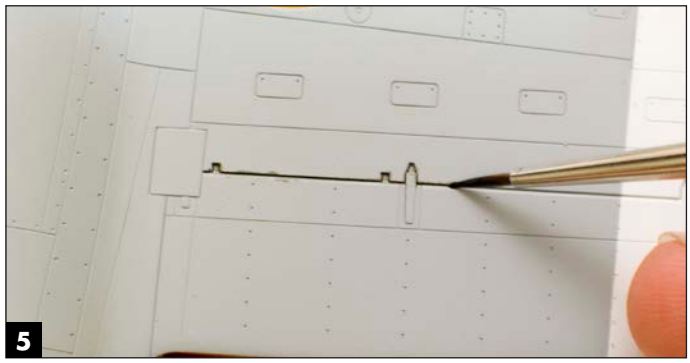
My next palette consists of black and dark brown artist's oil paint (Winsor & Newton Ivory Black and Burnt Umber), artist's turpentine, actual used motor oil, and black, gray, and brown Grumbacher pastels. It's a limited palette and you can certainly add to it, but watch what it can do. (Retired CDs make pretty good platforms for working with this stuff.)



Chalk pastel shaved from the stick it clings to the bristles of a fine paintbrush. I brush some black pastel under the cowl flaps. Actually, it's a combination of dab and brush, as I want to leave essentially leave a bead of the dust behind.



Next, with a wider brush, I pull the pastel back in the direction of the slipstream. If you don't like the effect of the pastel, you can remove it with a damp cotton swab, and when the area is dry, you can have another go. I examine the model and look for indentations (like around the turbocharger vents) and use the pastel to force shadows into those corners.

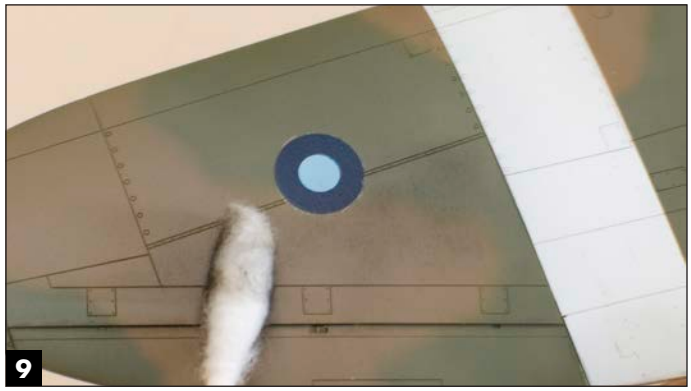


To produce a more pronounced forced shadow and some bonus streaking, I thin the black oil paint with some used motor oil (5W-30, for the record) and draw a line at the flap separation on the bottom of the wing. With a wider brush I pull back, again, directly inline with the slipstream. This draws some of the oil/paint mix out of the groove and across the flap, leaving a convincing stain. I start subtly and build up as I go, keeping in mind that what I'm doing may never truly dry. As long as I'm careful where I put my own fingers, there shouldn't be a problem. My aim is to stain the paint.

Think about where you'd see this kind of streaking that suggests some sort of leakage. Certainly around the power plant. What better medium can there be to suggest an oil leak than real dirty oil? Here a dabbing of oil paint is pulled back from the bottom of the cowling, a likely spot to find leaked oil. In photos you will often see oil streaking from under various side panels of the cowling and forward fuselage, too. If I want to really darken the effect, I rely on dabbing a heavier mix of paint thinned with turpentine. Since dirty oil and grease is essentially black, black is what I go with. A little brown streaking can add some visual interest. And who's to say the crew chief didn't spill his cup of coffee in the cockpit?

Here the underside is nearly done. Gray chalk pastel was also used for some of the streaking. Black would be too stark on the light gray paint job. The bulk of the work has been done behind the engine and on the wings between the landing gear struts. Outboard of them, there are no liquids that would logically leak and appear as streaks on the undersurfaces. It's largely open structure to the wingtips.

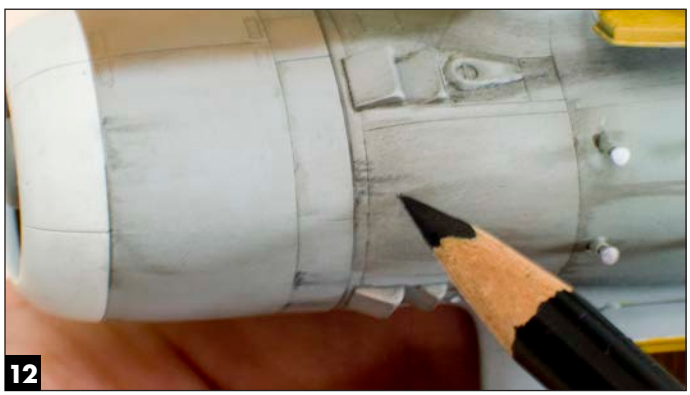
The tops of the wings aren't so prone to leakage, but they are wide open to the effects of people walking and working on them. Here pastel is applied with a wider brush to the area behind the ammunition door, where armorers would likely walk and work and leave evidence of their having been there. Keep in mind these areas would see more traffic than on the doors themselves, which would be open or removed entirely.



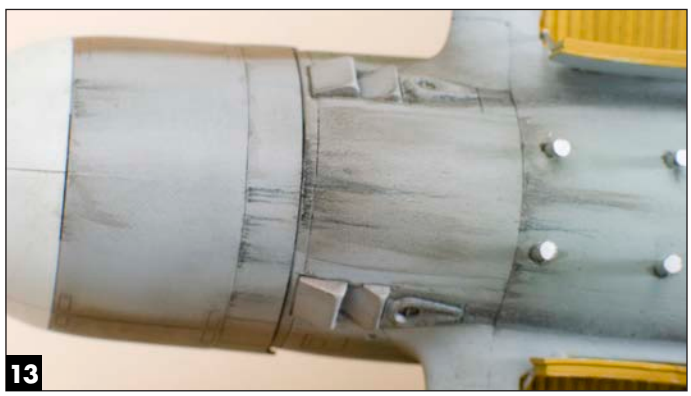
With pastel dust left fairly randomly behind, a cotton swab is used to blend it into the flat coat. Up and down, back and forth, and in swirls. Again, I'm looking for a subtle effect. and if more pastel dust needs to be applied, I'll add more.

As always, when painted metal is exposed to the real world, there's likely to be chipped paint. Yes, there are documented cases of some airplanes (Japanese in particular) with yards of paint missing, but this isn't usually the case. Except for the most heavily traveled areas, you usually have to look hard to see shiny metal exposed in most airplane paint jobs. Here I'm dabbing damp silver paint (Model Master Chrome Silver) on the leading edge of the wing, which would be exposed to objects thrown back from the propeller. The leading edges of propeller blades naturally are often smooth, but the backsides of the blades extending down from the tips sometimes look sandblasted.

Where the flat brush works well for some applications, a silver Prismacolor pencil cannot be beat for the fine-tuning. Sharpen that baby to a needle point and you can simulate tiny chipping anyplace. One likely and logical place you may consider tackling would be the Dzus fasteners on engine and cowling panels that are regularly removed. Many times I've seen these as measured lines of silver dots in photos; they're the shiny fastener heads. Also note the "step here" kick panels in the fuselage side that receive the toe of a flying boot each time the pilot comes or goes.



Prismacolor pencils come in all colors. A black one can be very effective for making fine oil streaks. As with the silver pencil, I sharpen one to a needle point and lightly draw some streaks.



I rub the waxy pigment with a cotton swab to blend and soften the effect. I use black pencil on both the lower cowl area and mark sparingly around the gun and ammo doors. At this point, thinking I was done, I took some digital images of the model. Looking at them on my computer monitor, I decided the model still looked a little flat. I mixed up some of my black and brown pastel dust, producing a dark brown.

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I smudged this mix randomly on both the brown and the green camo. This may suggest fresh paint touch-ups, oily-rag action, or … who knows? It's not important. I've seen many things in photos of worn airplanes that make no sense to be, but they're there nonetheless. I simply want the uneven look to be slightly more pronounced.


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I do have a little used set of twelve pre-mixed "weathering powders" from long, long ago. "Prof. Weathers" put these out. I don't know if he's related to Doc O'Brien, who offers these similar powders through Micro-Mark. These work fine, but I usually end up using pastel sticks. The sticks cost a little more than a dollar each, they last forever, and come in all the colors of the rainbow. You can combine colors until you find exactly the shade you need.

When it all comes together, it may look something like this. One thing you don't see are black streaks trailing back from the gun barrels. And don't those white bands nearly scream "Streak me!" I searched my references and couldn't find a single clear shot that showed those white stripes on RAF Thunderbolts with even a hint of "gunpowder stains." Did they never fire their guns, or are the streaks you see on other models wishful thinking?

What do photos of the real airplanes show? I never really have a preconceived image of the finished job, but watch and adjust pastel to oil paint to pastel as it comes together before my eyes. When is it overdone? That's in the eye of the beholder, I guess. What I don't want to do is let a beat-up finish dominate the model, unless the model is representing a wreck in an airplane boneyard someplace. **FSM**