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FROM THE EDITOR

By Aaron Skinner

Welcome to finishing school!

Weathering is one of my favorite parts of finishing a model. But it can also be one of the most heart-breaking. If something goes wrong at this stage, there's not a lot of recourse to fix it. That said, I love the challenge of trying new things and experimenting to make the model look as much like its full-size counterpart as possible.

When we were putting together this issue, the idea was to give you step-by-step guides to many of these techniques and hopefully remove some of the mystery and stress from the process. You'll find those under the "Weathering 101" banner in the following pages.

Before we head into the classroom, I should note that this is not an exhaustive list of techniques. There are many ways to weather models and narrowing it down was a challenge. Also, we are not advocating that you need to use all of these on every model. But experiment until you find what gives you the results you need.

Finally, we are not getting into the never-ending discussion of realism versus art in weathering. Build what you want the way you want!

editor@FineScale.com

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Editor, Scale Modeling Brand Group Tim Kidwell
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Craft paint a decent choice

When I started modeling over 50 years ago, all I could find was Testors paints in the small, square bottles. That worked for years until I discovered Model Master paints. I was in hog heaven! I also was able to find Humbrol at upscale model shops. But all good things come to an end. Now, I can buy 10ml bottles of Tamiya for \$2.90, a little steep for a semi-retired person.

But one day at Walmart, I came across Apple Barrel acrylics at \$0.50 for 59ml. Many different colors in matt, semigloss, and gloss. I mainly brush paint them, but if you can figure out the correct thinning ratio, it also airbrushes nicely. I find Pavement is great for tires, and if you can't find the color you need, they mix well.

I still mainly use Vallejo Model Air for air brushing, but for most of my painting it is the Apple Barrel for me. Covers well, cleans up with water, and is cheap — what's not to like?

— Bruce Parkes
San Antonio, Texas

Micro balloon filler ideas

Ed.: In a recent Scale Model Basics video, "5 tips for better gap filling," Aaron Skinner showed how superglue and micro balloons can be combined to fill larger gaps. It elicited a couple of comments we thought worth sharing.

I put the filler powder on the model before applying the superglue. You can shape it a bit to reduce the amount of post-filling clean-up. Another trick is to use clear tape as a backing to fill through holes or even extend flat surfaces with the powder/superglue combination.

— Kurt Greiner
via YouTube

Micro balloons are very useful but can be highly carcinogenic to the lungs if care and proper handling are not followed. One should never get them near where they can be inhaled and should wear a dust mask at minimum when working with even the smallest amount. Just my experience when working with them on aircraft composites.

— vf111Sundowner
via YouTube

Speaking of stash size

Ed.: In a recent FineScale Modeler Weekly video, Tim Kidwell and Aaron Skinner discussed reorganizing and downsizing their kit stashes along with the sizes of each. It generated plenty of responses, including these.

I use wish-list and inventory apps to keep my queue from growing and save me from having to remember what I've already bought. There are several free wish-list managers, or you can use a simple text file. It's best not to use a list tied to a particular store because if you add something and they stop carrying it, then it will disappear from your list and you'll never remember it.

To further keep my stash in control, at shows I only buy stuff that either I'm not

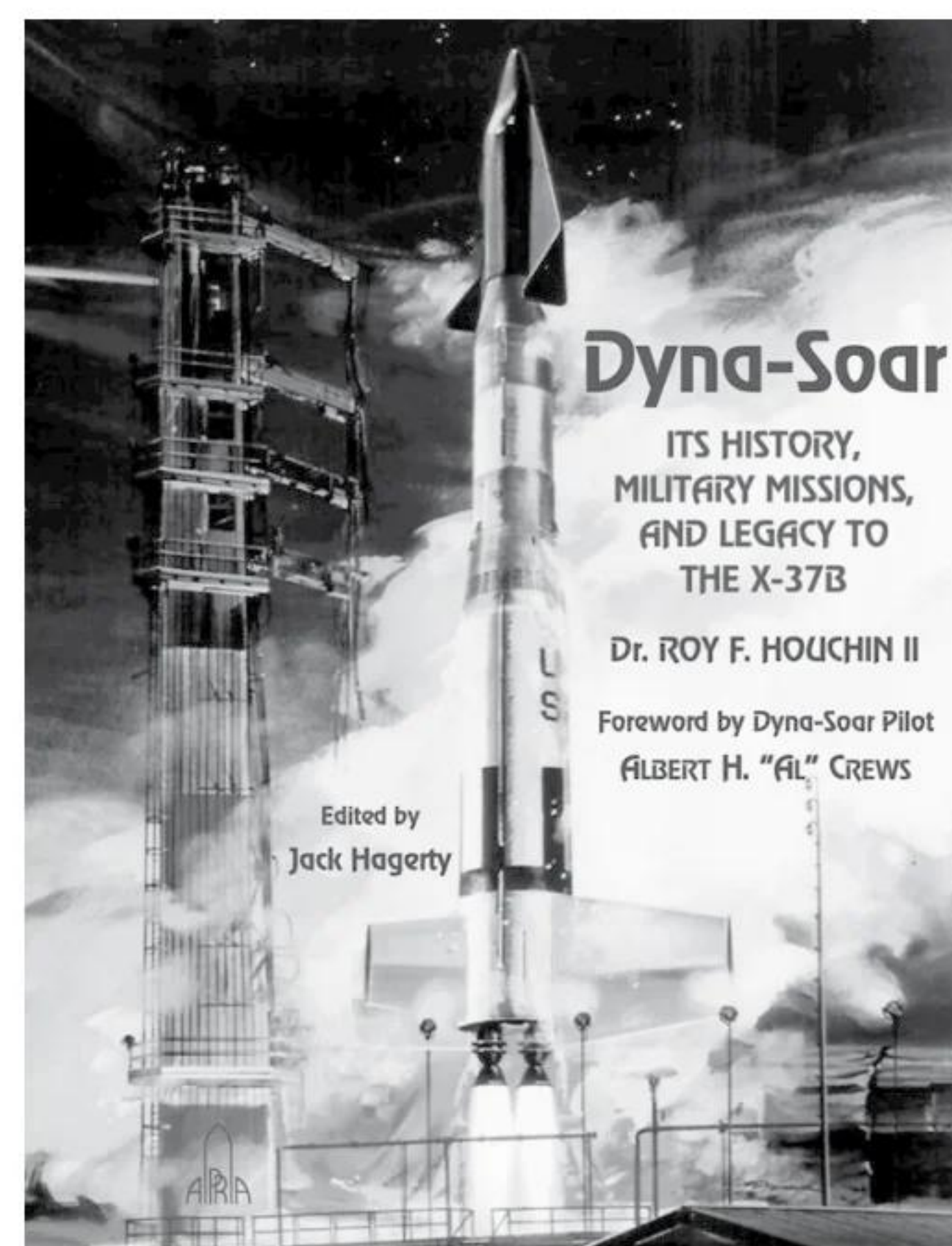
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likely to see again because it's out of production, or it is a really good deal, which I can check right away since the list is on my phone!

What I definitely do not recommend, if you have too many models, is a trip to Japan with a spare, empty suitcase. With the exchange rate right now, Japanese kits in Japan are 40-60% cheaper than they are in U.S. stores.

— Josh Wurzel
Bay Area, Calif.



I believe I have over 600 plastic kits in my stash. It comprises World War II, World War I, and Korean War aircraft, modern jets, sci-fi subjects, and cars. There are also paper and metal model kits. I recently moved to Colorado, and they are in tubs in my basement waiting for me to complete the basement hobby area. I was in Washington prior to Colorado, and I made a spreadsheet of my kits, which is now out-of-date. I am retired now and don't know when I will complete my stash inventory because I have acquired a few 1/24 and 1/25 scale car models. Keep up the good work on the magazine.

— Mike Lipford
Pueblo West, Colo.

Until 18 months ago, my stash was in my model bunker, the fourth bedroom in our home. But after being laid up for just over four months with a broken foot last spring and early summer, my stash expanded, and I had to move maybe 15-20 1/35 scale kits into another part of the house where they are stored in an old bookcase.

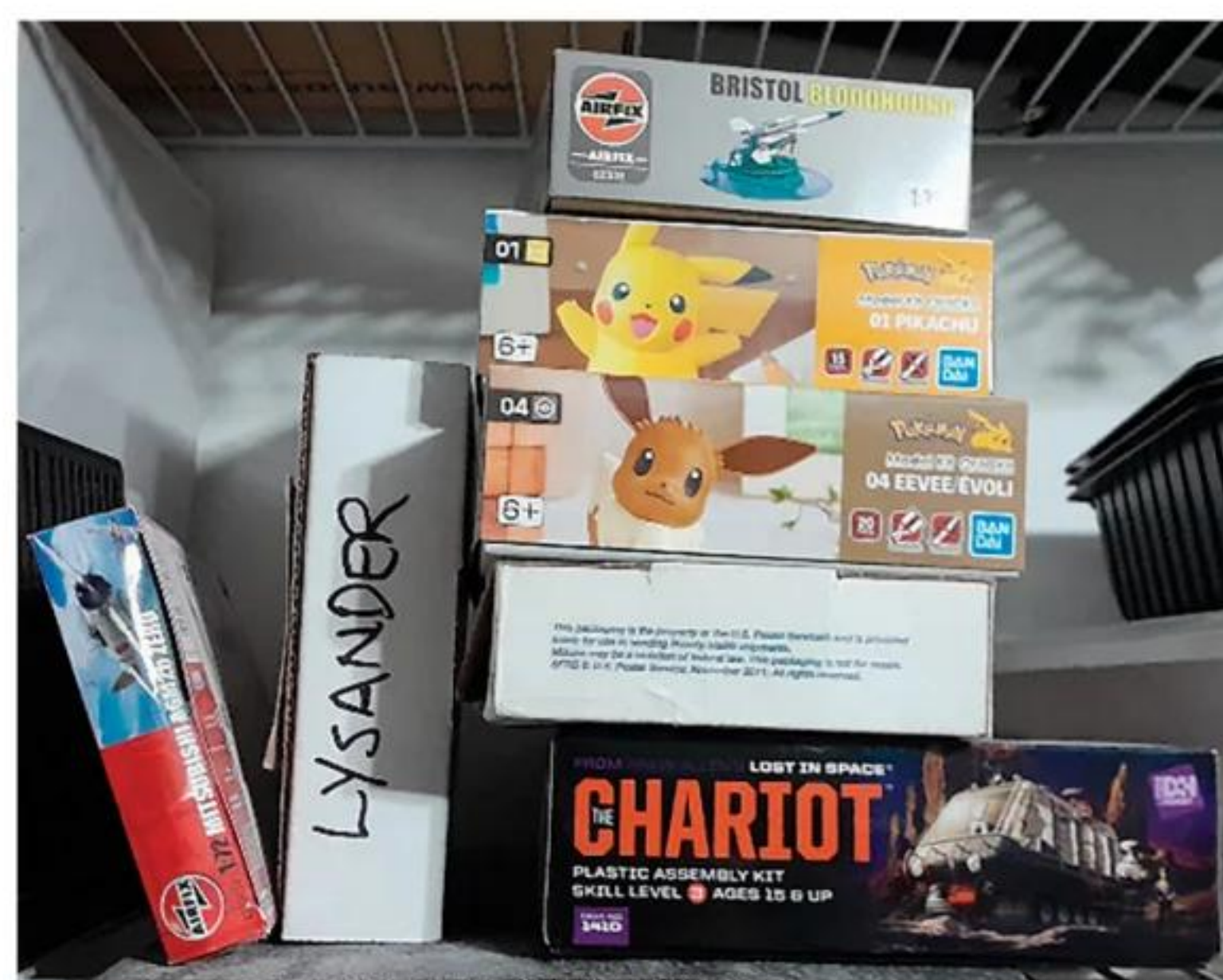
All of my 1/35 scale tanks, softskins, and AFVs are pretty much stored together and sorted by box size. For example, large German World War II tanks are stacked on top of each other and modern tanks are grouped separately. My 1/35 scale figures are stacked by manufacturer since most manufacturers each put all their kits into the same sized box. For example, I have

matched stacks of Dragon, Tamiya, and MiniArt figures. There is a tallish box of "bagged" 1/35 scale figures stored without boxes, so each set can stand upright in the container.

My 1/72 scale planes are together either in boxes or stacked on top of each other in an old stereo rack cabinet, with the shelves omitted, or on an even older microwave cart. About 75-80% of the planes are kept together by manufacturer and box size.

Lastly, because I have no hobby shops in my area; model shows are the largest temptation to add to the stash. They are followed closely by mail order shops with their sales or new arrivals.

— Mike Riedeman
Manchester, Md.



How do I manage my stash? I may have six or seven in my stash, but I build them before I buy anything else. So, two ques-

tions: **1.** Why do you even have a stash? Do you plan to retire tomorrow, lock yourself away and just build? **2.** If you do build them, where do you display them?

— Jim James
Winter Garden, Fla.

Ed.: Hi Jim. Let me take a stab at answering your questions. **1.** I have plans to build all the models in my stash. Will I? Who knows? But I know exactly what each will look like. **2.** I have a glass display case at home, although it's not large enough to hold all my completed models. Fortunately, a perk of working at FSM is that displaying finished models in the office is encouraged, and there are a couple of cases here for that. I also give finished models to people I think may enjoy them. For me, the process of building may be more important than displaying the result. — Aaron Skinner

Jim: **1.** <shrug> **2.** Not at home.
— Tim Kidwell

I currently have 103 kits in my stash. About a third came from my father and are from the late 1950s and '60s. All but about 15 are automotive. The remaining are military and sci-fi.

They are stored on two shelving units in the basement rec room and more at the bottom of the display case.

— Ronald Neuendorf
Waukesha, Wisc.



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1/48 SCALE

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1/72 SCALE

IAR 81C - Great Air Battles of 1944, No. 72570, \$36.99 from IBG Models.

IAR 80 - Early Gathering Storm 1941, No. 72564, \$36.99 from IBG Models.

ARMOR

1/35 SCALE

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SdKfz 234/2 Puma (interior kit), No. 35414, \$105.99 from MiniArt.

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1/56 SCALE

PzKpfw VI Tiger I Ausf. E, No. 25755, \$33.50 from Italeri.

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1/72 SCALE

StuG III Ausf G Feb 1943 Prod. with winter tracks, No. 72103, \$TBA from MiniArt.

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1/24 SCALE

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1/72 SCALE

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FIGURES

1/35 SCALE

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1/48 SCALE

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1/48 SCALE

Maryland Mk.I/II landing gear (for Special Hobby) No. 48464, \$14.95, from Scale Aircraft Conversions.

1/72 SCALE

De Havilland Mosquito B.XVI landing gear (for Airfix) No. 72205, \$18.95, from Scale Aircraft Conversions.

AIRCRAFT DECALS

1/72 SCALE

US Airways 737-400 dark blue scheme, No. 737-213, \$38. Also available in 1/100 \$25; 1/144 \$13.50; 1/200 \$9; 1/400 \$7.50 and 1/500 \$7.50 from Draw Decal.

BOOKS

The Air National Guard - The Early Years, \$35.00, soft cover, 160 pages, 55 color photos, 24 B/W, ISBN: 978-1-78155-932-1, from Fonthill Media.

What we call WEATHERING

Collect-all term covers a variety of finishing techniques

BY AARON SKINNER

In the real world, weathering can mean the wear and tear vehicles, structures, and even people are subjected to by the elements, be they rain, wind, dirt, sun, or ice. In scale modeling, the term has a slightly wider meaning covering those effects as well as many finishing techniques used to enhance a model's appearance and give it life.

Some techniques have been used on workbenches for decades, including washes, dry-brushing, and pastels. Others, such as pre-shading and color modulation, have become popular in the last 15-20 years. In that same period, we have watched as something of a renaissance in model finishing with companies dedicated to

weathering products. While many of these new techniques were conceived by armor modelers, we have witnessed a cross germination of techniques between modelers of all genres.

Weathering 101 explores those techniques with step-by-step instructions and examples of them in use. Class is in session. **FSM**



1 A patina of rust hints at the history of Tony Hartjes' 1962 Galaxie.



2 Castor oil stains lend authenticity to Dennis Davison's Fokker E.I.



3 Pre- and post-shading helped wear Bill Gudmundson's Tempco 400.



4 Aaron Skinner's M113A1 has dust and rain streaks from use in the field.

Shine a light on SHADING

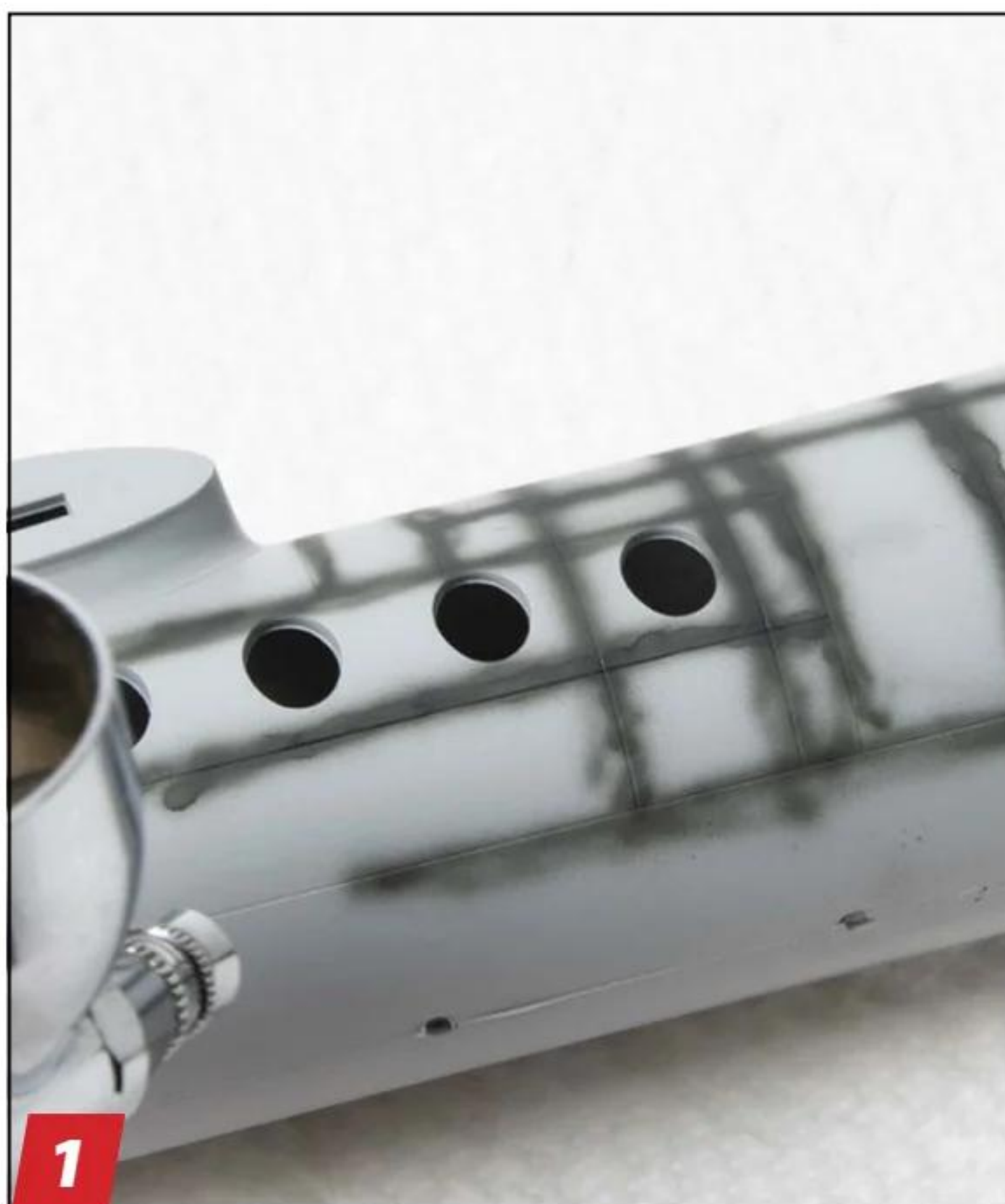
Break up monochromatic paint for wear and drama

BY AARON SKINNER

Shading and related painting techniques affect the tone of the base color by adding related tones. Some mimic the way light plays across an object. There are several ways to do this including pre-shading, post-shading, and color modulation, all of which we'll look at here.

PRE-SHADING

In order of weathering operations, pre-shading should be the first step in any painting or weathering. As the name implies, this technique involves applying contrasting shades under the base color. These can darken or lighten various areas on the model, break up camouflage and provide variety to a model's final appearance that provides more visual interest. As you'll see, dark colors, like black and dark gray, can be airbrushed along panel lines and in recesses that show through the upper layers for deeper shadows. Lighter colors, like white or brown or even a bold choice like blue or red can be applied to panel centers and less shadowed lines and panels.



1

The classic example of pre-shading is to airbrush black paint in thin lines along panel lines. I thin the paint slightly more than normal and set the pressure at 15 psi. You don't have to keep the lines perfectly neat because the next layers will cover mistakes.



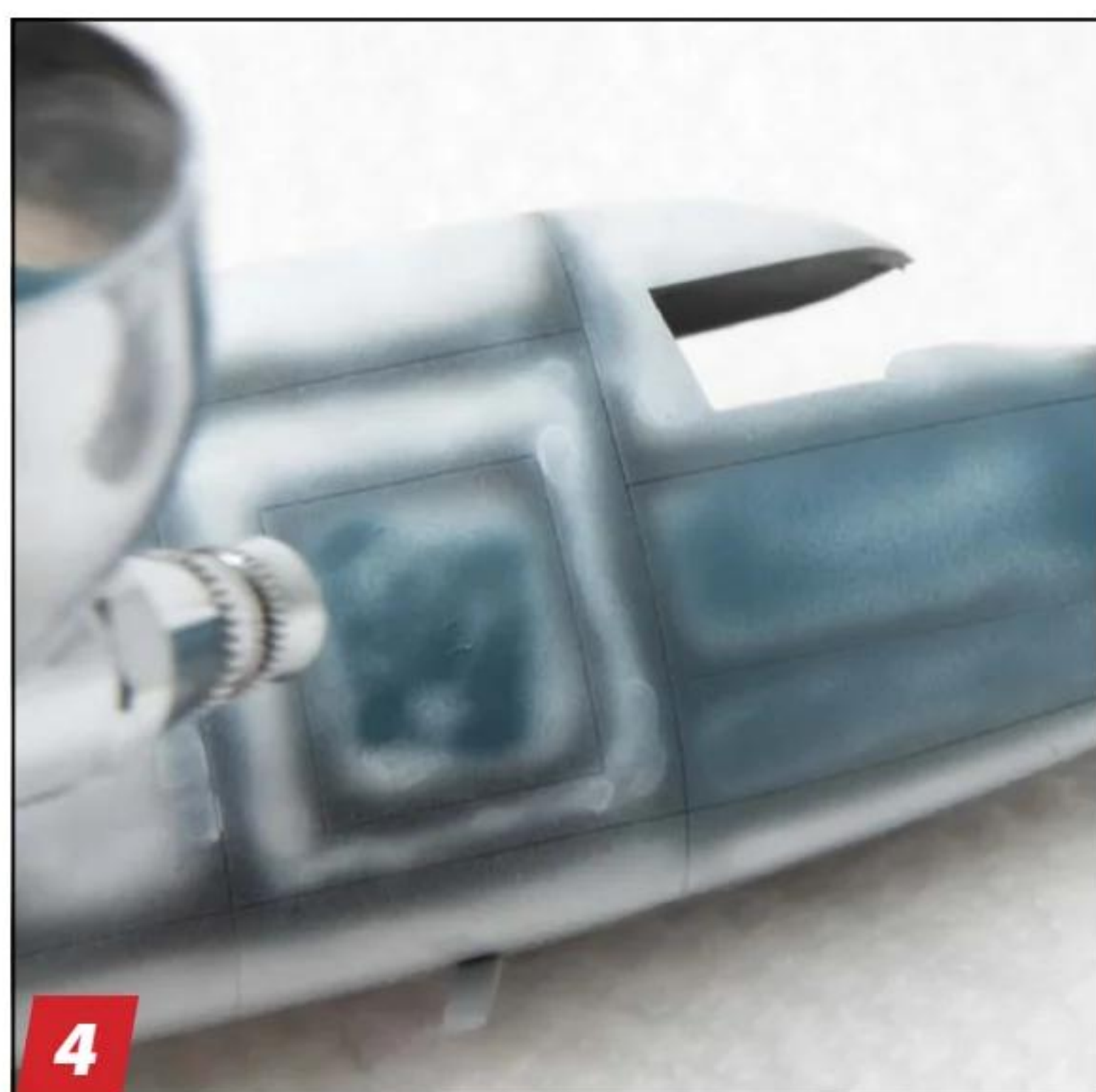
2

If you've primed the model with a light gray, you are ready to spray the top colors. If not, or if you want to increase the contrast between the lines and panels, you can airbrush white over the panels.



3

Black is not the only choice for pre-shading. Some modelers will use browns, grays, or blues depending on the model's overall colors and the effects to come. It is also possible to fill panels with colors other than white for the same reason.



4 After filling your airbrush with the base color, start spraying panel centers keeping the layer thin. You want to color the model without overwhelming the pre-shading.



5 Gradually build up the color to cover the dark panel lines and recesses so they are mostly obscured but a hint of the shade shows through and affects the upper layer.



6 On multicolor finishes, apply each color only in its area and limit overlap. This minimizes the layers over the pre-shading and maintains the consistency of the effect over the surface.

POST-SHADING

You've probably guessed that post-shading comes after painting. The idea is to layer thin shades of the base colors onto the model to lighten and darken areas. I like this technique because the thin layers of color are usually the same type of paint as the base colors, so you can paint and post-shade in a single-session.

To post-shade Tamiya Desert Yellow (No. XF-59), I added a couple of drops of Red Brown (No. XF-64) for the darker shade (left). Go easy with darker colors because it doesn't take much to shift the shade. For the lighter shade, I added 1 part Buff (No. XF-57) to 2 parts Desert Yellow.



1



2

I started by spraying the darker shade along panel lines and in recesses and overhangs. On a model like a tank, I may airbrush this darker shade around the suspension and under the fender. I don't always use this step, especially on dark base colors.



3

After flushing the darker shade from the reservoir, I airbrushed the lighter color starting thin near the edges and gradually building it to the center. As you can see, the initial layer is subtle.



I added a little Tamiya Deck Tan (No. XF-55) to the previous highlight shade and airbrushed the panel centers but focused more on the center.



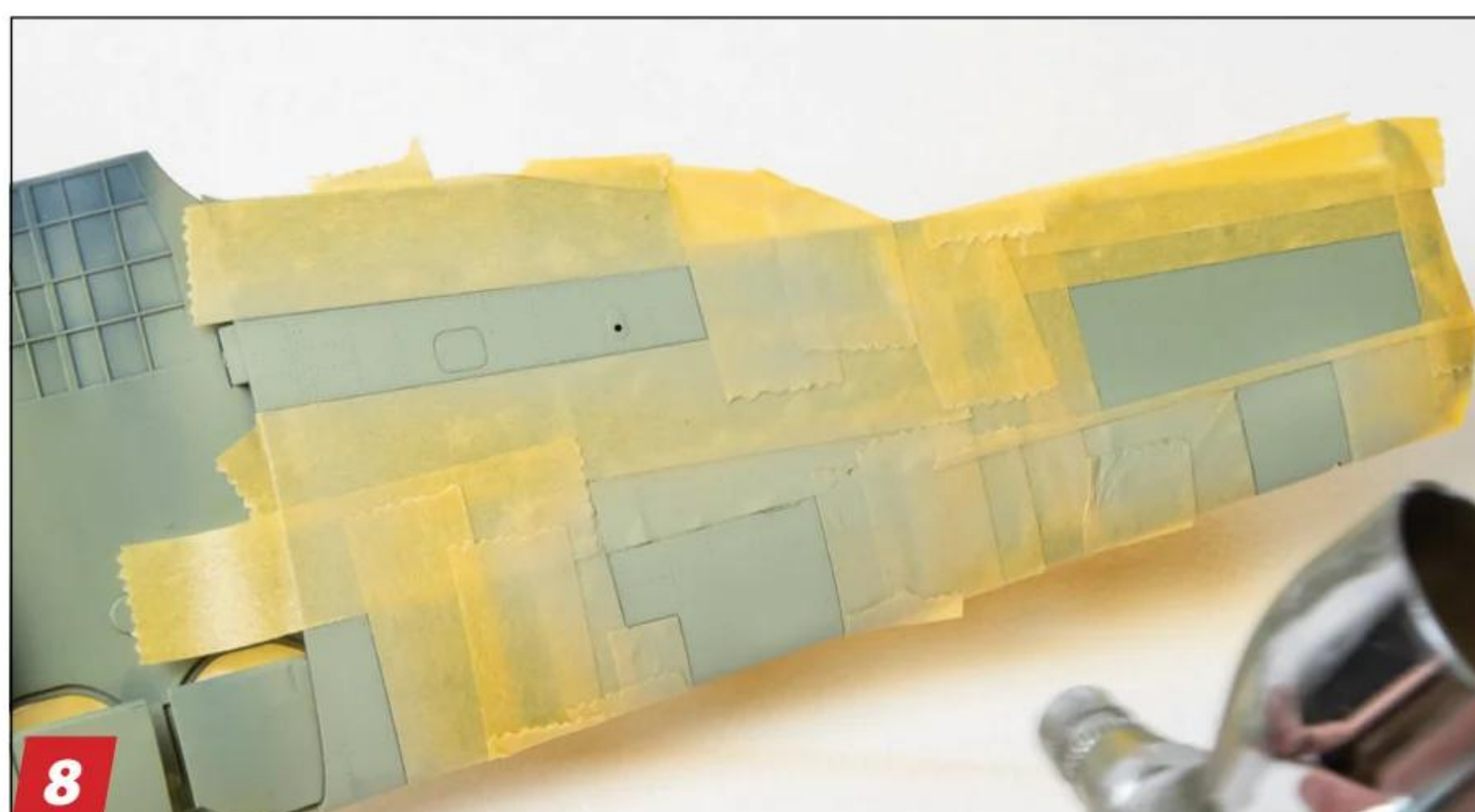
Adding progressively more deck tan, I gradually lightened the shade and focused the spray more and more on the center with each layer.



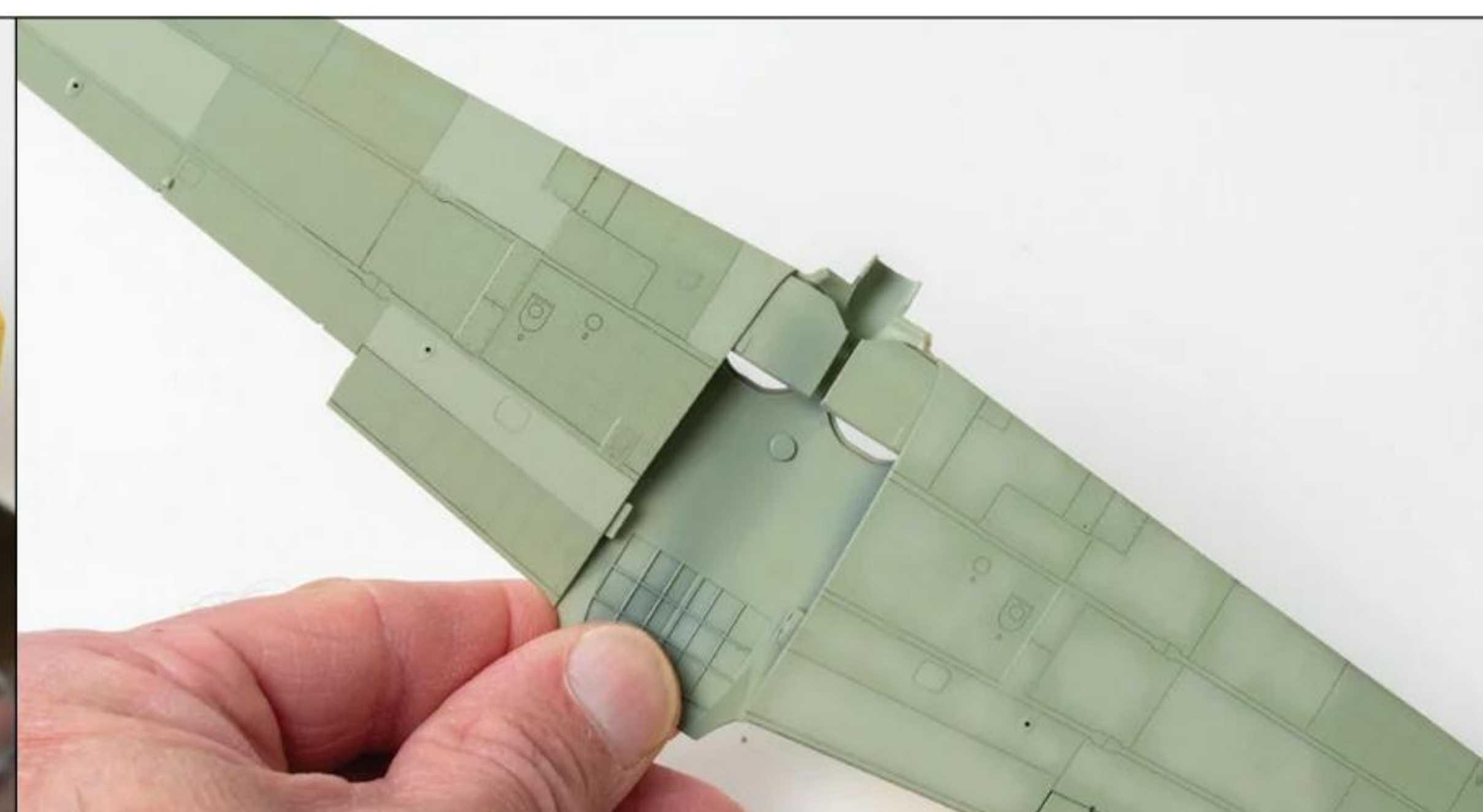
A variation of post-shading replaces the gradual lightening of the area toward the center with a mottling of darker and lighter shades. I usually limit how much of the lightest and darkest shades I use and apply just a few dots of each to the panel.



If the effect looks too stark, it's easy to mist on a thin layer of the base color, in this case desert yellow, to soften the contrast and blend the layers. Other weathering, like washes, streaking, chipping, pigments, and pastels will also blend and tone down this effect.



Another variation of post-shading is masking specific panels and painting them with a slightly lighter or darker tone, as seen on the port wing. It appears to contrast too much at this stage, but after flat coats, decals, and weathering the effect will be more subtle. Note the starboard wing that was post-shaded freehand.



OTHER SHADING TECHNIQUES

Black-and-white basing: This is basically pre-shading on steroids applied like color modulation using black for the darkest areas and white for highlights producing gray in the middle. When the colors are added over the top, the base creates the shadows and highlights

Zenithal shading: Like color modulation, this method establishes the light source the vehicle is subject to with shading applied in specific directions and areas

SHADING AT A GLANCE

- Whether shading comes first or last, the upper layers should be thin
- Gradually build up the shading until you have the desired result
- Subsequent weathering will mute the effects

COLOR MODULATION

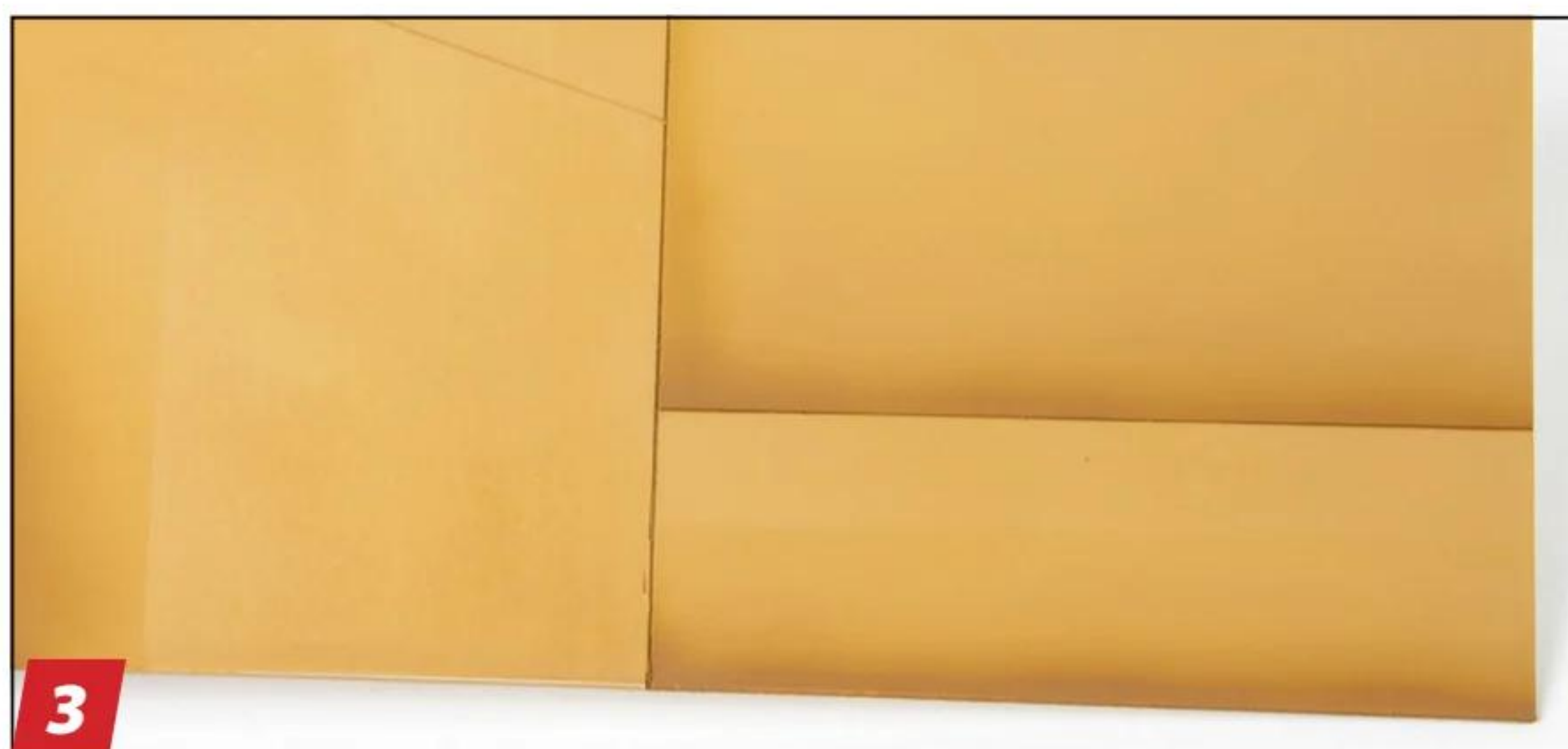
Like post-shading, color modulation uses color layers over the base colors to adjust the tones. But rather than fading panel centers, color modulation orients shading with lighter shades toward the top of panels to mimic the play of light on a vehicle.



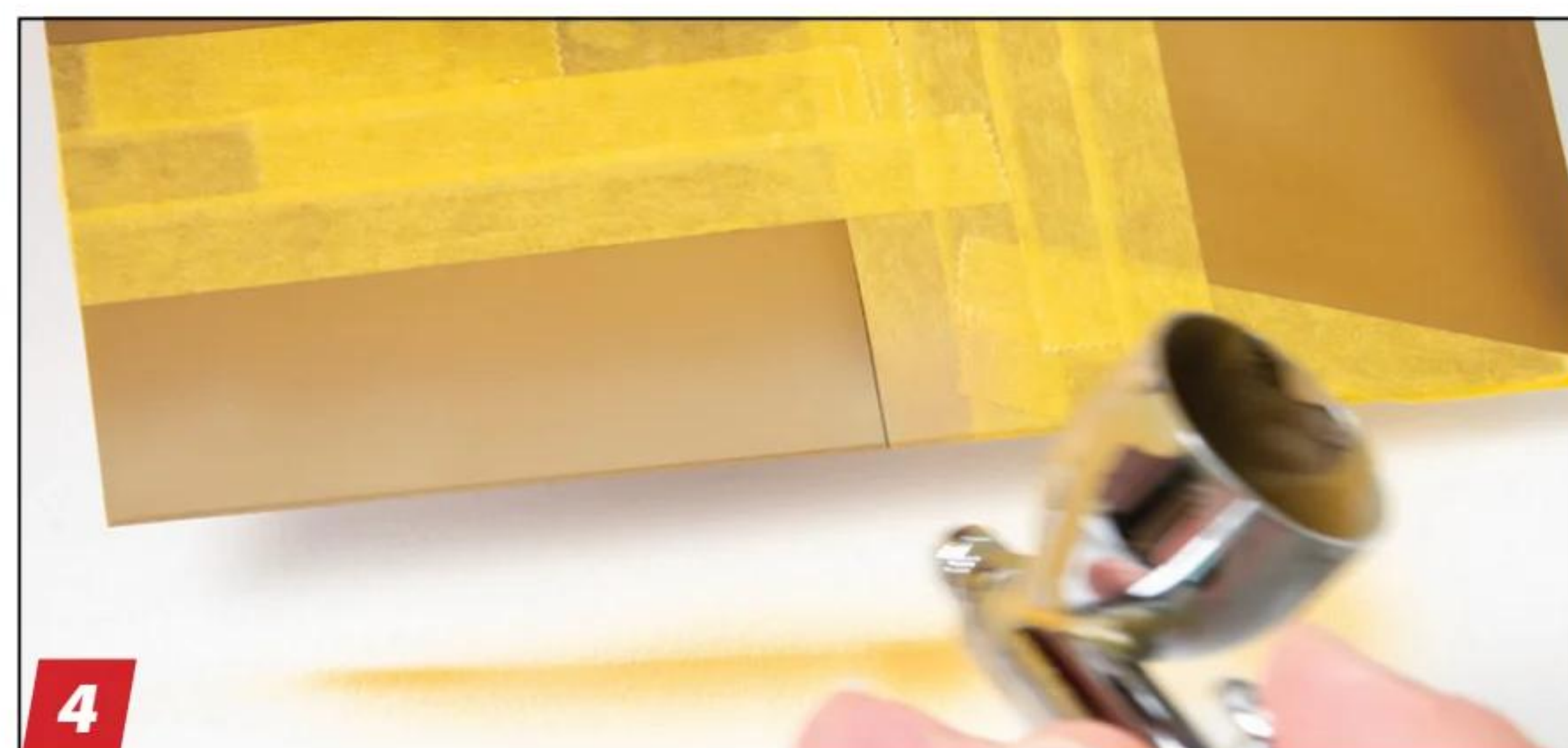
The process relies on hard edges at panel lines, so I taped the side off and ran a single strip along the lower edge of the upper panel. Just as with post-shading, I started with the darker shade.



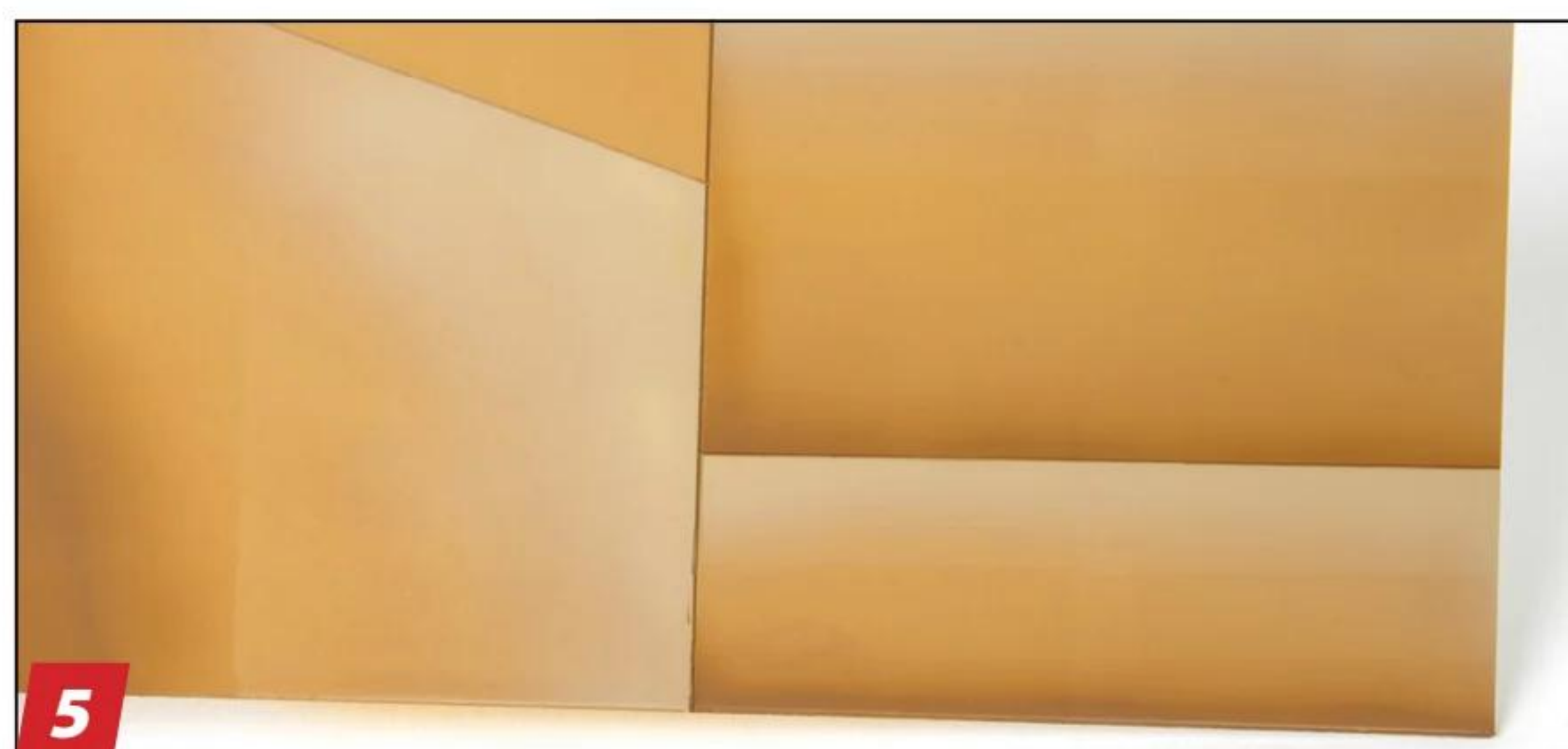
Again using Tamiya Desert Yellow as the base color, so I used the same dark shade mixed with a few drops of red brown for the darker section. I airbrushed it along the lower edge of the lower panel and along the tape on the upper panel.



With the tape removed you can see the effect of just the dark shade. I also airbrushed the dark mix along across the corner of the large panel on the left and up the side of the upper right panel.



I re-taped the panels, this time running tape along the top (or light) side of the line between the rectangular sections. With the lightest shade I had used for post-shading, I airbrushed the upper edges of both panels. The brush was initially angled straight down over the tape or the edge; then I angled it from the side at about 30 degrees to feather the color.



With the tape removed, you can see how the color fades from light to dark across the three painted panels. The effect is stark right now, but it can be toned down with a mist of the base color and weathering.



To contrast post-shading and a variation of color modulation, I applied the former to the hatches on the left and the latter to the hatches in the middle. The hatches on the right are unaltered. **FSM**

The humble, versatile **WASH**

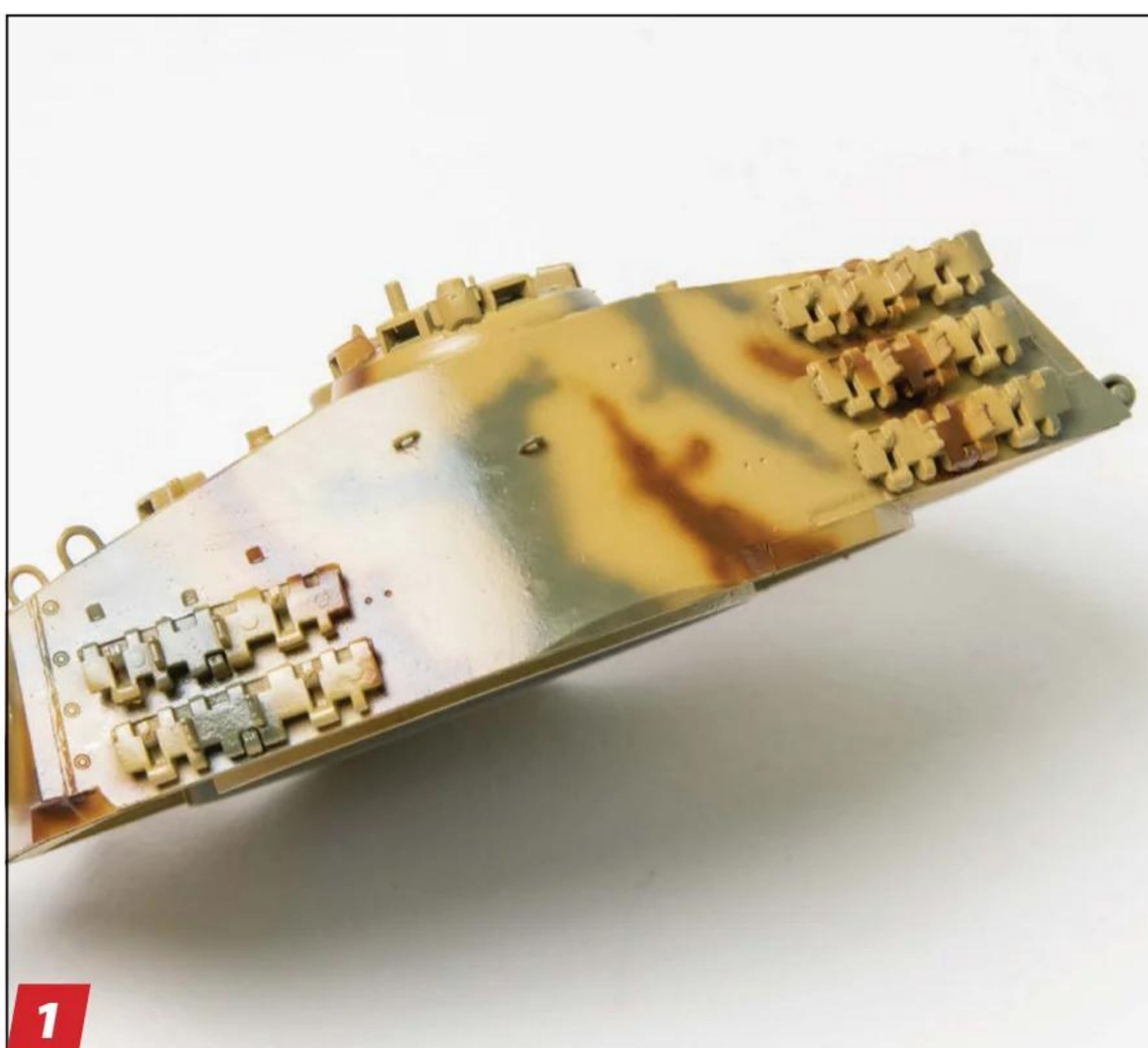
Thin paint emphasizes detail, adds dirt and grime, and more

BY AARON SKINNER

While the wash is one of the first weathering techniques most modelers learn, it is also one of the most used and useful. Just to be clear for anyone unfamiliar with what I mean when I say “wash” in a modeling context, I am not talking about cleaning the parts with soap and water before

painting, although that’s not a bad idea. Instead, a wash is heavily thinned paint — a better description might be dirty thinner — which, flowed onto the surface of a model, naturally collects in recesses and corners. This creates natural shadows and emphasizes detail as well as giving an impression of dirt or grime.

SURFACE PREP



It is best to apply a wash over gloss. Because most camouflage colors go on flat, cover them with couple of thin layers of clear gloss. It doesn’t need to gleam like a jewel, but it does need to cover the model.



Here’s why we recommend washes over gloss. On flat paint, the thin wash bleeds into the surrounding paint and creates tide marks.



Trying to remove the excess with clean thinner won’t help. It doesn’t remove all of the wash blooms and can actually extend the staining and worsen an already frustrating situation.

MIX YOUR OWN VS. PRE-MIXED WASHES

For decades modelers mixed their own washes. Then, a couple of decades ago, as part of what I refer to as a renaissance in the model finishing world, new companies hit the market with premixed enamel, oil, and acrylic washes. Many of these referred to the colors they were designed to be used over (like U.S. Army olive drab) or the weathering effect they were designed to replicate (for example, fuel stains). This leads to the ultimate questions: Which is better? Which should I use?

I don't have a dog in this fight, and I use both on my workbench. I like mixing my own for certain things because it gives me more control over the color and density. The only limitation on the colors of mixes you can use is the range of colors available in artist oils, my preferred medium. It probably also works out cheaper to mix them. There are a lot of fingernail-sized dabs of paint in a typical tube. But the premixed washes are right there ready to use and produce consistent results. If I'm working on a cockpit and want to be able to move on to the next step quickly, I just grab a bottle, flow it on, and go. The biggest advantage of premixed washes is convenience.

MIXING AN OIL WASH



For an artist-oil or enamel wash, place a little of the chosen color in a cup or other reservoir. It doesn't take much paint, so be sparing; a fingernail sized blob is all that's needed.



Next, add thinner. Mineral spirits work well for artist oils and enamels, but you can also use turpentine. Start with about 9 parts thinner to 1 part paint and mix it thoroughly.

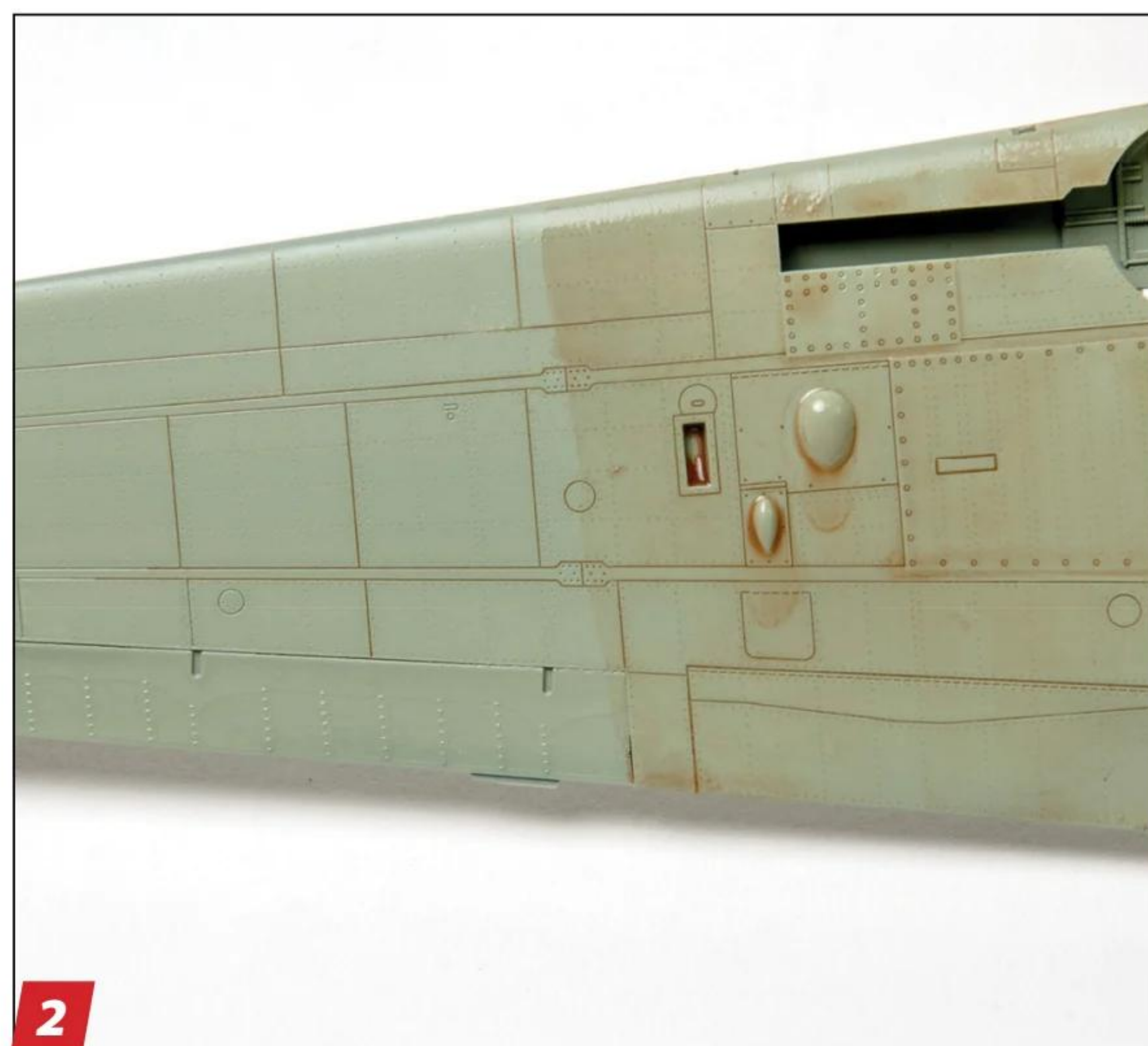


This is looking about right. When you dip a brush into the wash and touch it to the side of the cup, it should leave a faint, translucent trace as it runs down.

OVERALL WASH



There are two ways to apply a wash like this. I find the overall wash works best on larger surfaces with a lot of engraved surface detail, like an aircraft wing with panel lines and rivets. Using a wide, flat brush, apply the wash over the entire surface.

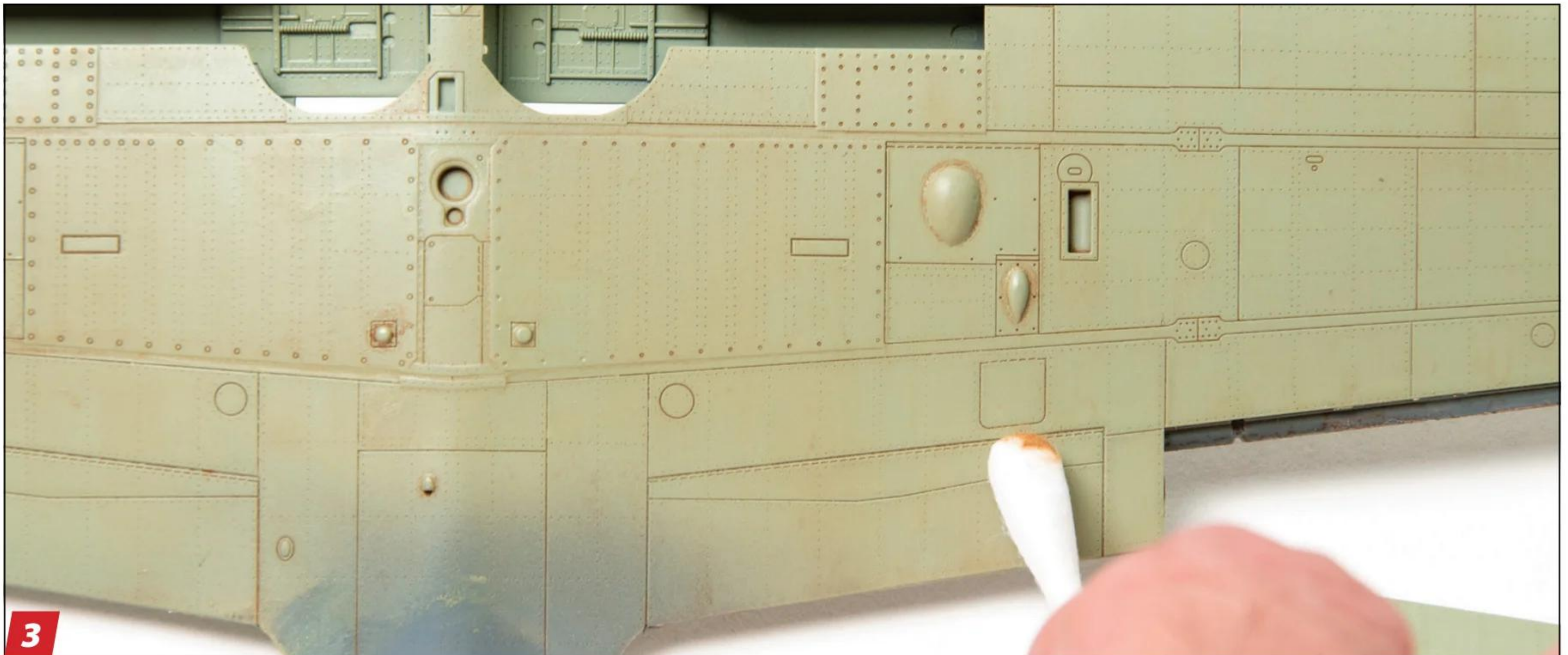


I have brushed the wash over the right half of the wing. You can see the wash has discolored everywhere it was brushed, but has collected in recessed details, making them pop against the lighter paint. Also note that capillary action has pulled some of the thin paint along panel lines.

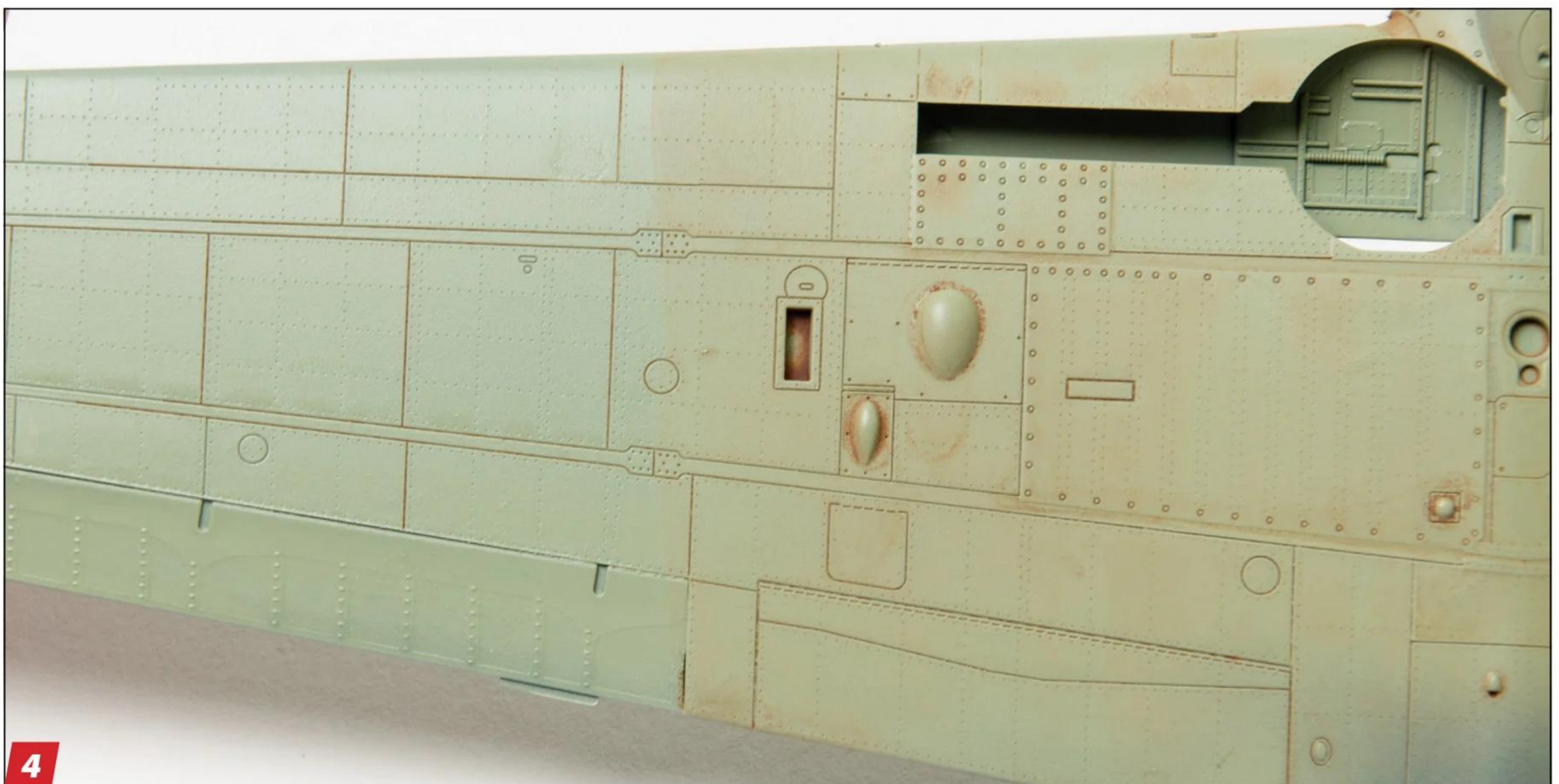
WHAT COLOR TO USE?

Mostly, this is up to personal choice with much of the decision based on the base color or colors you are using. In most cases, the wash should be at least a little darker than the base. For green, brown, or tan colors, I prefer a brown that looks like shadows and grime without being too stark like black often can be. On the other hand, black works well for natural-metal, silver, or dark gray. For light and medium grays, like those used on so many modern military aircraft, neutral gray or gunship gray may work. Black poses a problem when looking for a darker shade and is one of the cases where a lighter color, usually a gray, will be required.

The colors can also vary depending to what you are applying the wash and what the purpose is. For example, on an Abrams with desert camouflage, I would probably use a brown to pop bolts, rivets, nonskid texture, and panel lines. But I would use black for engine screens and grilles to add depth to those areas. Over the dark washes on the road wheels and suspension, as well as in some of the corners on the upper surfaces, I might flow a thin, sand-colored wash to represent a layer of dust.



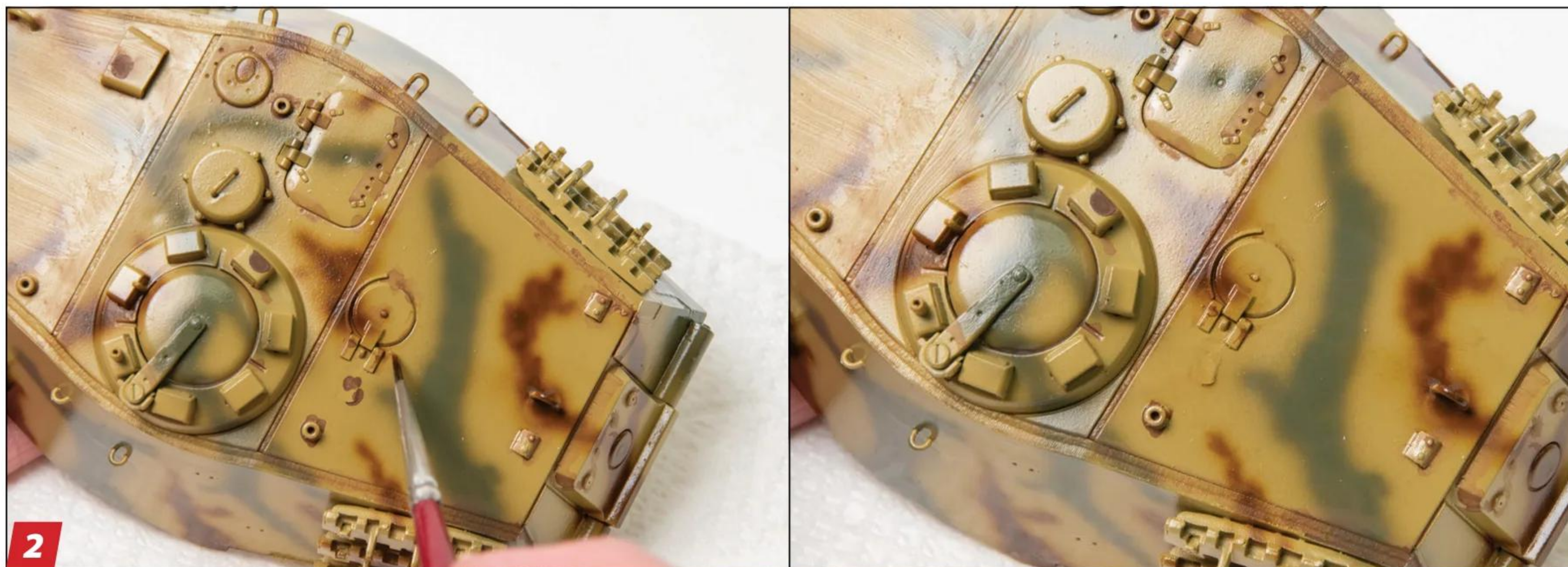
Let the wash dry for an hour or so, then wipe the surface with a clean, dry cotton swab or soft cloth to remove the wash from the surface and leave it in recesses and around detail. You can use a little clean thinner for stubborn spots but you are trying to avoid removing any from lines.



On aircraft, I wipe in the direction of airflow. On ground vehicles and ships, wipe down following the way water would run off. Now any streaking left by the swab or rag will look like dirt, grime, or rain streaking and contribute to the weathering. Be aware, a side effect of overall washes is a subtle overall color shift that can darken the model's appearance.

PINWASH

You can avoid some of that overall darkening by applying a pinwash. A contraction of the term pin-point wash, it uses the same thin paint as the overall wash. Rather than using a flat brush, the color is flowed along lines and around detail by touching a fine brush — here the one in the lid of a Tamiya Panel Line Accent Color bottle — to it and allowing capillary action to pull the wash along recesses.



Overflows and excess are par for the course but easily removed after the wash dries with a fine brush damp — moist, not dripping — with clean thinner. It will liquify the paint, which can then be worked around details or soaked up. Blot the brush clean between spots to avoid adding color where you removed it.





A little clean thinner on a cotton swab is useful to refine the wash in areas like weld seams. I usually blot excess thinner from the swab on a paper towel before using it on the model.

OIL, ENAMEL, OR ACRYLIC?

As a best practice, use a medium and thinner that is different from the paint or gloss coat it is going over. This will prevent the thinner from attacking the paint. If you painted with acrylics, oils or enamels are a good choice. Enamel or lacquer base coats may require acrylic washes.

As I am writing this, I know there are readers saying, "I've used artist oil washes over enamels without a problem." If you have, great. But if you are new to the wonderful world of washes, experiment with what works before flowing it over that freshly painted 1/32 scale F-14 you spent the last six months detailing.

ACRYLIC SLUDGE WASH



If you prefer acrylic washes, you can mix them with water and water-based acrylics. But water wants to bead on surfaces rather than flow, so the wash needs something to break the surface tension. First, mix 1 part of an appropriate acrylic with 9 parts water. Yep, it looks like a wash.

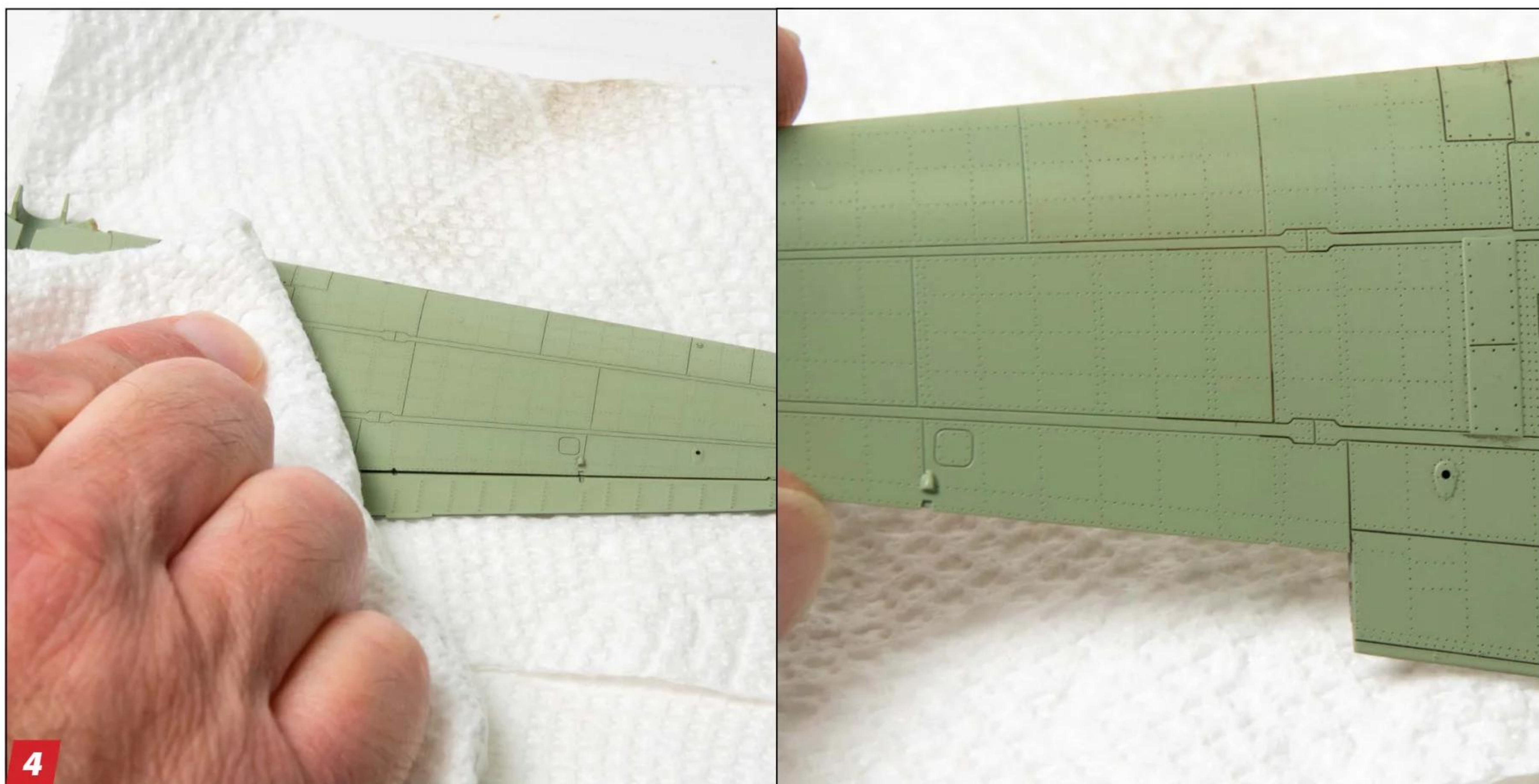


Next, add liquid dish soap to the mix. You are going to want to add more than you think, as in almost equal parts with the water. Stirring will produce a slightly thick, sludgy mixture.

Apply the sludge to the model like the overall wash we discussed earlier. It does not need to be neat, but it does need to cover all the surfaces and details you want to emphasize. Leave it to dry for an hour or two.

WASHES AT A GLANCE

- Better over gloss for flow and ease of cleanup
- Start with a ratio of 1:9 paint to thinner
- Use a wash that won't attack the paint



Rub the surface with a dry paper towel or cloth pressing hard enough to remove the wash from the surface, but not too hard. You want to leave the color in the recesses and remove it everywhere else. **FSM**

WASH IDEAS BEYOND PANEL LINES

- **Tires:** Brown or tan flowed into the tread of plastic or vinyl tires not only brings out the pattern, but it also adds dirt.
- **Engines:** Motors are rarely clean, so dark brown or black wash is an easy way to add grease and grime.
- **Cars:** While a shiny car doesn't seem like the place to use a wash, black flowed into door, hood, and trunk outlines quickly separates those opening parts from the body. It can also make solid-molded radiator grilles appear open.
- **Ships:** On small-scale ships, a dark wash will deepen shallow portholes. A brown wash can add definition to molded deck planks.
- **Buildings:** Washes bring out the texture of bricks, plaster, and even concrete.
- **Groundwork:** Dark washes vary the color of dirt and soil and deepen shadows.
- **Jet engines fans:** These parts are often buried deep in a fuselage, but flowing in a black wash can separate the fan blades along with afterburner flame keepers.

Learn to STREAK

We strip back the covers on a winning technique

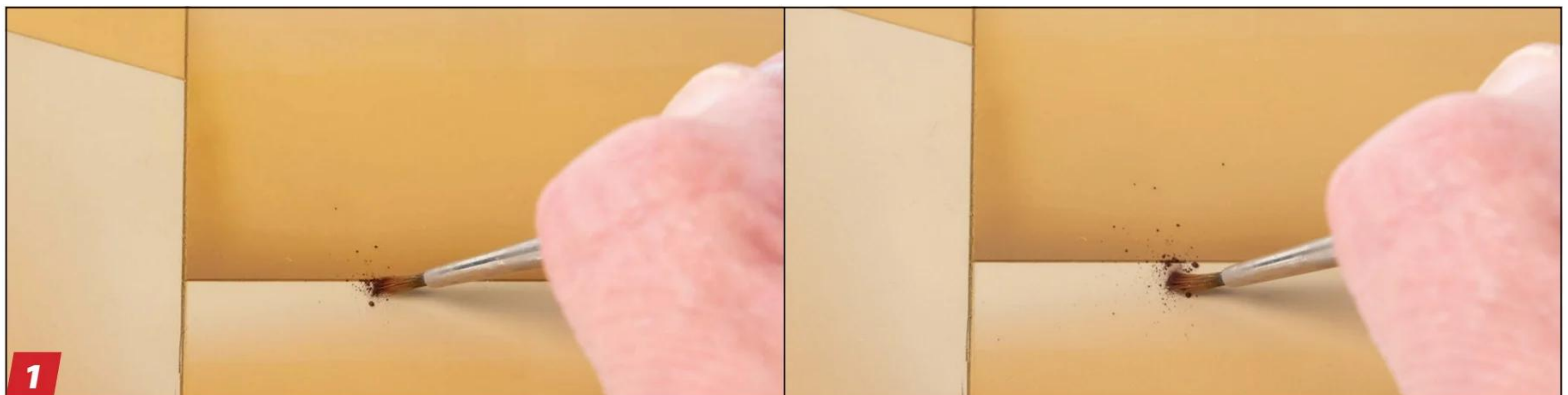
BY AARON SKINNER

As rain and other moisture runs down the sides of an object, any dirt or grime on the surface will be dragged with it. On aircraft, the passage of air over the airframe will pull dirt and fluids in the direction of airflow.

Replicating streaking is a great way to place a

model in context and show how it was used and abused and even where it served. As with so much in modeling, different methods and mediums can produce different results. To begin, these techniques are best applied to a satin or flat surface to give streaking something to stick to.

PASTELS OR PIGMENTS



1 Pick up a little powder on a fine brush and apply it on the model where you want the streak to start. Start a short downward stroke to leave a mark on the paint.

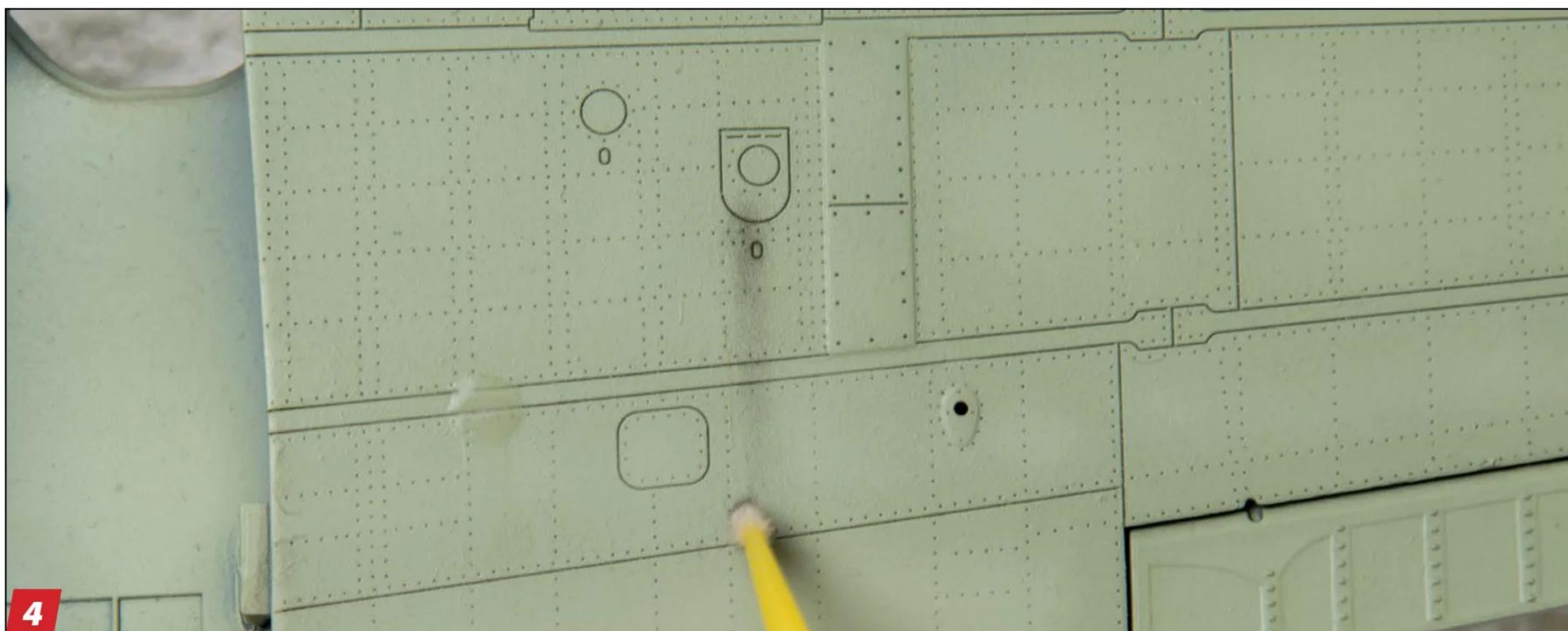


2 Blow the excess powder from the surface and begin pulling the brush down the vertical surface top to bottom from the source of the streak, in this case a panel line. Repeated strokes will produce a nicely feathered line that gets fainter toward the bottom.



3

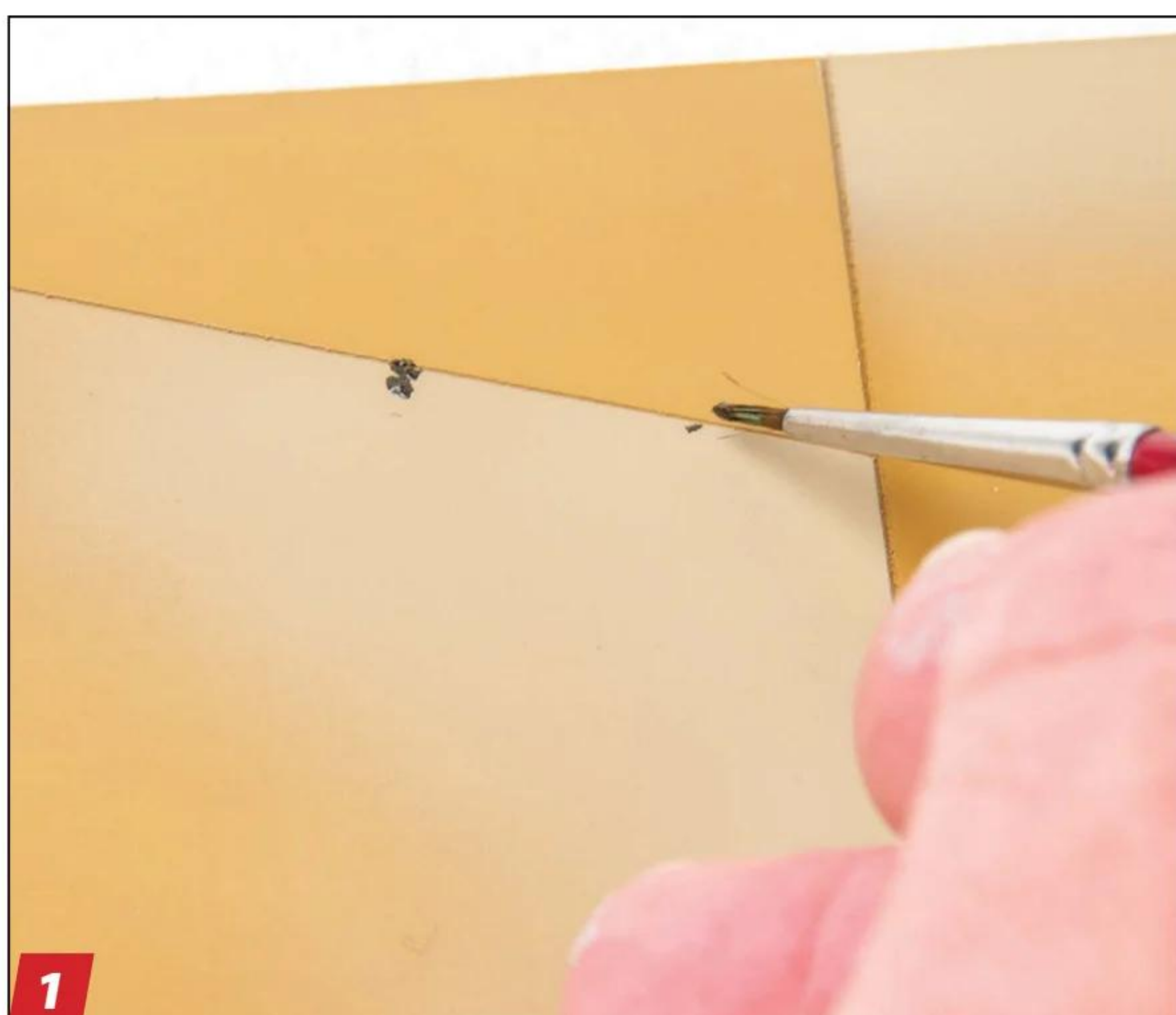
Repeat the process across the surface until you have all the streaks you are looking for. Varying the amount of powder on the brush, the pressure applied, and the color will produce different streaking.



4

I find pastels a perfect technique for applying streaking to aircraft wings, especially aft of maintenance hatches or weapon-bay access opening. A micro brush keeps the streaking nicely restrained.

OIL PAINT



1

Place dots of the color you want for the streaks at the source. The size of the dot (the amount of paint) will directly affect the length and density of the streak.

STREAKING IDEAS

If you look at vehicles in photos and the world, you'll see examples of places streaking can be used:

- Rain streaks even a little rust like the bolts holding license plates on a car.
- The flat tops of M113s collect dirt from the crews, which in turns runs down the vertical sides in the rain.
- Aircraft wheel wells even on airliners frequently close when the landing gear is wet producing dirty streaks aft of the bays.
- Sea water running off ship decks and down things like hawsepipes will streak the hull above the waterline.

STREAKING AT A GLANCE

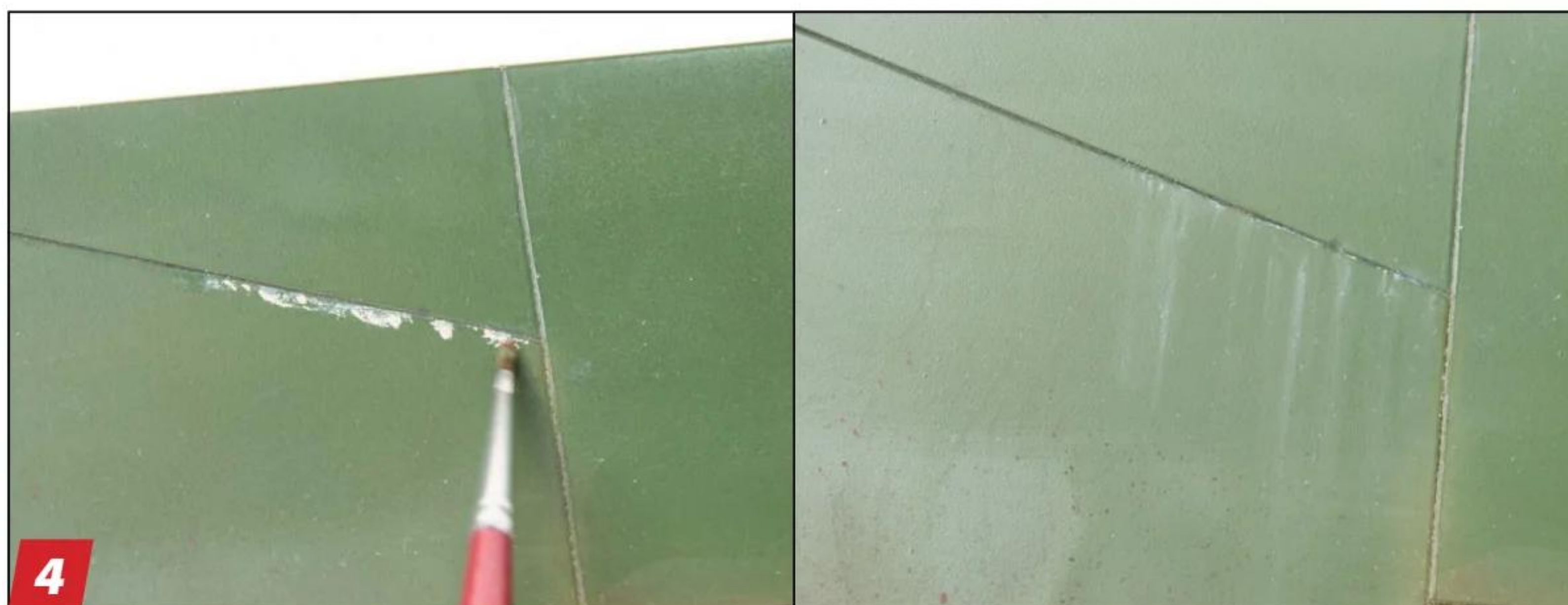
- Apply to flat or satin paint
- Start slow and build up the effect
- If you take too much off the surface, add more



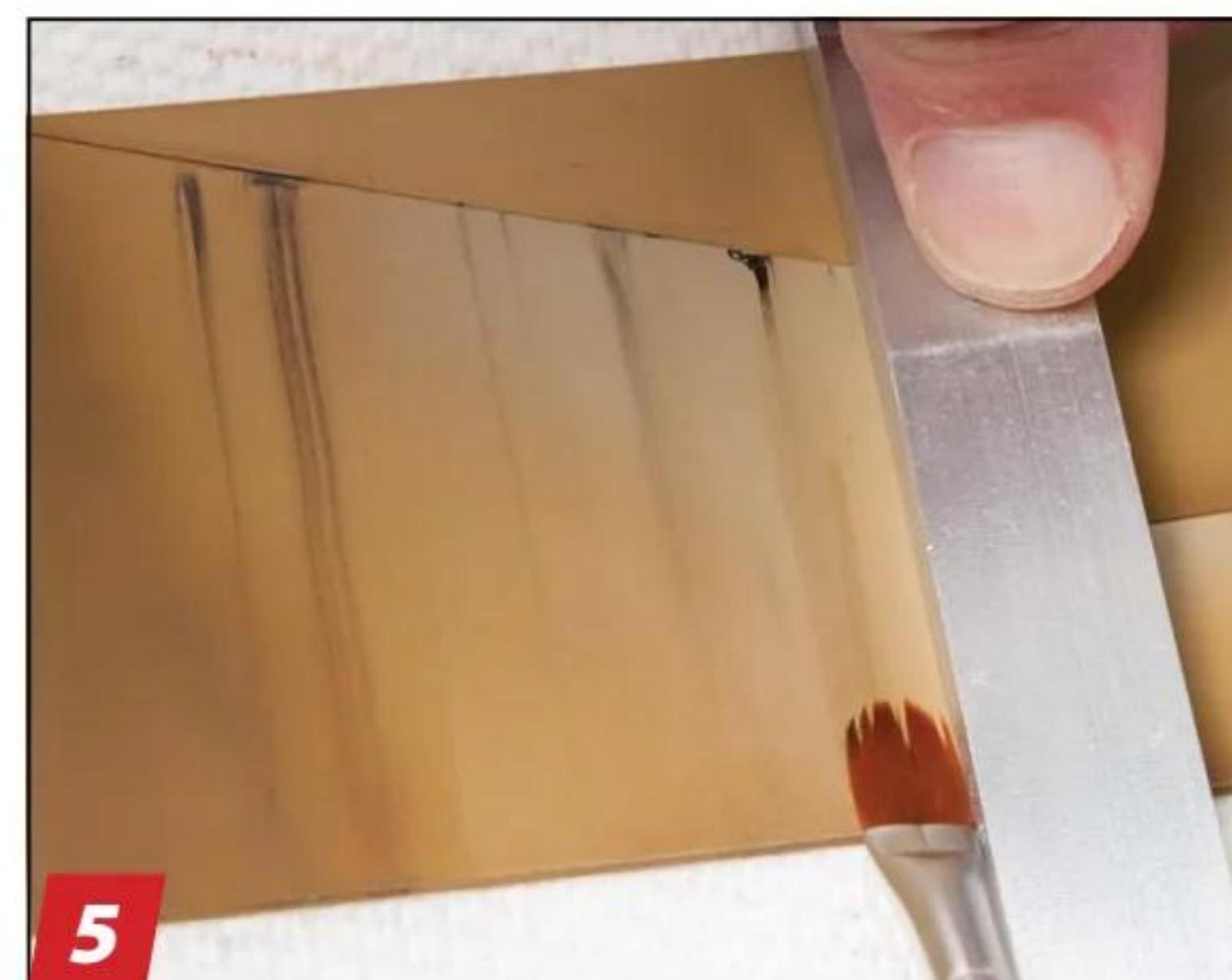
2 Drag a wide, flat brush damp with turpentine across the dot and down the surface. The brush should only be damp, so blot excess liquid from the bristles on a paper towel.



3 Start the stroke above the dot and avoid stopping on the surface as color may collect at that point. Also, blot the brush clean between strokes to keep the streaks distinct and avoid muddying the surface.



4 Don't neglect lighter colors when adding streaking. Here, I applied a light buff along a panel edge and dragged it down the surface to replicate the results of rain running down the paint.



5 Don't be afraid the use a straightedge to keep everything square.

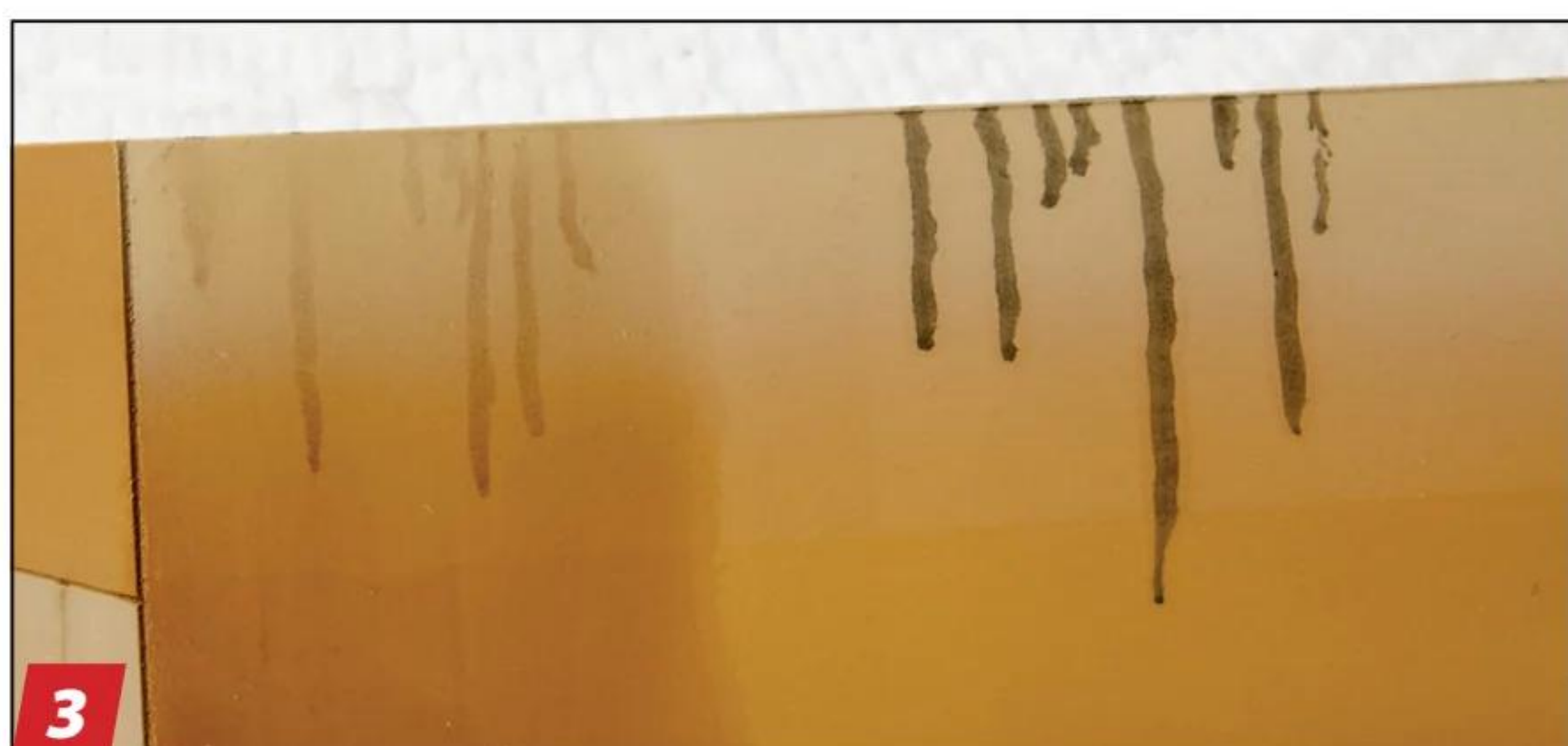
STREAKING FLUIDS



1 Enamel streaking colors from Ammo and AK Interactive are applied in stripes from an edge.



2 While the color is still wet, drag the streaks down the surface with a flat brush damp with a little mineral spirits. As with the oil streaks, blot the brush clean after each streak.



3 Do not allow the streaking fluid to dry on the surface, because it becomes impossible to blend with mineral spirits and the painted streaks will need to be painted over to eliminate them.



4 Instead, work in short sections, applying the color and drawing it down with mineral spirits before repeating the process on the next. **FSM**

How to paint CHIPPED PAINT

Two techniques to apply realistic paint chipping

BY IVAN MOMCILOVIC

Look around the world and you'll see equipment, vehicles, and even buildings with chipped and worn paint. Some of this is the result of harsh weather, but most is caused by use. Tanks and construction equipment literally crash through terrain and buildings. Crews climbing over vehicles and repeatedly opening ammunition bays and engine and maintenance hatches will chip paint around

those openings. Speed, sand, and other things will wear paint on aircraft leading edges.

All of this makes chipping popular with modelers. There are several ways to represent chipping, but I primarily use two. To demonstrate them, I applied both to an old resin Sherman turret from my stash. To keep the weathering logical, check photos of vehicles in action to see how and where paint gets chipped.

First, I primed the turret with spray-can Vallejo Hobby Paint Black (No. 28.012). If you are not familiar with the Hobby Paint range, be sure to use it in well-ventilated space — I spray it outdoors — because it is flammable and toxic.



After the primer dried, I airbrushed the turret with Ammo Atom Leather (No. ATOM-20058) acrylic.



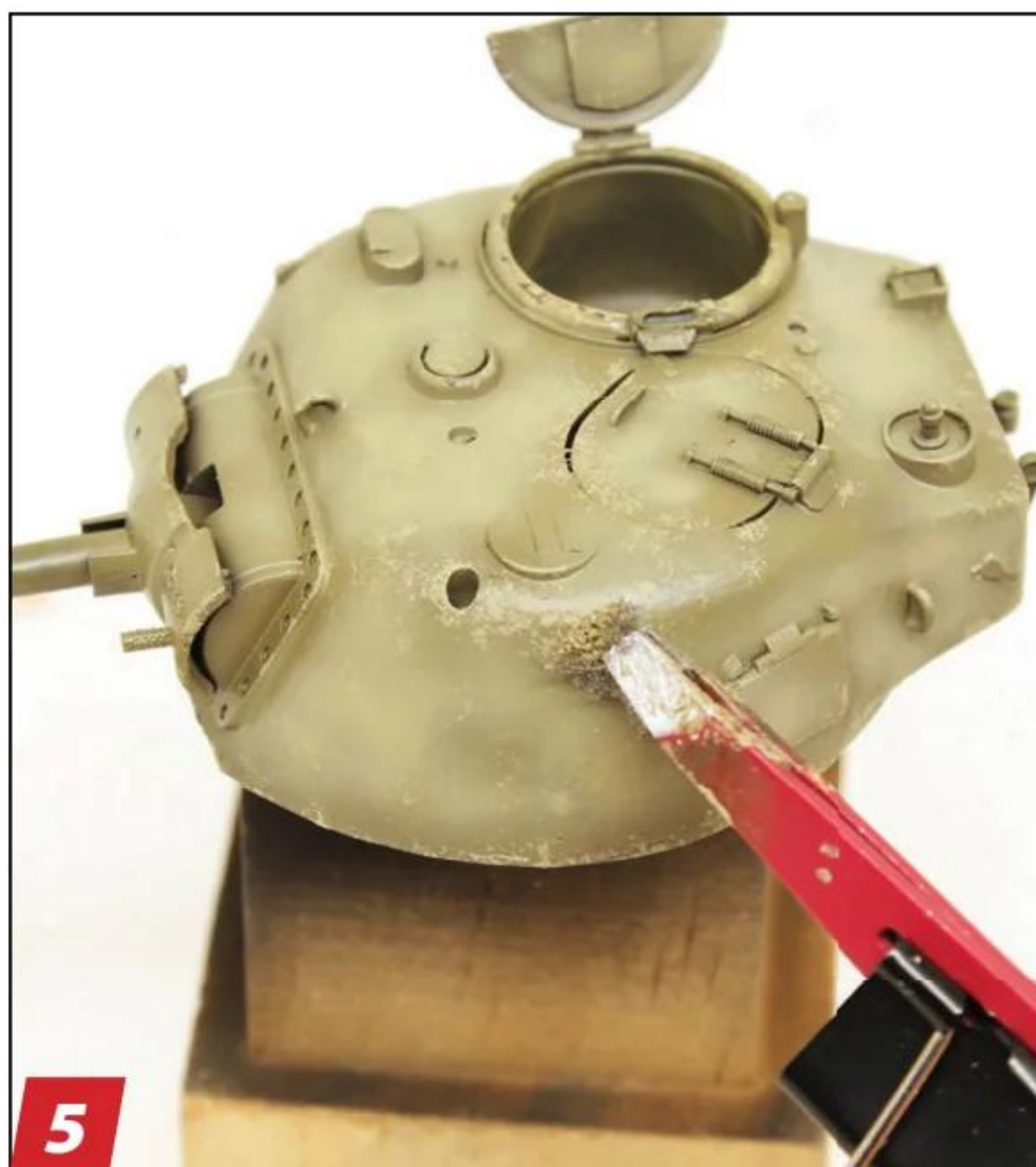
I masked half of the turret and sprayed the exposed section with chipping fluid. This stuff is available from several manufacturers — hairspray can also be used — and serves as a release agent for paint over it.



I let the chipping fluid dry and removed the tape before airbrushing the turret with AK Interactive Olive Drab Light Base (No. AK135). Next, I sprayed AK Olive Drab High Lights (No. AK136) in a marbling pattern to break up the color.



Holding a chunk of sponge in tweezers, I dipped it in Scale 75 War Front Grau (No. SW029), a similar but slightly lighter color than the base, so it's a good choice for fresh chipping. I applied this to both sides of the turret.



Make sure that sponge is almost dry when you are making this type of chipping. That keeps the chipping small, restrained, and more realistic.



You can achieve similar results with a fine brush, but the sponge technique is quicker, especially if you have a large area of chipping.



On the side under-coated with chipping fluid, I brushed on tap water. Using a toothpick, I chipped and scratched at the surface in areas previously chipped with the sponge. This revealed the brown producing dramatic, multilayer chipping.



Switching to the other side, I used a fine brush and Ammo Atom Leather (No. ATOM-20058) — any dark red-brown will work — to carefully add dark spots inside the sponge-applied grau. I also added a few scratches.



After a dark brown pinwash, I highlighted the chipped areas with Ammo Streaking Rust Effects (No. A.MIG-1204). This turret has clearly seen better days!



Subsequent weathering steps mute the Streaking Rust and blend the other layers together to good effect. Not all chipping need be this extreme, but even a few carefully placed chips can improve your next model.



CHIPPING AT A GLANCE

- The sponge should be nearly dry for chipping
- Go easy when removing paint over chipping fluid or hairspray
- Photos are your best reference for how and where to paint chips

SEE CHIPPING WORK

TO SEE A DESCRIPTION OF USING hairspray to chip paint, scan the QR Code to see the Scale Model Basic video. It'll have you heading to the store for a can of AquaNet lickety split!



TIPS FOR SPONGE CHIPPING

Look for a slightly open-pore sponge. I find the soft sponge used to package resin models works perfectly. Tear off a section and refine it if necessary. You want edges that are random in shape to produce a broken pattern of chips.



1

Holding the chunk of foam sponge in tweezers, dip it in a shallow pool of paint. You want color on the edges, not soaking through the foam.



2

Blot excess paint from the sponge by pressing it against a paper towel several times. Stop just before paint is no longer being transferred to the paper.



3

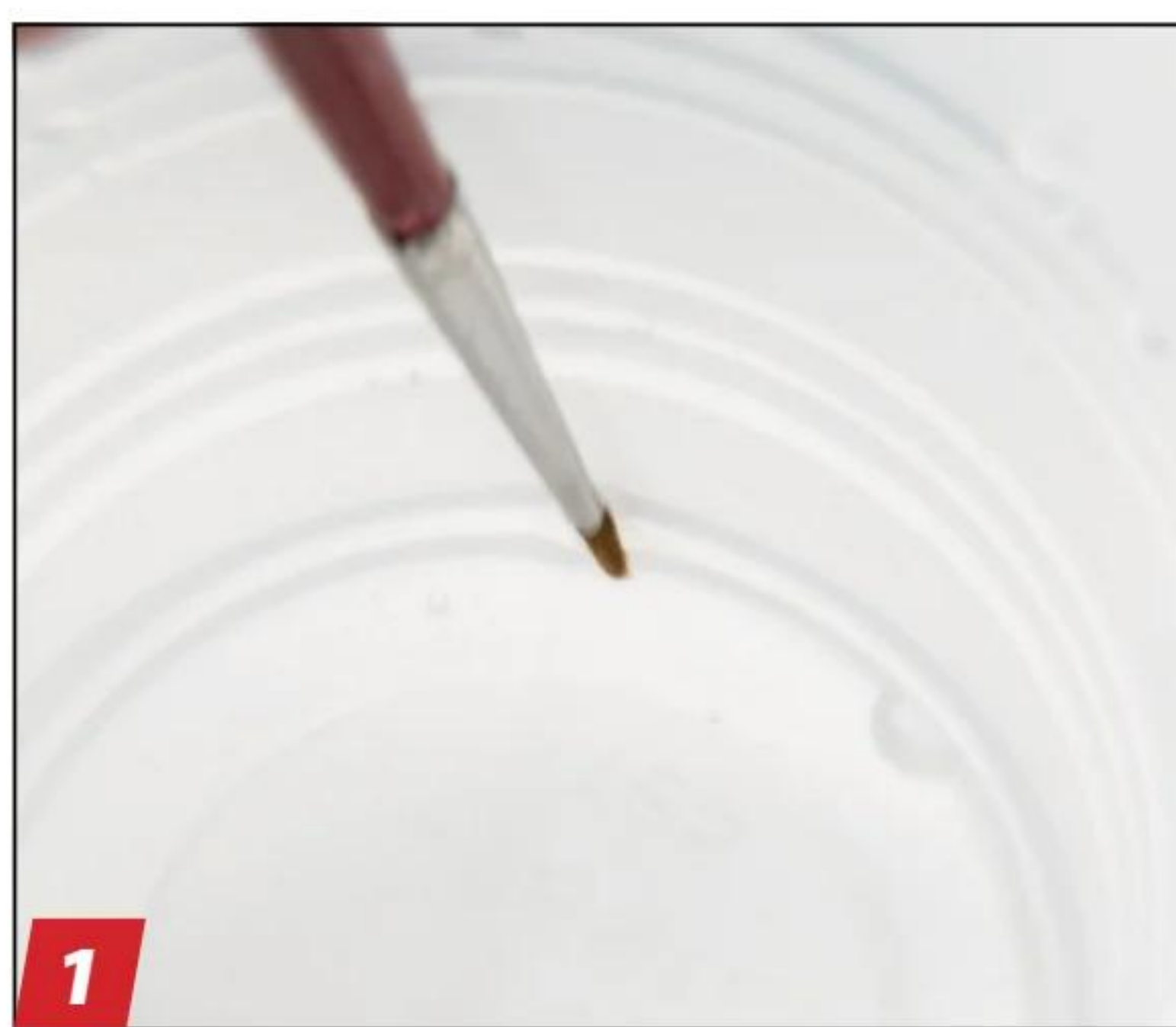
Touch the sponge to the area where you want to produce chips and pull it directly up off the surface. Rotate the sponge orientation between touches to vary the chipping.



4

BRUSH-PAINTING CHIPS

Wet a fine brush, such as a No. 0, with a solvent appropriate to the paint, in this case water.



1

Dip the brush into the paint to pick up just a little.



2

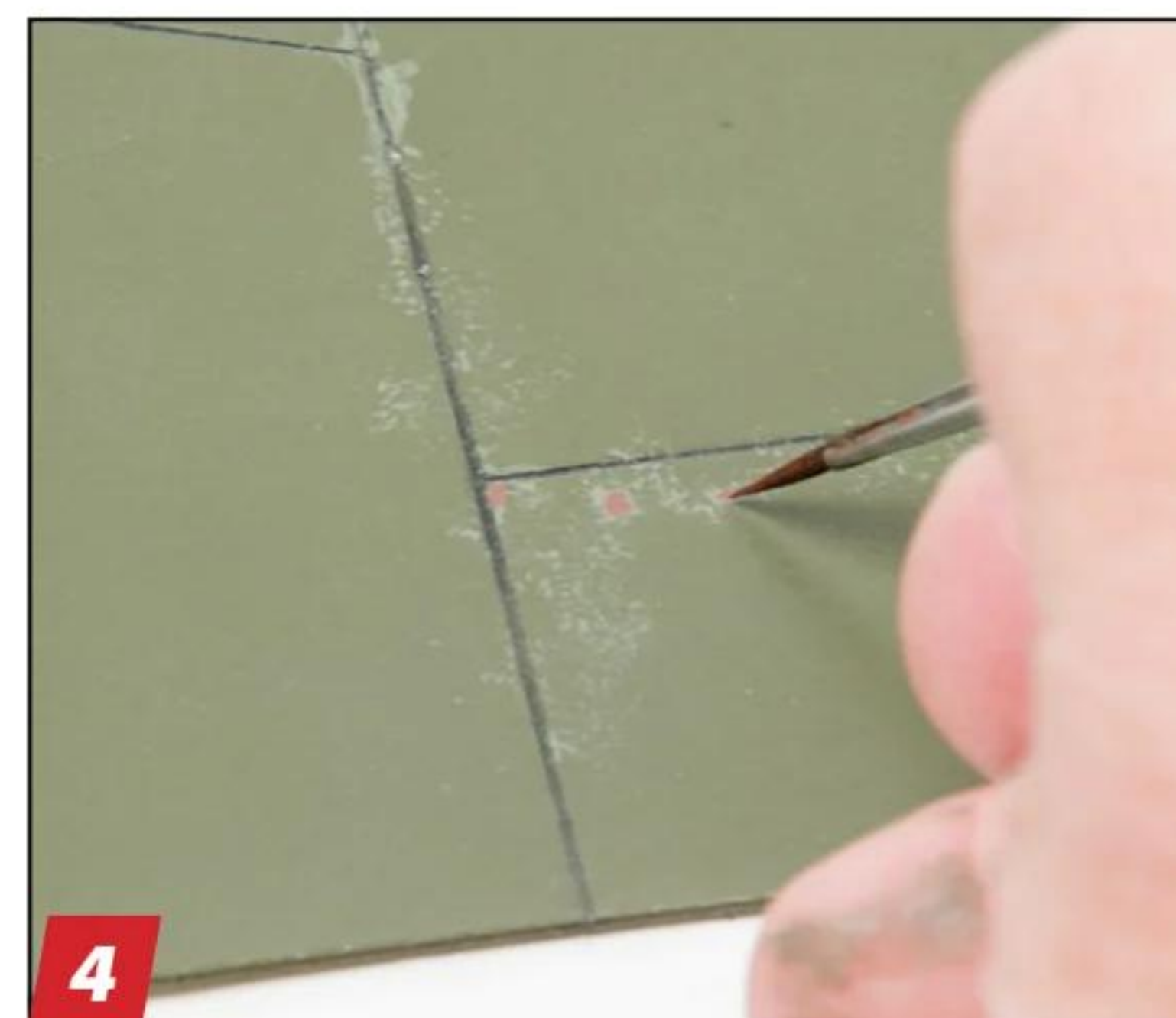
Remove excess paint by dragging it across the lip of the container or by touching it to paper towel.



3

Now you are ready to start painting chips. Remember to use a light touch and clean the bristles between every three or four paint applications.

FSM



4

Draw on weathering with **PENCILS**

Versatile tools provide multiple effects

BY AARON SKINNER

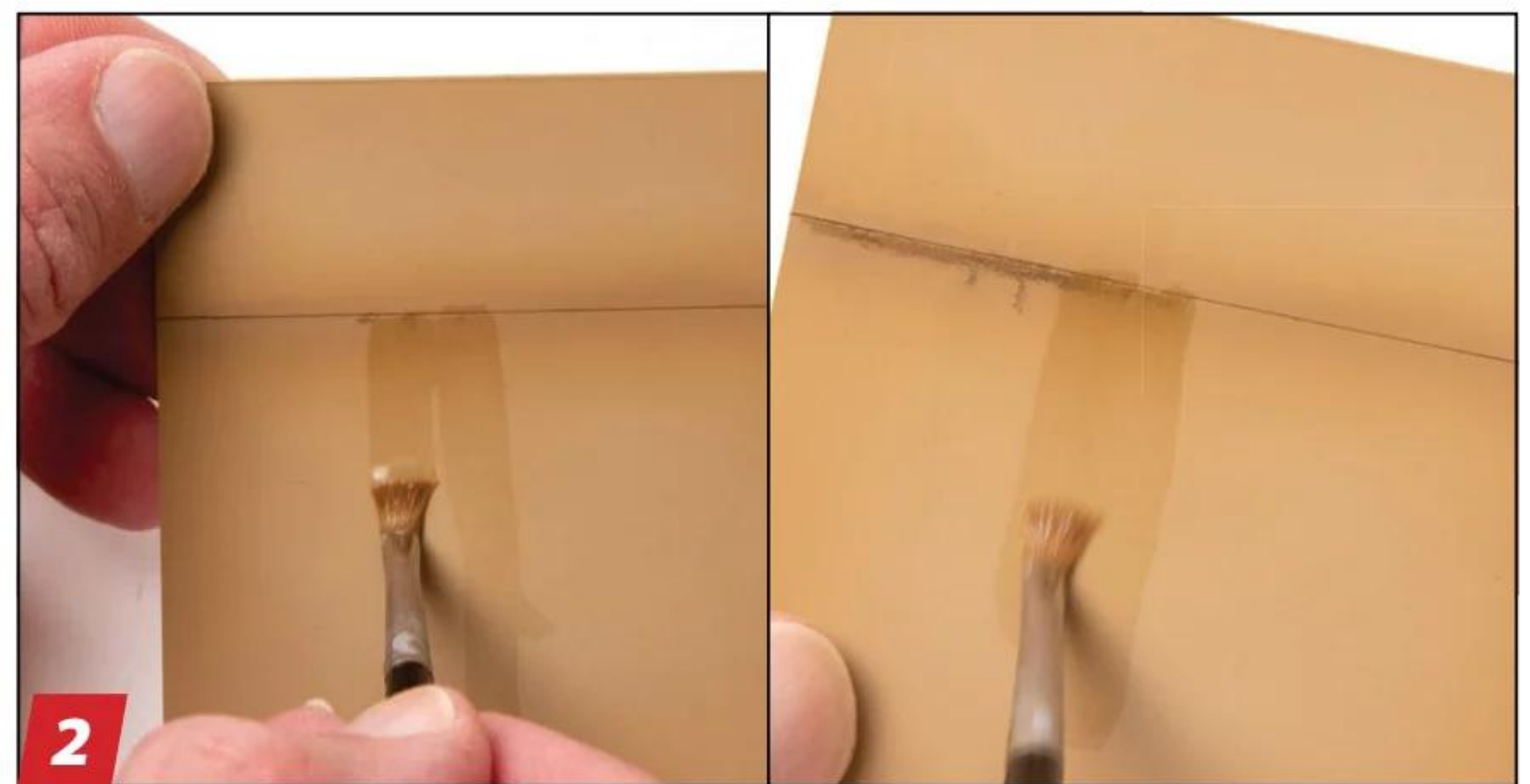
Invented in the 1930s, watercolor pencils have been used by artists and cartoonists for years. They offer the precision of a pencil and the blending of watercolor color paints, features that make them attractive to modelers. Artist watercolor pencils have increasingly

become part of weathering arsenals and AK Interactive has released its Weathering Pencils, a range of 37 colors, including shades like Dust, Light Rust, and Streaking Dirt specifically for modeling. For best results, apply watercolors over flat finishes.

APPLYING WATERCOLOR PENCILS DRY



1 Like a regular pencil, AK Weathering Pencils and other watercolor pencils can be sharpened to a point for precise application. For basic streaking, draw a pattern or line at the source of the streaks.



2 Dip a brush in water and begin drawing it down the surface. The amount of water will alter the effect. Damp bristles will leave more of the color. A lot of water will dissolve and thin the paint quickly.



3 One of the best things about watercolors is that they can be reactivated with more water even after drying, which makes it easy to refine effects as you go.

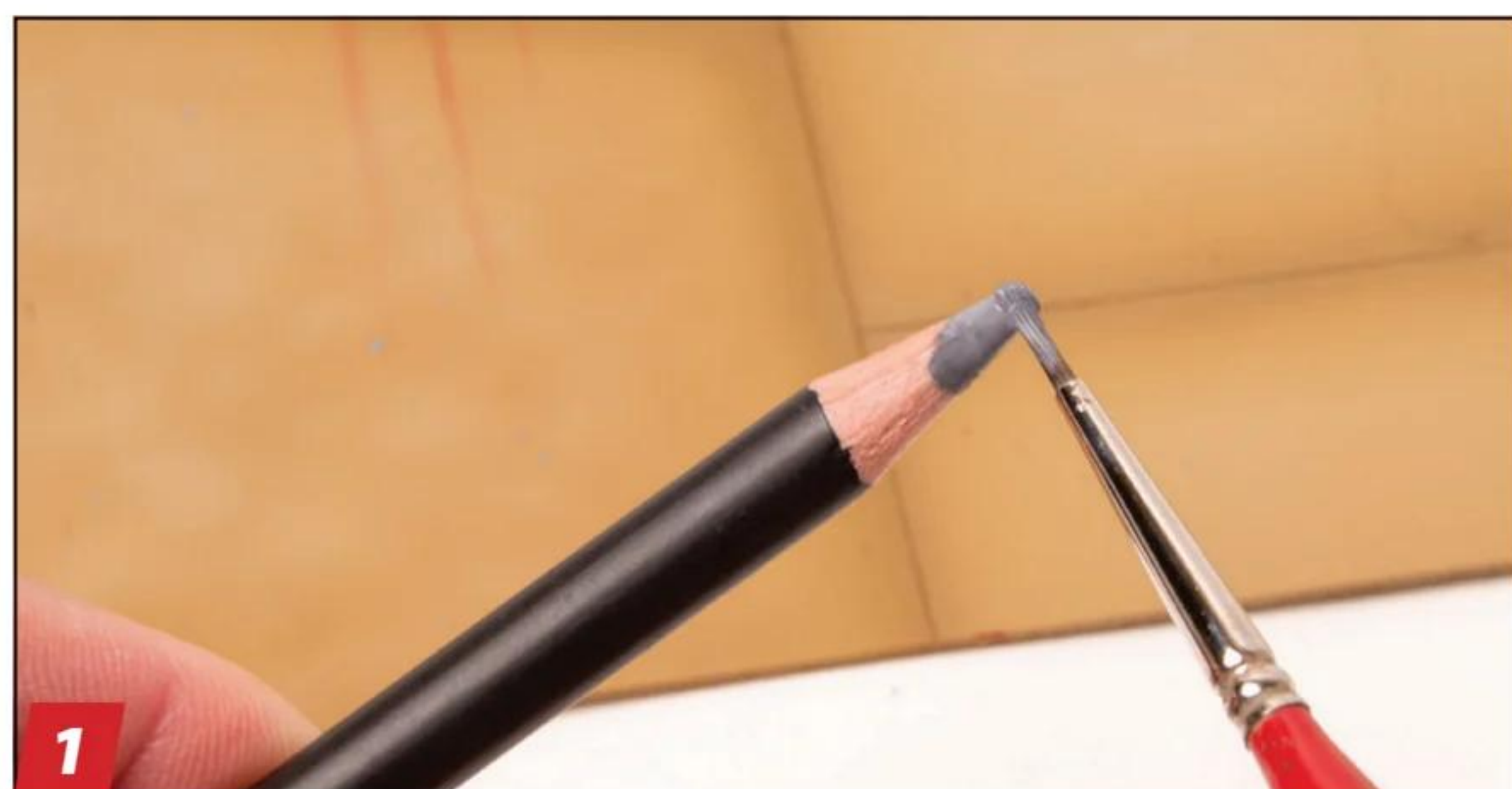


4 The thin, translucence of watercolors also makes them a great choice for use as filters, stains, and fading. Simply draw the color on the surface to be affected — the shape of the pattern doesn't matter.



Step-by step, here's streaking applied dry to a vehicle. I drew variously sized dots of AK Interactive Streaking Dirt along the upper edge of a panel. Using a little water on a fine brush, I drew the paint down the side a little. A damp flat brush further blended the streaks for a feathered finish.

APPLYING WATERCOLOR PENCILS WET



1 Watercolor pencils can also be applied wet. Simply touch a damp brush to the tip of the pencil. It doesn't take much water or pressure to draw color into the bristles.



2 Paint that color directly onto the model. The first thing to notice is that the color is much more intense than when water is added to the dry pigment on the model itself, but it is easy to paint and blend.



3 Blend and feather the color with a large flat brush and the result is a subtle layer of dirt or dust.



4 I wasn't happy with the look of this dirt deposit after the watercolor dried, but it was a simple matter to come back with a little water and further blend the edges.



5 Don't be afraid to layer shades by either drawing or brushing more colors onto the surface and feathering them into the paint.

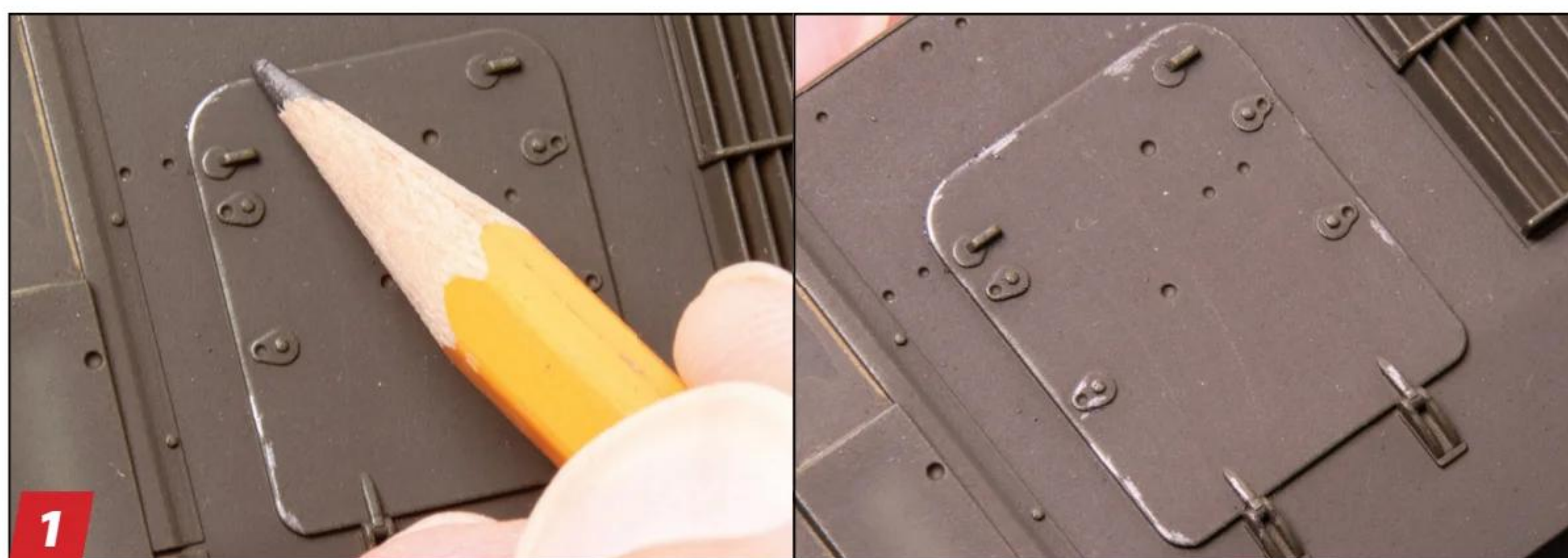


Be careful not to blend or bleed the colors too much because the combinations can look kind of muddy (and not the good kind of mud) and spoil the final appearance. If that is a concern, seal each layer with a light spray of clear flat. Other than that, apply and blend, apply and blend.



One word of caution about painting wet watercolors onto the model. The paint, especially bright, high-contrast shades, can become stubborn to remove even with plenty of water. Go easy and build up the effects slowly to avoid this issue.

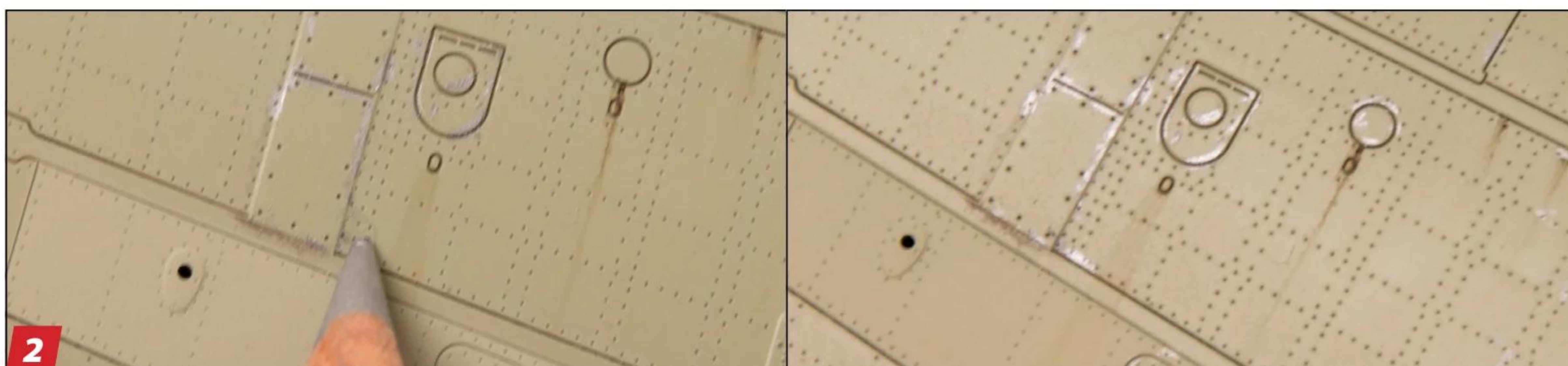
OTHER PENCILS OF NOTE



PENCILS AT A GLANCE

- Apply over a flat finish for best results
- Watercolors can be applied dry or wet
- More water can refine the effects or remove the color (usually)

In your enthusiasm for watercolors, don't overlook the humble No. 2 pencil. Yep, the thing we all used to color in the circles on exams is perfect for representing raw steel along edges where paint gets rubbed away from use. Simply drag it along those edges. Seal it with clear flat to avoid smearing the graphite if you expect to handle the model a lot after this step.



One of my favorite tools is a silver Prismacolor pencil. (You can find them at art stores.) The bright silver is especially useful to give the appearance of aluminum bared by ground crews and weather on aircraft. Keep the point sharp and skip the tip lightly over the surface along hatch edges, walkways, and leading edges. **FSM**



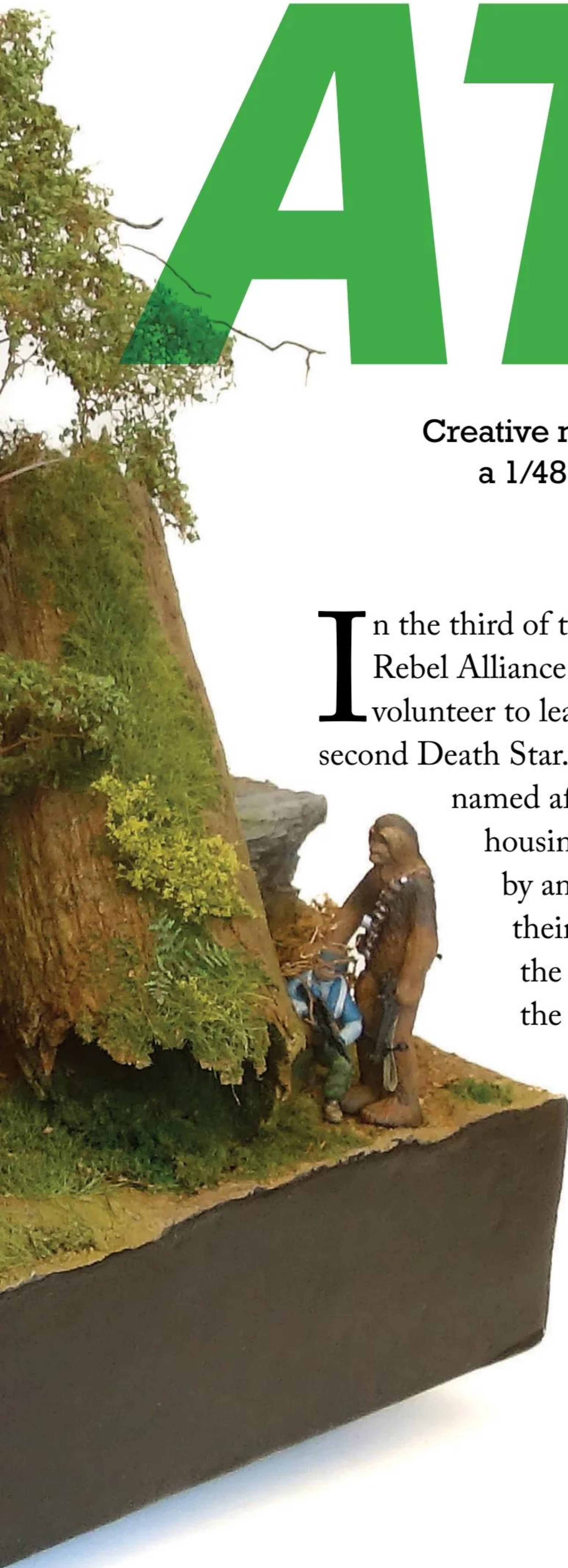
ENDOR CAT AND MICE
STAR WARS
EPISODE VI
RETURN OF THE JEDI

Build and weather an

AT-ST

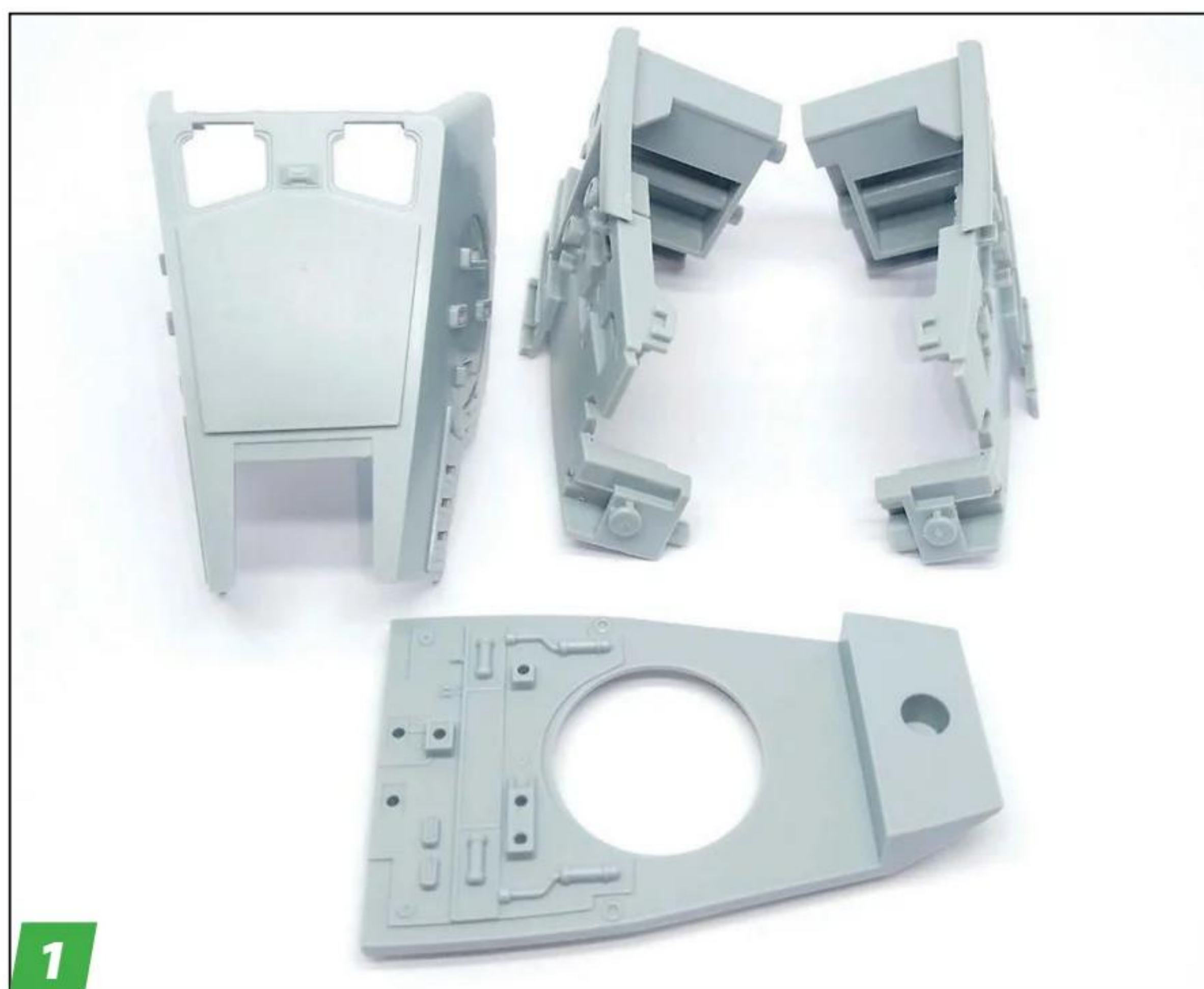
Creative modifications and artist oils prepare
a 1/48 Scout Walker for duty on Endor

BY KOSTAS GEORGIU



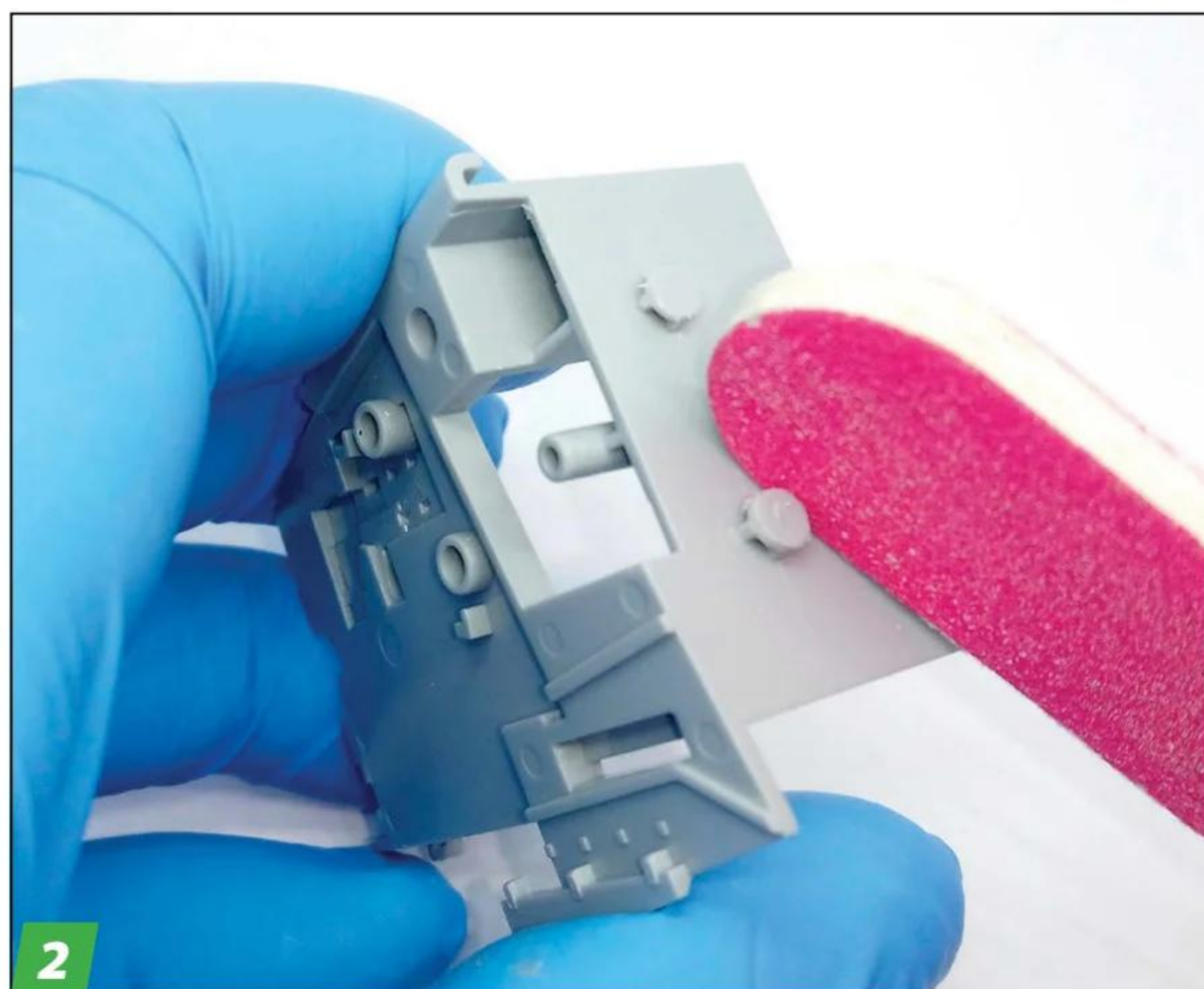
In the third of the original *Star Wars* films, *Return of the Jedi*, the Rebel Alliance heroes Han, Leia, Luke, and Chewbacca volunteer to lead a team to deactivate the shield protecting the second Death Star. After landing on Endor, a forested moon (also named after the planet it orbited) and finding the bunker housing the shield generator, they also found it guarded by an Imperial garrison. After fierce fighting alongside their newly acquired Ewok allies, the Rebels disabled the shield generator and enabled the destruction of the battle station.

A famous scene from the movie shows Chewbacca swinging in on a vine to drop on top of an Imperial AT-ST, commandeering it with the help of a few Ewoks. I thought to model the moments prior to this when Chewie comes up with the idea to take over the walker while hiding from it in the dense forest foliage. Building and weathering a Bandai 1/48 scale *Star Wars* Imperial AT-ST kit was the perfect place to start.



1

The kit represents the movie miniatures well with clear, crisp details, and it's a breeze to build. However, I read that some modelers had problems when using enamels on the plastic, causing the styrene to become brittle and crack. I wanted to avoid that outcome.



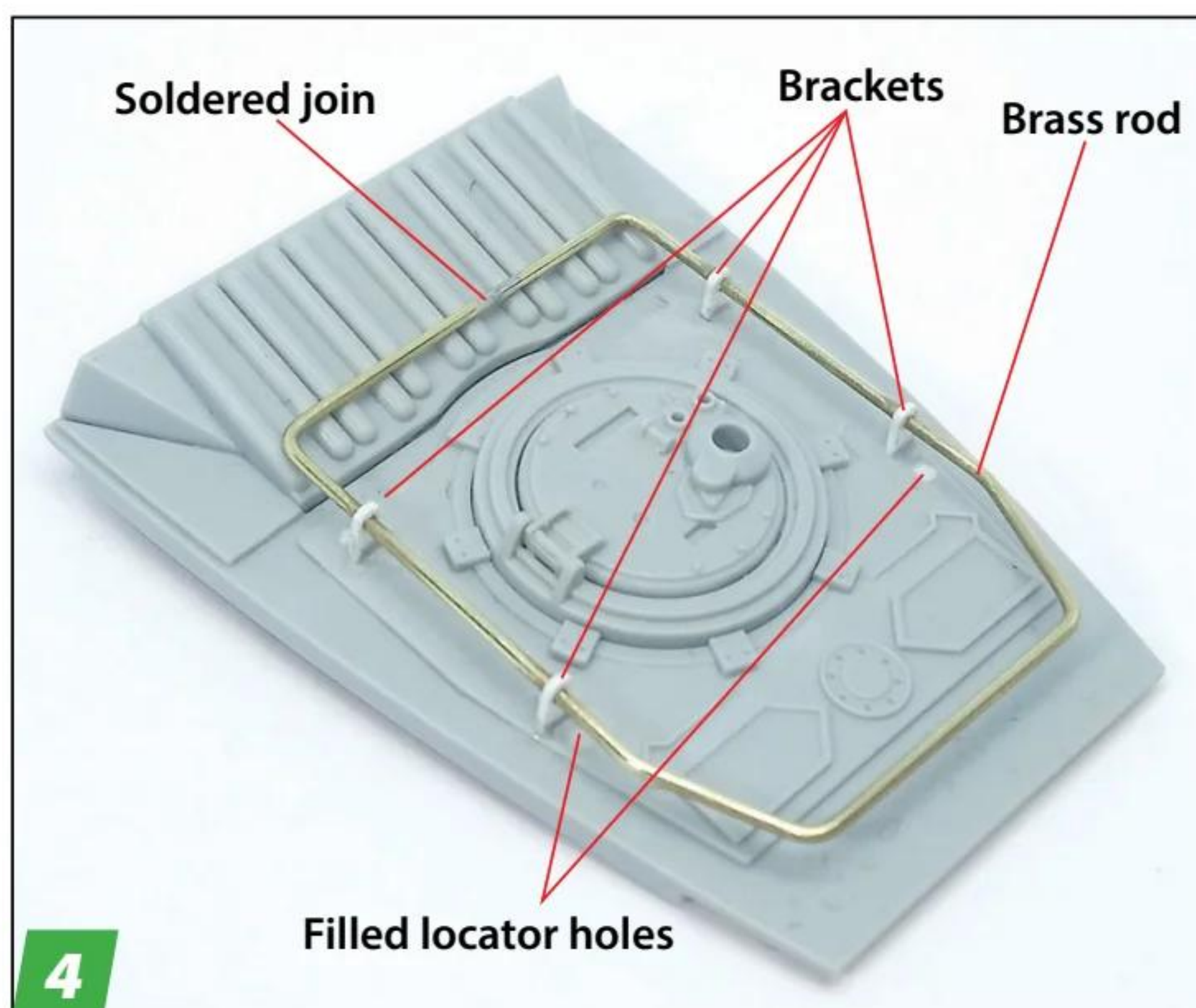
2

Bandai designs many of its kits, including the AT-ST, to press-fit together. I was going to use glue, and as such, I sanded most of the locator pins to eliminate the tension with the corresponding holes and reduce the chances of cracks caused by enamels used later.



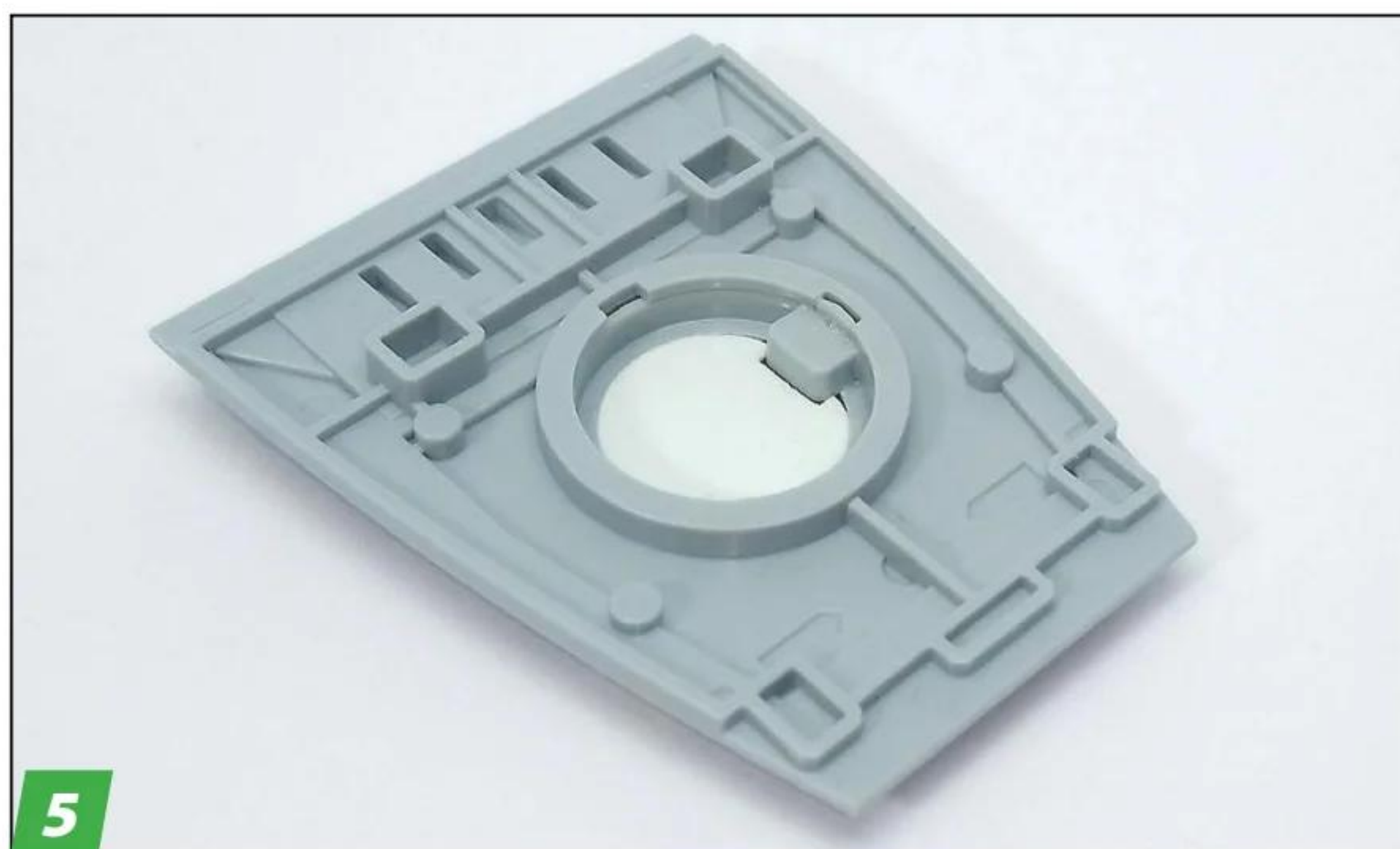
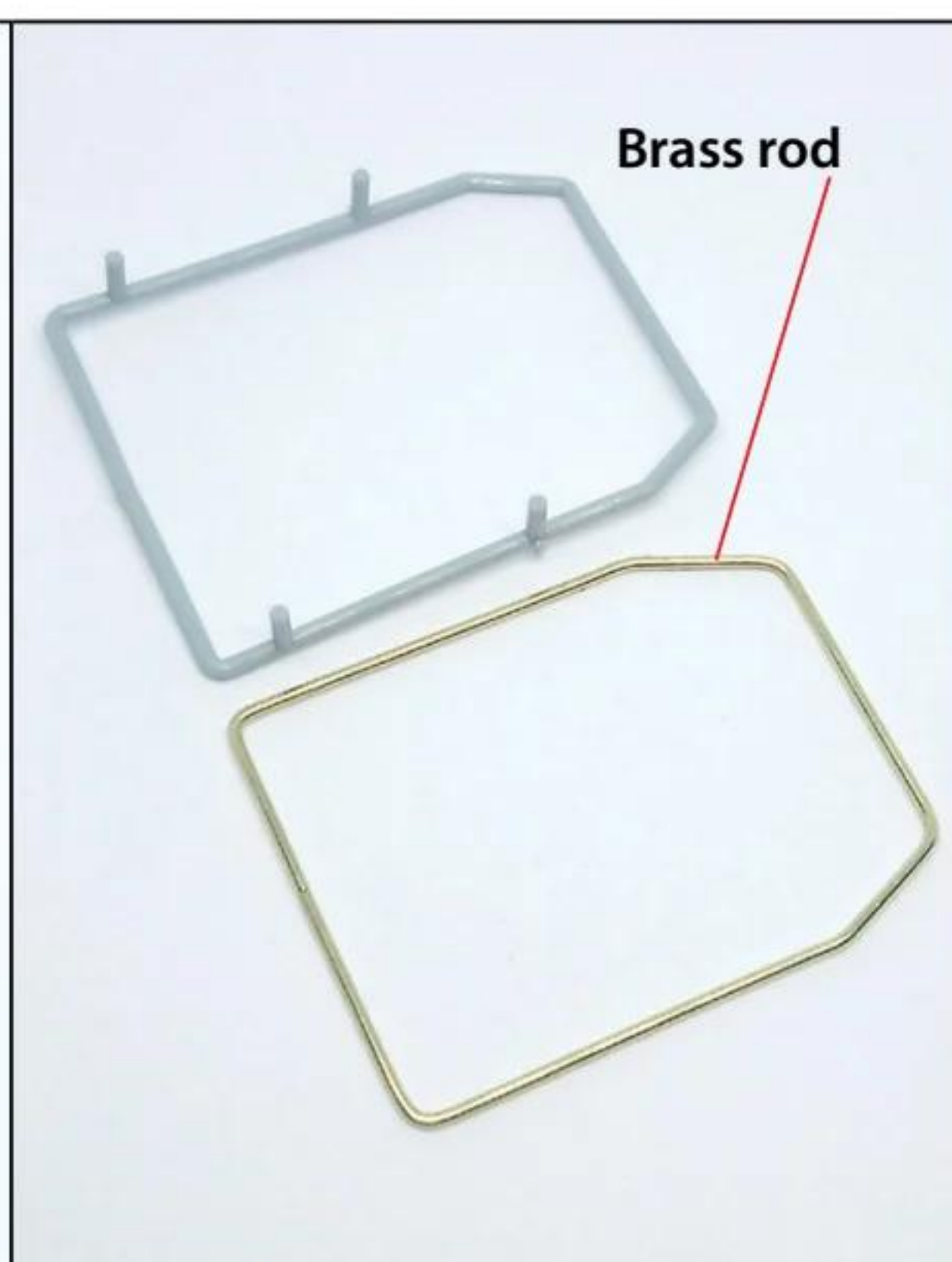
3

Because the AT-ST would be buttoned up for the scene, there was no reason to finish the interior. I left most of the cockpit parts out because nothing would be visible through the small view ports.



4

The kit-supplied rail for top of the AT-ST appeared too thick at 1.2mm. I replaced it with .8mm brass rod bent to shape. I rubbed the rod with steel wool to clean it, filled the locator holes on the hull top with plastic rod sanded flush, and made brackets from styrene sheet.



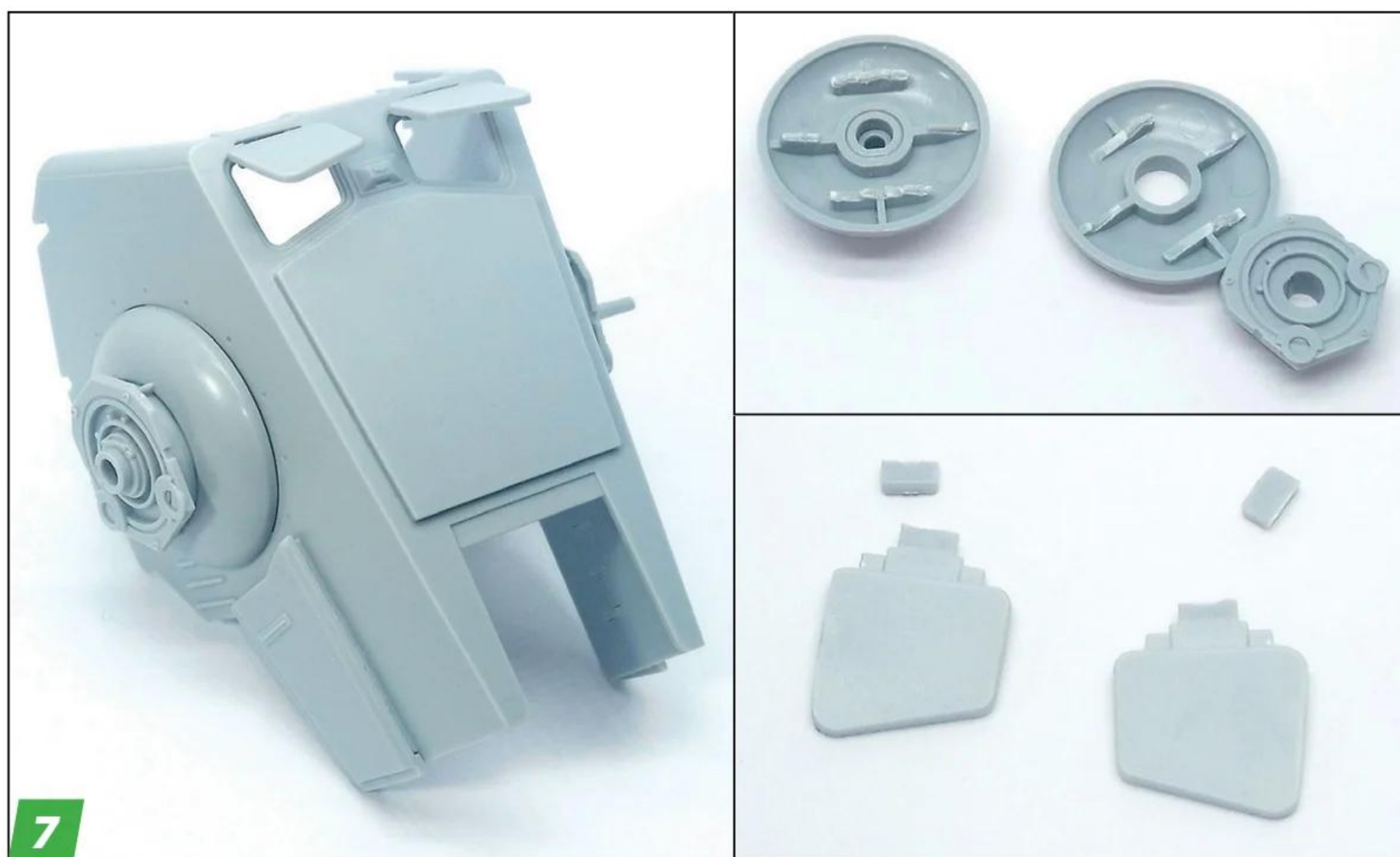
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The top hatch didn't fit tight and left a bit of a gap. I made a blank from styrene sheet and glued it inside the hull top to seal the opening.

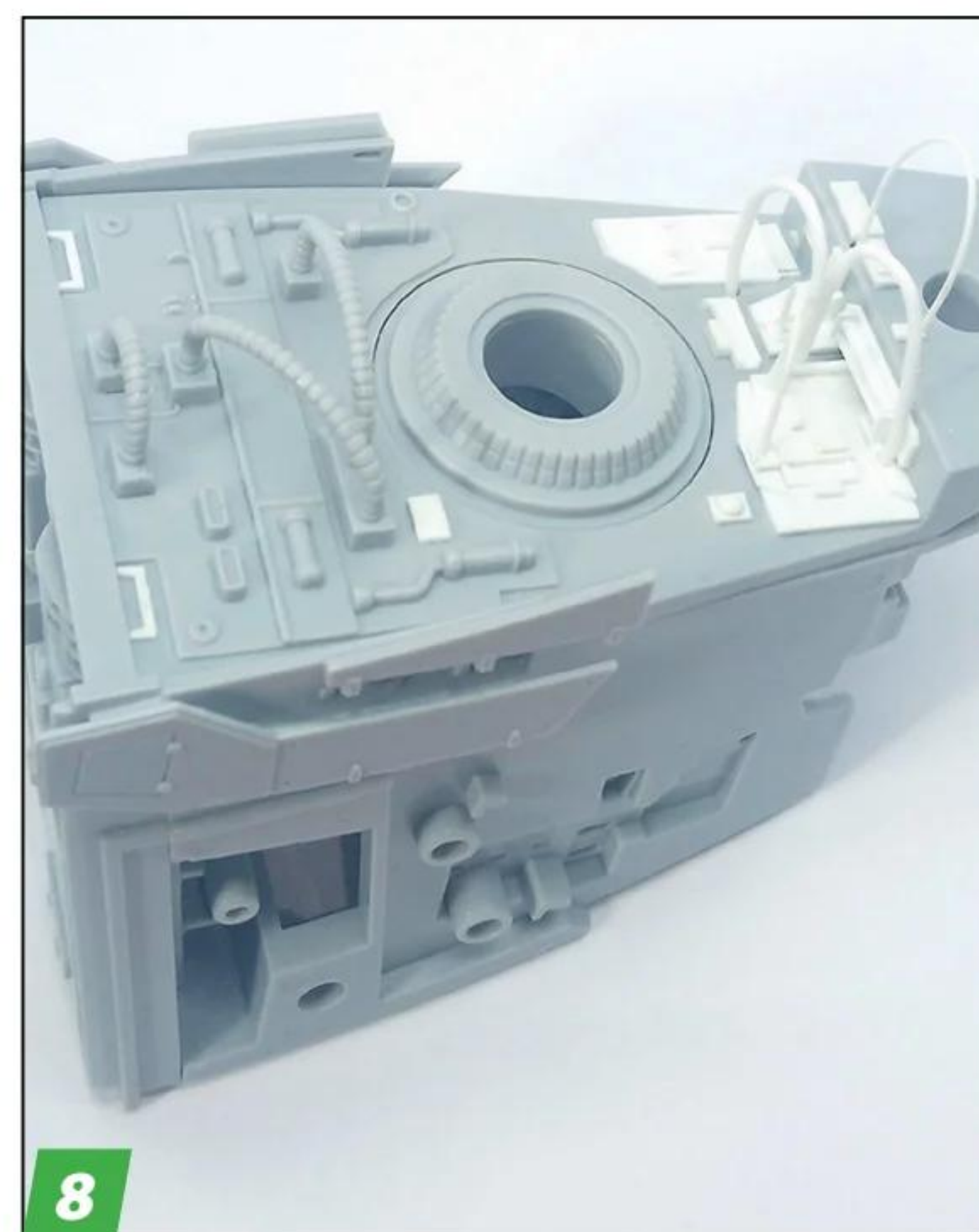


6

So fine were the depressions around the weapons mounts on the AT-ST sides that I worried they'd disappear under primer and paint. I deepened and widened them with a .75mm drill chucked in a pin vise. It just took a couple of turns each to do the job.



7 For a perfect fit between the hull sides and weapons mounts, I removed the locators with a pair of snips. I also trimmed the locator tabs on the viewport shields to allow me flexibility to pose them at slightly different angles for visual interest.



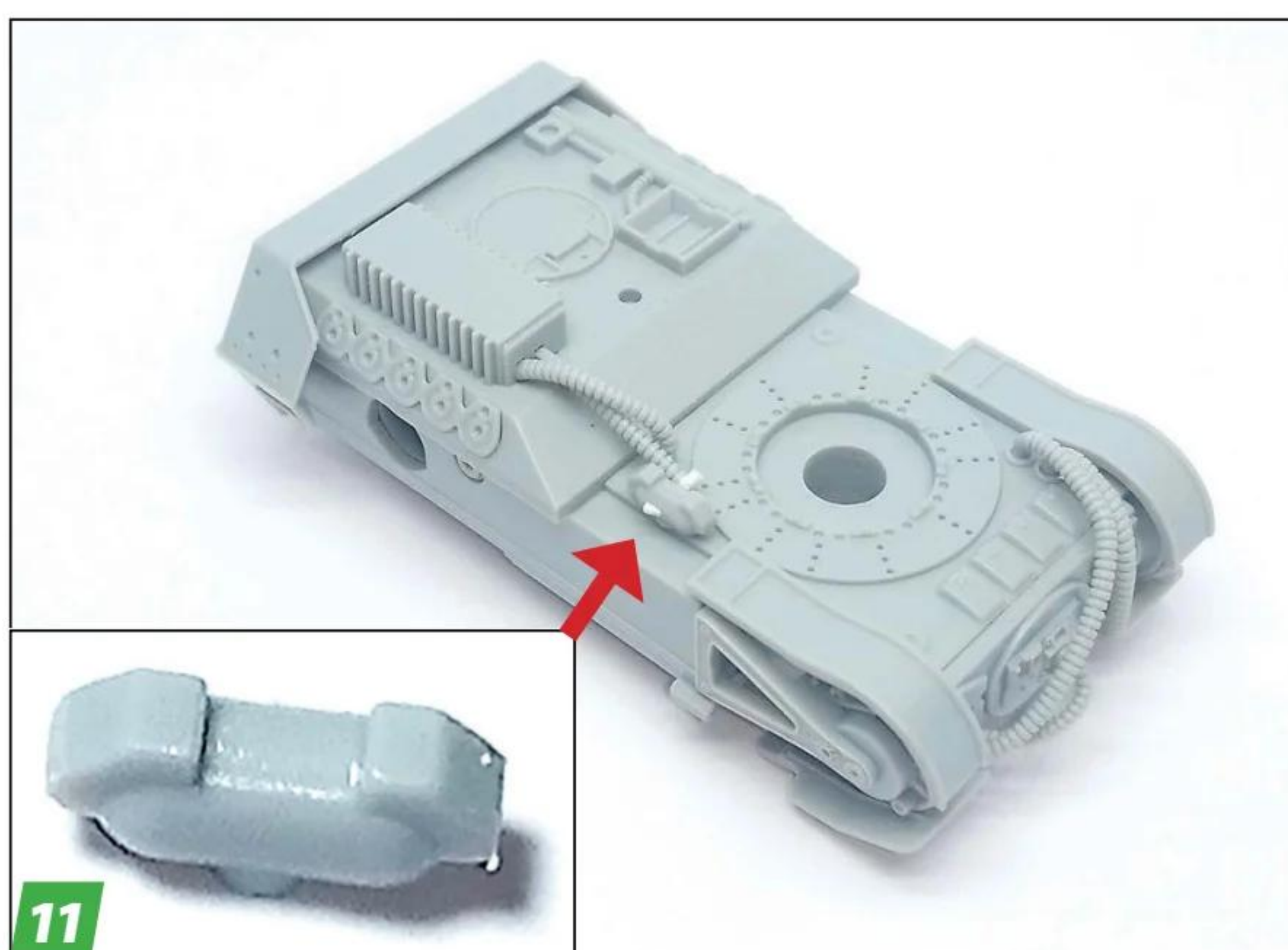
8 The underside of the AT-ST hull lacked detail. I added piping and cables made from styrene rod of varying thickness and armor plates and hatches from styrene sheet.



9 The muzzles for the various weapons were molded solid. I drilled the ends with either a 1mm or 1.4mm bit depending on diameter of the part. Some of the soft details on the chin mount were sanded off and replaced with new ones made from styrene tubing.



10 For the gyro system and engine deck, I trimmed the locator pins as I did earlier and removed the locators entirely from the side details so they rested flush against the sides. Then I glued the parts together.



11 The kit supplied pipes and greeblies, but one of them stood at a strange angle and didn't seem to have a suitable terminus. I snipped a bit of sprue and to make a mechanism for the pipe to connect to.



12 Sanding and trimming every join that seemed tight was tedious, but I planned to use enamel products for weathering and wanted to avoid the reported cracking. I removed the strips on the back of the legs to be replaced later with thin styrene strips.



13 I filled gaps with stretched sprue from the kit for maximum compatibility and a lot of liquid cement to melt the sprue into recesses. After letting the parts sit, I sanded the areas smooth for an even surface.



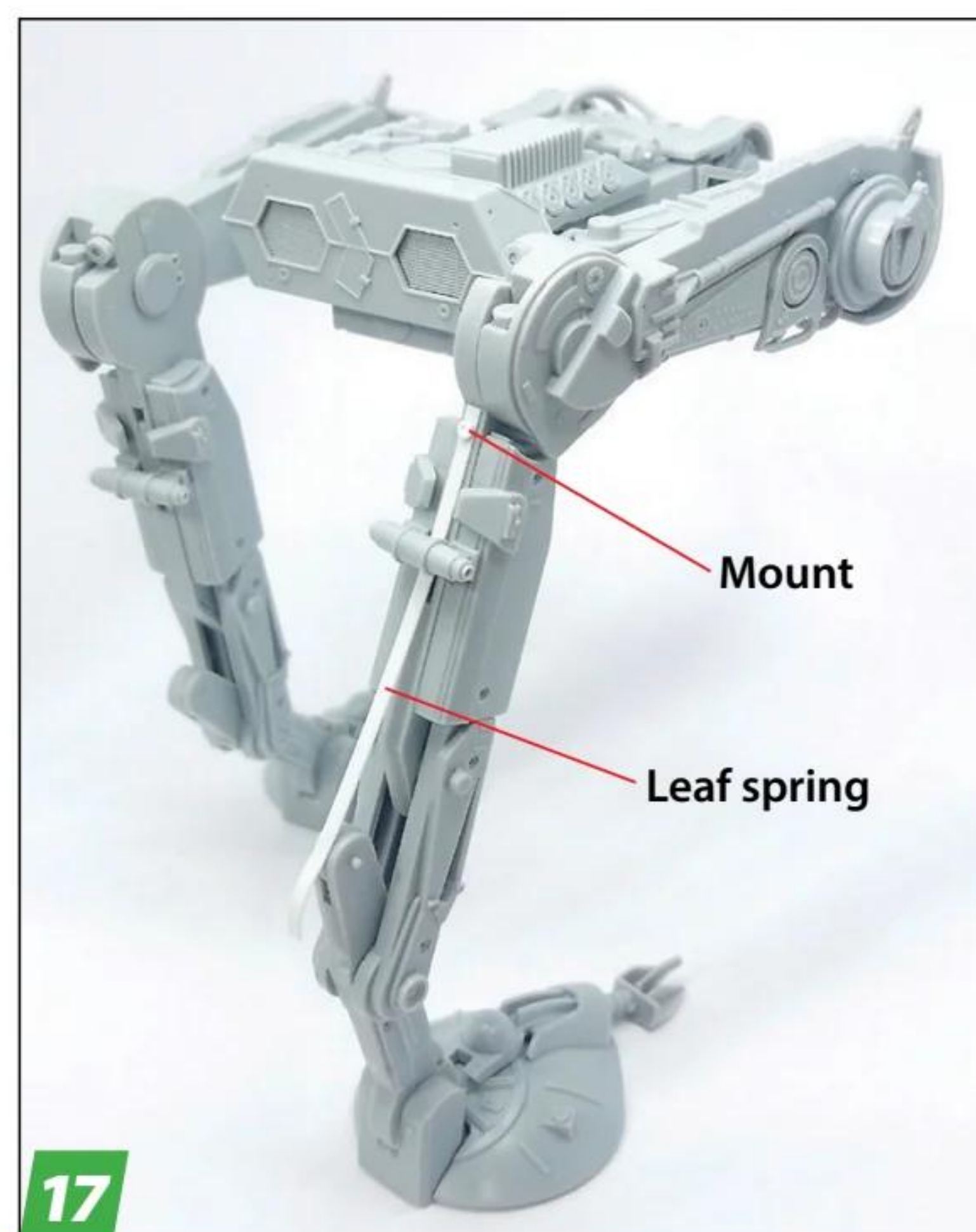
14 Sometimes after filling and sanding, details disappear. I restored engraved details and panels lines with a scribing tool and straight edge.



15 For the diorama, the AT-ST was going to need a more dynamic pose. The leg parts have "stops" molded on to lock the legs in position. I cut those off and sanded the areas to allow me to have flexibility to pose the legs.



16 I assembled the legs, and, yes, having them being able to move freely can be a bit scary. However, with a bit of testing, and then glue, I was able to achieve a stance that looks like the AT-ST is on the move or about to start moving rather than standing still.



17 The "leaf springs" on the backs of the legs I'd trimmed off earlier were replaced with plastic strips, and I used a punch and die to make 1.2mm "mounts" for the strips.



18 I primed the subassemblies to make sure gaps were filled and areas that need smoothing were good to go. After I was satisfied, I mixed Tamiya JN Grey (No. XF-12) and Real Color Flat White (No. RC004) in a 2:3 ratio and airbrushed the subassemblies.



19 I airbrushed a coat of gloss varnish over the base coat and let it fully dry. Then, to simulate grease and grime, I shot bursts of a heavily diluted mixture of Mr. Hobby Smoke Gray (No. 95) and Real Color Flat Black (No. RC001) at low pressure in suitable areas.



20 Lamp black and burnt umber artist oils concentrated in places where there would likely be hydraulics and other working parts added tonal variation to the airbrushed black creating the appearance of oil leaks and grease stains.



21 On places like the feet and horizontal hull surfaces, I added spots of Naples yellow artist oil. This was then worked with mineral spirits to resemble accumulated dust.



22 Using lamp black and burnt umber, I pulled streaks down from the top of the hull along the sides. These are just to give some color variation and hints of rain streaks. On top, I turned to Naples yellow and burnt umber oil paints and applied them similarly to Step 21.



23 Fresh oil effects were done with the use of AK Interactive Engine Oil (No. AK-084) gloss enamel. Diluting the enamel diminishes its sheen allowing you to easily alter your results. For tonal variation, you can mix it with AK Streaking Grime (No. AK-012).



24 On the bottom of the hull, I weathered with all of the techniques I used previously, just more heavily, as one might expect. I used the AK Engine Oil in larger amounts to blend all the other colors and create a very "grimy" surface.



25 On the feet, I created texture as if clumps of earth and mud had stuck to them. I applied Humbrol German Cam Red Brown (No. 160) enamel straight from the tin randomly with a brush and worked it with thinner to look like dry mud.



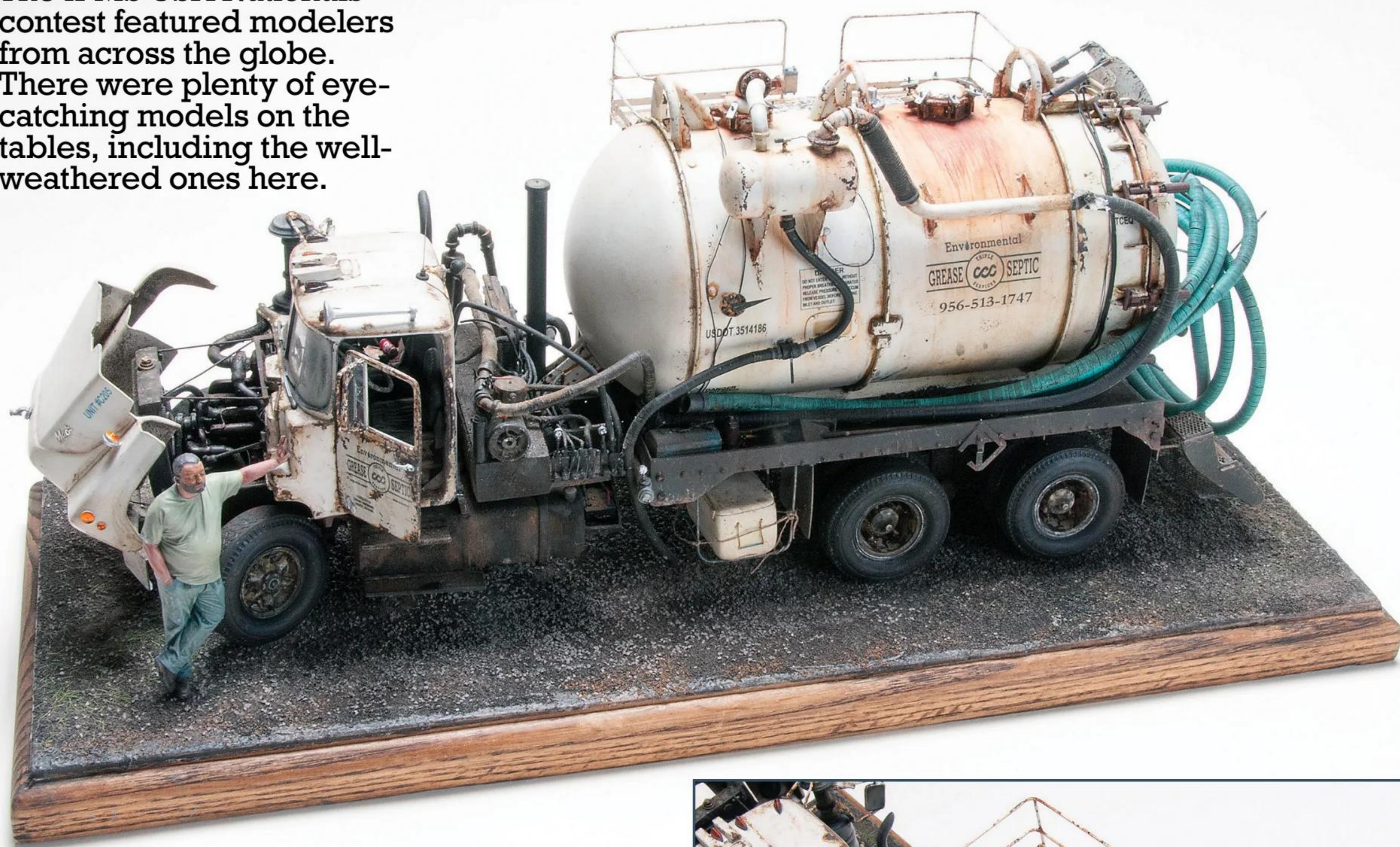
The last details to be painted were the hoses and connectors between the hull and the gyro system and engine deck. I used Vallejo Dark Grey (No. 70.994), and after a last critical once over, called the AT-ST finished.

FINAL THOUGHTS

OF COURSE, this wasn't the end of my project, but the end of the beginning. Now that the AT-ST was built and weathered, I could turn to planning the scene, posing the figures that would be in the diorama, and, of course, creating the huge trees, groundwork, and Imperial bunker. But all of those are stories for another time. Cue the John Williams end score! **FSM**

IPMS USA Nationals 2024

The IPMS USA Nationals contest featured modelers from across the globe. There were plenty of eye-catching models on the tables, including the well-weathered ones here.



▲► **HUGO GARCIA**
EDINBURG, TEXAS

There are some parts from an MPC 1/25 scale Mack in Hugo's grease and septic service truck, but 90% of it is scratchbuilt to match a vehicle still being used in McAllen, Texas. He painted it with Model Master White enamel over primer, then applied various rust pigments to give it the proper well-used look. The black and brown colors reinforce the impression and make it so you can almost smell the model!





◀ **DANNY R. HERRON**
OWENS CROSS ROADS, ALABAMA

Using a pair of Bandai 1/144 scale Zaku, Danny imagined a sniper team about to engage a target. He scratchbuilt pistols for the fighting suits, painted them with Tamiya acrylics, and placed the mechs and their guns on a foam base with small pebbles and *Warhammer 40K* ruins.

▶ **MARK SMITH**
AKRON, OHIO

Building a Lukgraph 1/32 scale Lohner Type L flying boat, Mark opted to scratchbuild the cockpit interior and construct a base from basswood. He painted the reconnaissance aircraft with Tamiya, Gunze Sangyo, and AK Interactive colors, using an Iwata Custom Micron C for his airbrushing needs, and weathered with pigments.



◀ **NATHAN LAPORTE**
ST. CLAIR, MICHIGAN

Nathan's Revell 1/144 scale Type VII C/41 U-boat benefits from a Griffon Models superdetailing photo-etched-metal set and wood planking. He textured the hull with a rotary tool and opened the limber holes. Painted with LifeColor acrylic paints, the sub underwent artist-oil dot filters and many washes to depict a wolf, long prowling the seas.

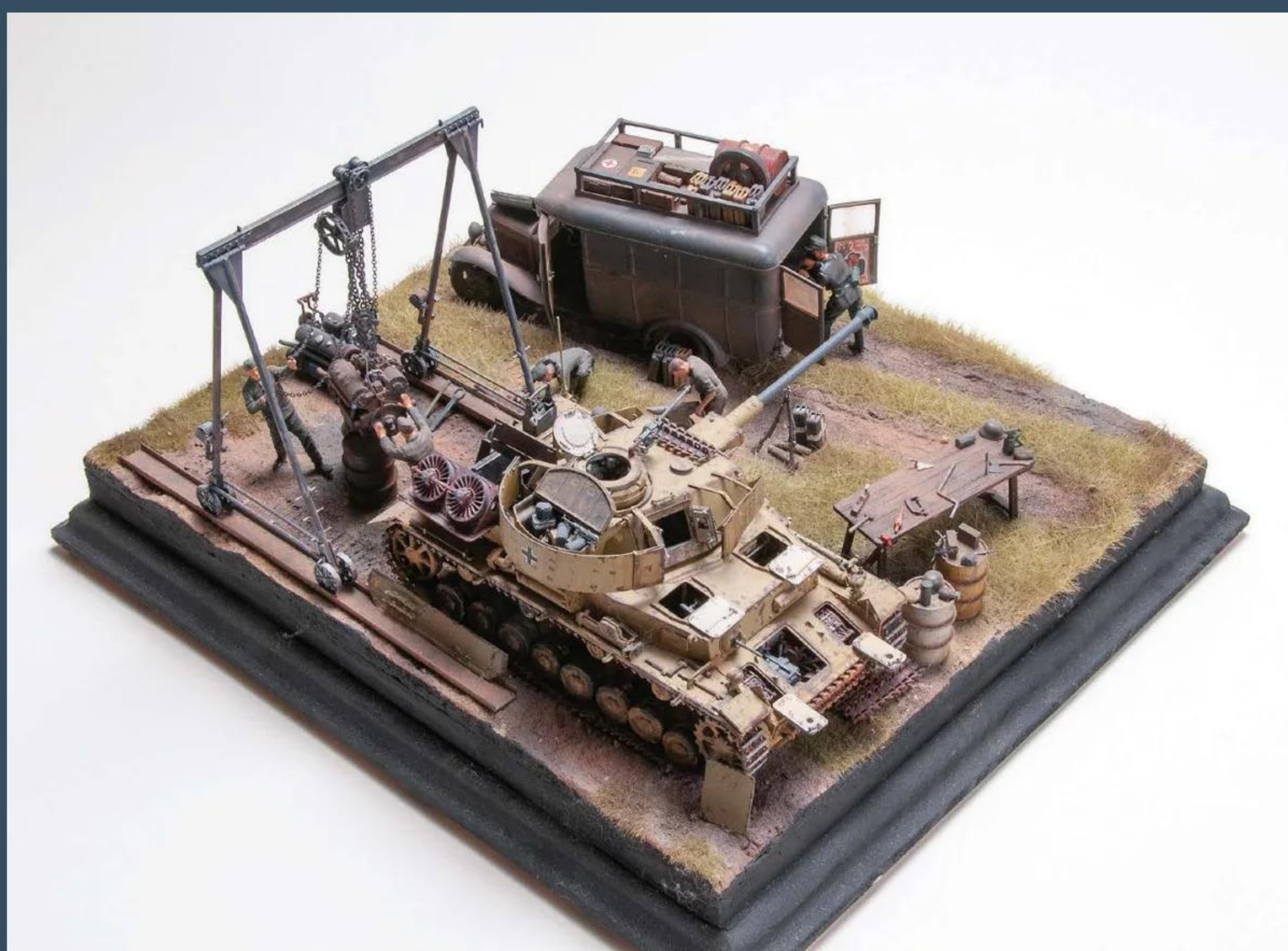


▲ **MIKE PEER**
OSHKOSH, WISCONSIN

Darth Vader and his stormtroopers, now more fearsome than ever! Mike combined a Bandai 1/100 scale Gundam RX-78 Ez8, an MPC 1/54 scale AT-ST, an AMT 1/32 scale Anakin's Pod Racer, and figures from Fantasy Flight Games *Star Wars Legion* to create this one-of-a-kind diorama. Vallejo and Tamiya paint color the figures and walker, and Mike weathered the latter with washes, sponge chipping and rust, and pigments.

► **MICHAEL SMITH**
TREMONT, ILLINOIS

To model this scene of a Panzer IV in the midst of an engine change, Michael turned to a number of MiniArt 1/35 scale kits and figures. He painted all the models with Tamiya acrylics sealed with flat clear lacquer. Paint chipping, dry-brushing, washes, and pigments weathered the war-weary vehicles.





◀ **KEVIN STOVER**
EVANSTON, ILLINOIS

"Thunderbirds are go!" To say Kevin is a *Thunderbirds* fan is an understatement, and his commitment to the show is on full display with his Aoshima 1/144 scale *Thunderbird I* model. He painted a metallic base topped with several coats of polished clear. Then Kevin weathered with light artist oils and heavy pastels on the rear.

▶ **JARED NUSS**
WILLIAMSBURG, VIRGINIA

Jared said this Y-wing is "part of Saw Gerrera's personal squadron of partisans." He based the "Cavern Angels" paint scheme on the markings seen in the movie *Rogue One: A Star Wars Story*. The 1/72 scale Bandai kit wears Gaia Notes lacquers, Tamiya acrylics, and plenty of weathering from washes and Ammo Oilbrushers.



◀▲ **ZACKERY HENDERSON**
HARRAH, OKLAHOMA

Abandoned somewhere in Germany is an M41 Walker Bulldog tagged with graffiti. Zackery found a photo of this tank and had to model the scene with its photographer. He removed the fenders from a Tamiya 1/35 scale kit, added bent grab handles, ran metal tracks, and placed a 1/35 scale photographer and cat. Zackery hand-painted the graffiti, weathered the tank with chipping fluid, pinwashes, pigments, and airbrushed on dust and grime. Amazing work from this 15-year-old!



▲ **ED BAROTH**
PORTER RANCH, CALIFORNIA

Ed's Russian P-39 in winter camo comes from an Eduard 1/48 scale kit. The colors are Gunze Sangyo and Tamiya paints with an extensive artist-oil wash and pastels for that dirty appearance. He commissioned the base specifically for this model.



▲ **NICOLAS PONCINI**
LUGANO, SWITZERLAND

Other than the resin wheels, Nicolas scratchbuilt his 1/35 scale CH-37 Mojave helicopter. He finished it with Tamiya acrylics to represent a bird with the Marine Aircraft Group 16 in South Vietnam, 1965, flying out of Da Nang East Airfield.

◀ **ROB KEMPINSKI**
MELBOURNE, FLORIDA

Demonstrating one of the reasons tanks were invented, Rob posed a Takom 1/35 scale St. Chamond crossing a World War I trench made from carved insulation foam and covered with acrylic terrain paste. He built the French heavy tank out of the box and painted the multicolor camo with Ammo and Vallejo acrylics, artist oils, and pigments.



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WASHES, PIGMENTS, and a **PUMA**

Things get dirty with a reissued Italeri 1/35 scale SdKfz 234/2

BY RAÚL CORRAL





I taleri released its 1/35 scale Puma SdKfz 234/2 (No. 202) first in 1980 and reissued it in 2022 with a few updates: rubber tires and photo-etched metal (PE) parts among them. But in general, it's still the old Puma. The build itself had no complications and needed no putty or filling. Forty years on, this old design still held up. That allowed me to focus on painting and weathering!

The German word *sonderkraftfahrzeuge*, abbreviated SdKfz, translates to something close to “special purpose vehicle.” During World War II, Germany had produced a bunch of cool looking SdKfz vehicles in variety forms and sizes. Some had four wheels, others eight, and many were halftracks. If you’ve seen a WWII movie, you’ve seen a SdKfz, guaranteed. No matter the form, SdKfz have become popular and well known among modelers.

I have always been partial to the SdKfz 234/2 Puma. It wields a 50mm L/60 gun and coaxial MG42 machine gun housed in a turret originally meant for the cancelled VK1602 Leopard light tank. It could achieve up to 90 kph, and the Puma’s eight-wheeled suspension allowed it to handle all sorts of terrain. This powerful weapon and maneuverability combination made the SdKfz 234/2 variant excellent for reconnaissance — and it looked cool, too!



1 I airbrushed the Puma hull and turret Vallejo Model Air Pale Brown (No. 71.035) as a reddish primer coat. Full disclosure, I did mix in a couple of drops of flat black at one point and traced panel lines but stopped before going too far to focus on the camouflage.

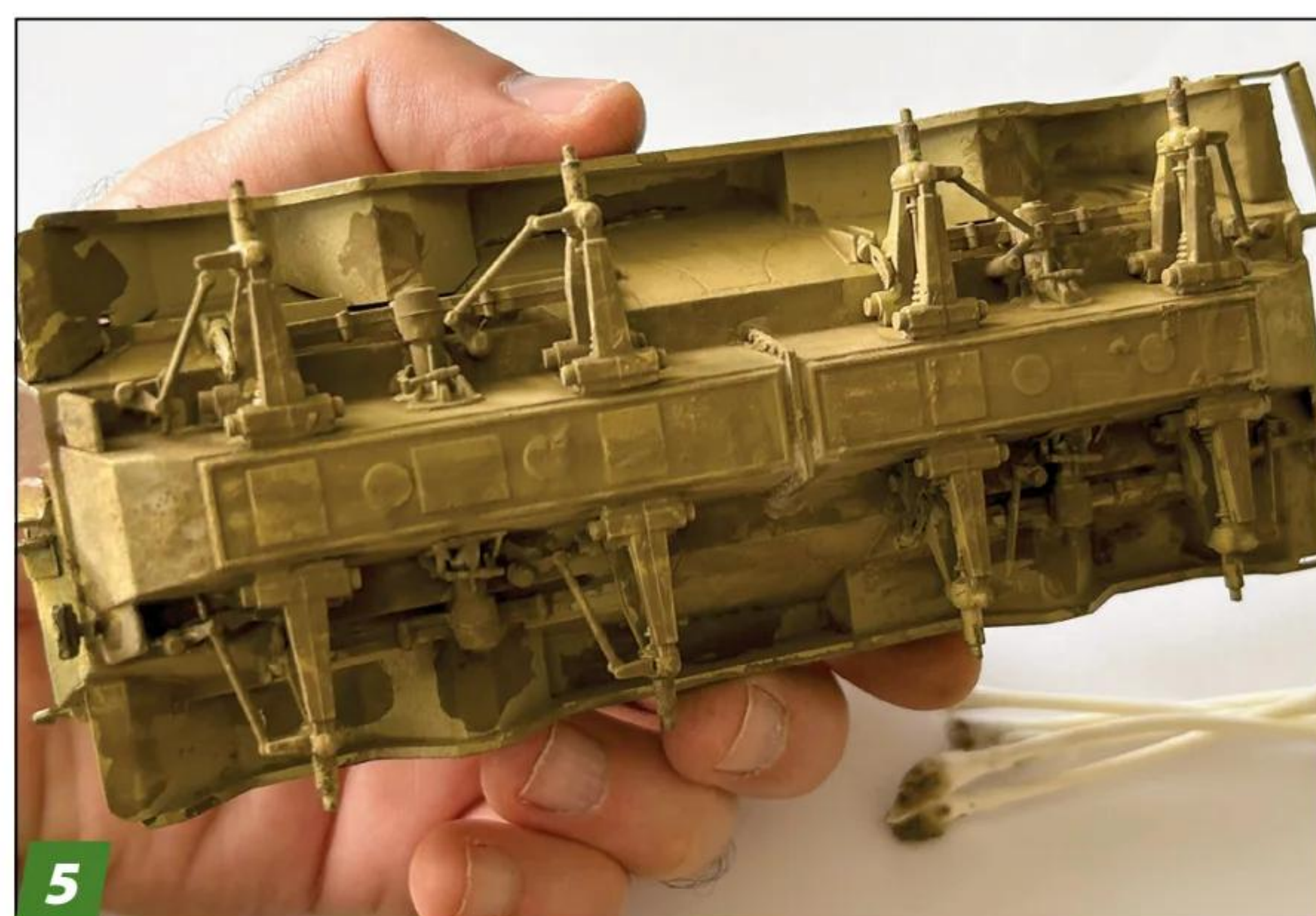


2 Tamiya Dark Yellow (No. XF-60) served well as dunkelgelb. I airbrushed it over the hull and turret, letting some of the brown beneath to show through at the edges. I mixed a few drops of Hobby Color Yellow (No. H313) into the dark yellow and lightened panel interiors.

Tamiya Dark Green (No. XF-89) and NATO Brown (No. XF-86) were used for the second and third camo colors, airbrushed freehand without masks. I lightened each color with a few drops of Flat White (No. XF-2) to vary the color and add visual interest.



4 I was a little careless while airbrushing the camouflage, which resulted in overspray. I touched up spots with thinned dark yellow. When it had dried, I airbrushed a coat of Tamiya Clear (No. X-22) over the hull and turret and applied the kit's decals.



5 Ammo Nature Effects Earth (No. A.MIG-1403) and Dark Mud (No. A.MIG-1405) created dirt and weathering on the lower hull. Enamel based, both can be applied with a brush out of the bottle or thinned. After drying, I adjusted how "dirty" certain areas were with cotton swabs.



6 Impressed with the Nature Earth Effects on the lower hull, I applied it over the rest of the vehicle. The final appearance, after it dried, looked quite realistic. In some areas, rather than rub off the dried wash, I wetted a cotton swab with mineral spirits and cleaned up any excess.



7 I also made my own wash to apply to panel lines from a heavily thinned mix of Revell Flat Black (No. 32108) and Brown (No. 32137) enamels. For deep panel lines I felt needed further accentuating, I added more black to the mix; some spots received only a black wash.



After letting the enamel washes dry for 24 hours, I dry-brushed Revell Light Grey (No. 32176) enamel on raised details. Not too heavy, because the point is to show light touching the highest points where color goes almost white.



9 Footage I found on the internet showed a Puma with dark camo netting covering almost the entire front of the vehicle, but not the rest. Inspired, I fished some aftermarket netting from my spares and brush-painted it Revell Flat Green Black (No. 32140).



10 After the paint had fully dried, I trimmed and shaped the camo net to conform to the front of the Puma and attached it with white glue. The white glue dried clear and I'd take care of any shiny sheen with a coat of flat clear.



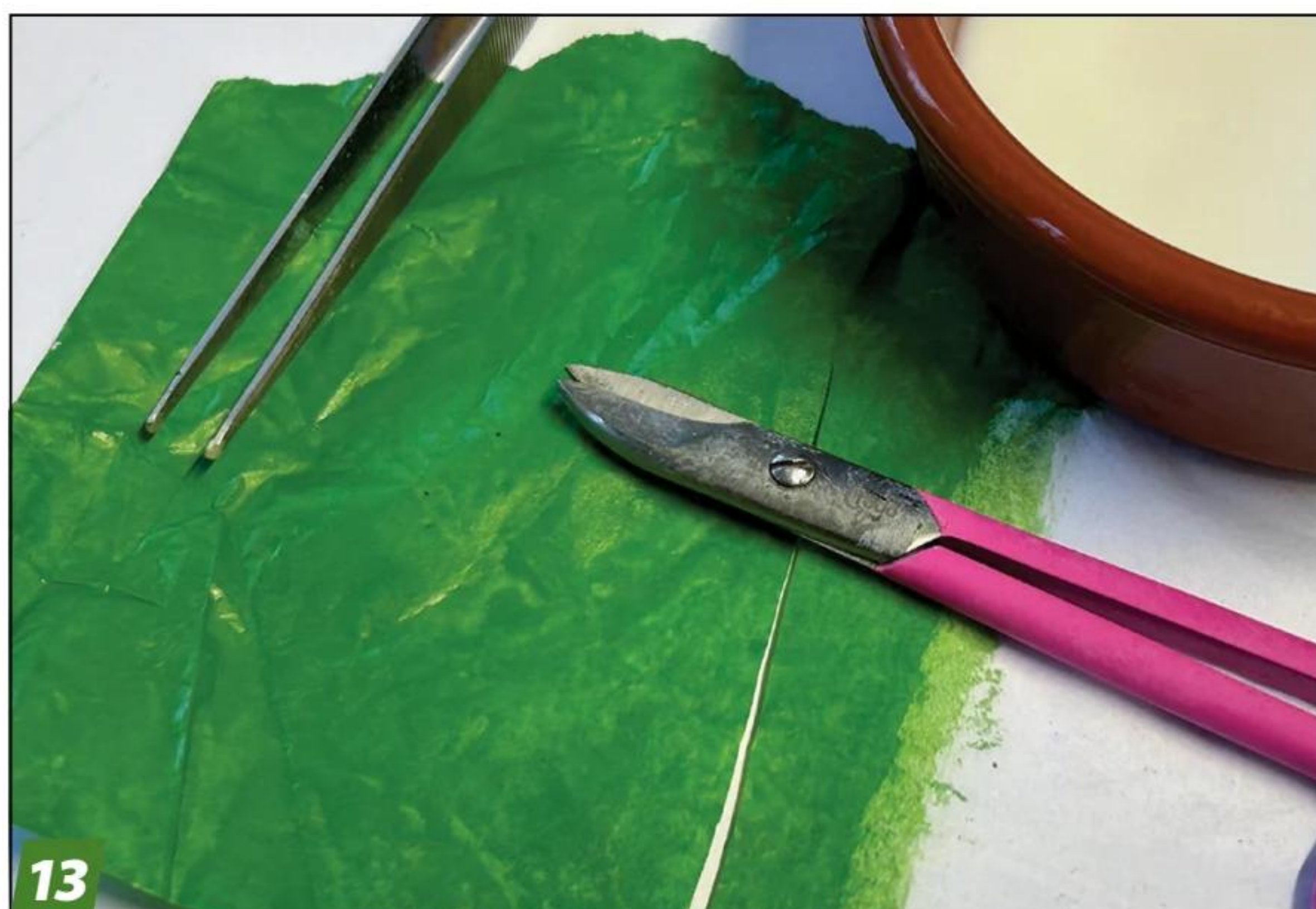
11

In the film footage, the Puma's rear had a bunch of things heaped onto it and over the spare wheel, including more netting, tarps, and maybe even clothes, although it was hard to tell. I started with more camouflage netting to build up the look.



12

White glue mixed with a little water helped soften the net and hold it in place over the many contours. I wasn't too concerned about the net looking a bit plastic because it was going to have more on top and needed to be a good base to glue to.



13

I brush-painted this tissue wrapping paper Revell Semigloss Fern Green (No. 32360), let it dry, and then cut it into pieces for sections of tarp. Then I soaked the tarp in a solution of 1:1 white glue and water until it was completely softened and pliable.



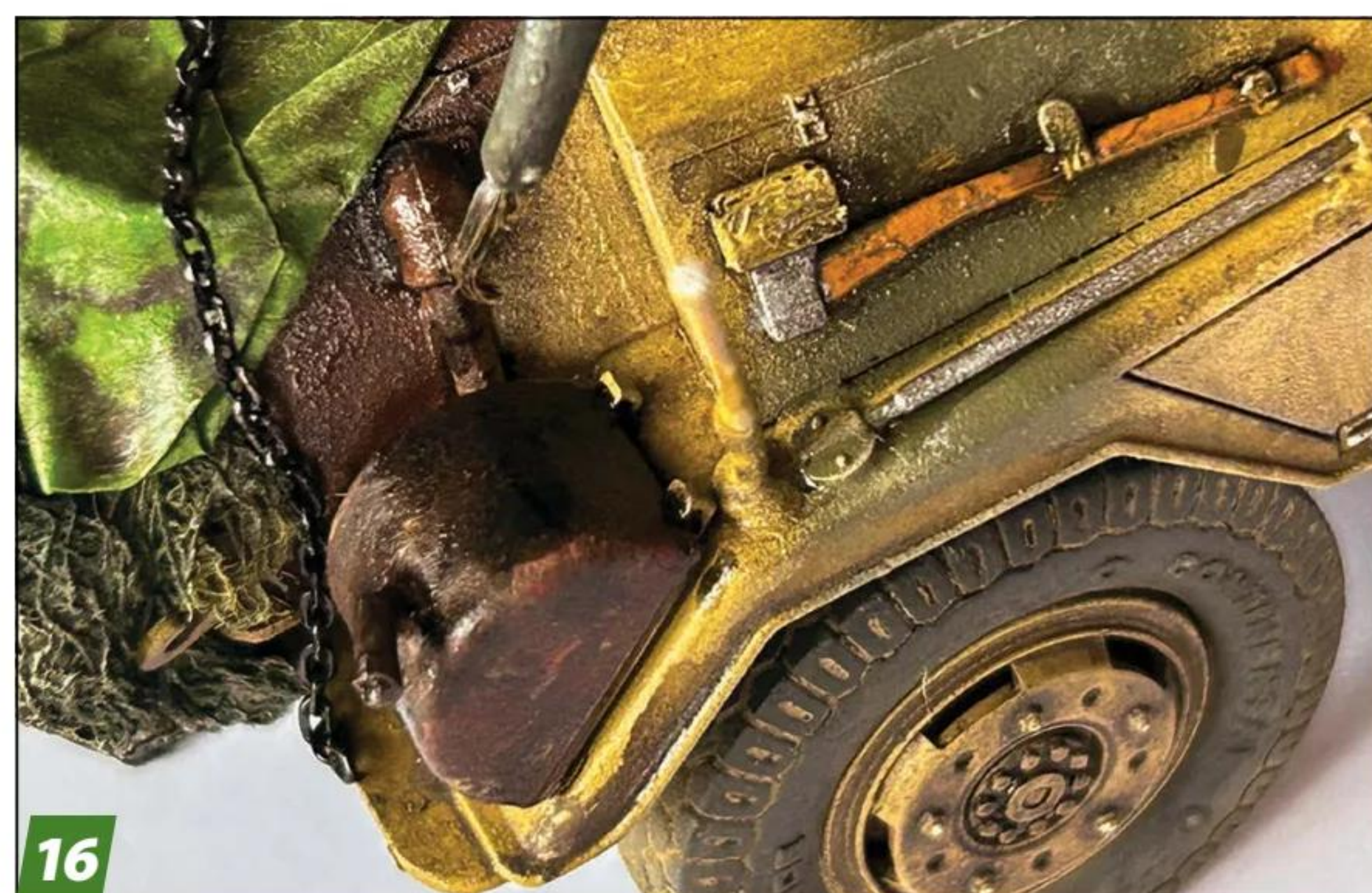
14

I draped the softened paper over the netting at the rear, using a brush to position it, applying more and more of the glue-water mix until the tarp had achieved an appropriately saggy look before letting it dry.



15

After the tarp had dried, I dirtied up it and the camo netting with Nature Effects Earth, let that dry, and then came in with a quick, light dry-brushing of light gray around the rear deck and on the tarp just to show a bit more wear.



16

I hand-painted the tools, highlighting them with a bit of white mixed into the base colors. The exhaust received a custom mix of Revell Flat Black, Yellow (No. 32115), and Red (No. 32332) applied freehand. A dark wash made details stand out.

And what about the wheels?

I FIGURED THE WHEELS needed separate treatment because they were an adventure unto themselves.



Italeri's most recent release of its Puma includes black, rubber tires. The original plastic tires lacked detail, and these new versions rank head and shoulders above the previous iterations.



First, I painted all of the rubber tires Hobby Color Tire Flat Black (No. H77). To do this, I scrunched (technical term) a cardboard tube through all the tires, sprayed on the paint, and let the parts dry before removing them from the tube.



The wheels were painted following the exact same steps I used with the hull and turret: a primer coat of Vallejo Model Air Pale Brown (No. 71.035) followed by light coats of Tamiya Dark Yellow (No. XF-60). That tire in back is the spare and all plastic.



I popped the wheels into the tires and applied a thinned mix of Ammo Nature Effects Earth (A.MIG-1403) to everything.



Then I mixed Nature Effects Earth with Ammo Dark Earth Modelling Pigment (No. A.MIG-3007), brushing the slurry onto the wheels and tires.



Test-fitting them on the Puma, they were pretty dark. I knocked off some of the excess with a few cotton swabs.



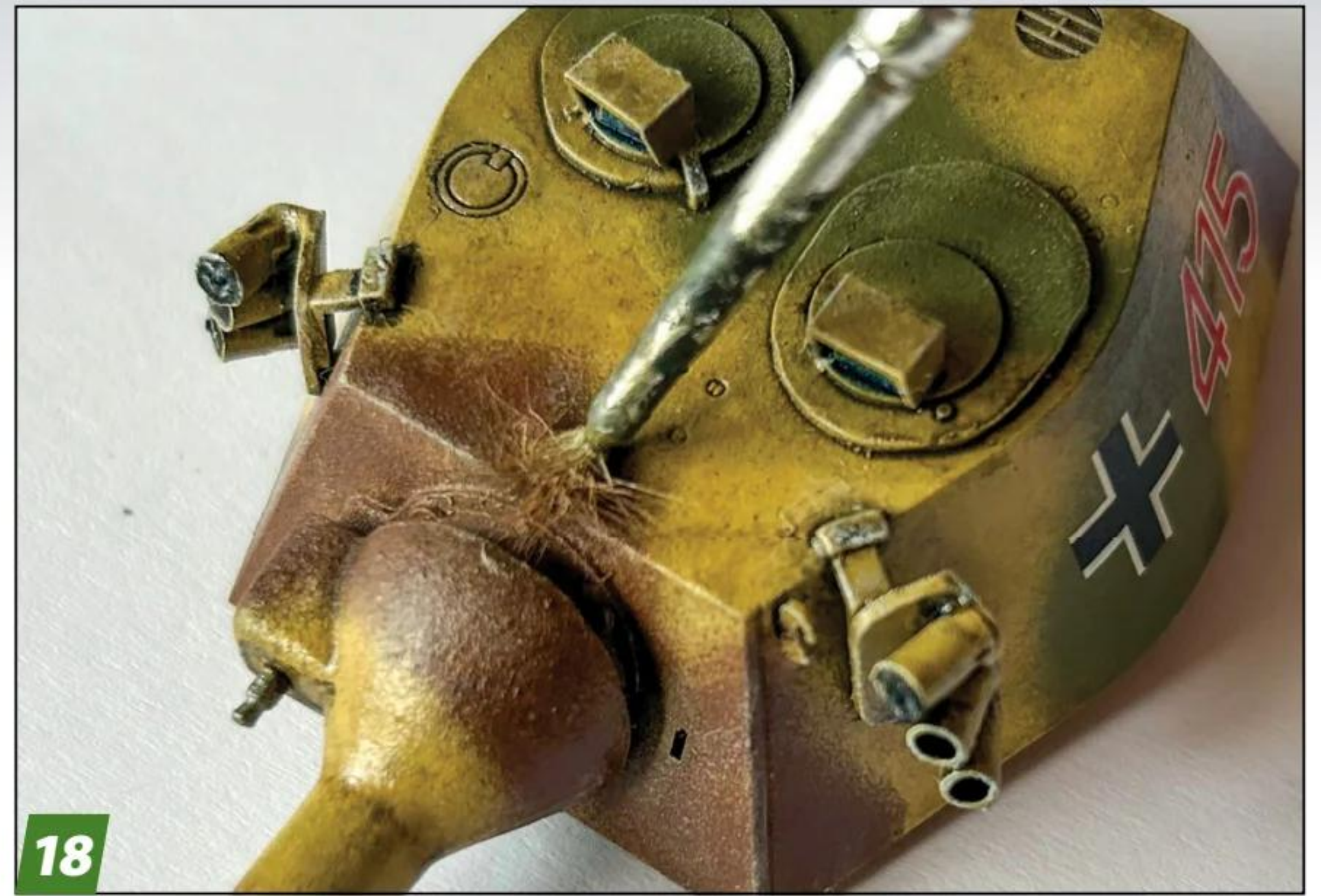
I mixed white pigments into the slurry to lighten it and applied it sparingly to the wheels and tires. You can see it added a contrasting dirt color that will help make a realistic appearance in the next step.



I knocked off excess "dirt" with a cotton swab, leaving behind an amount I thought suitable. Obviously, the more you remove, the cleaner the final result will be, but what's left is realistically varied due to the different dirt hues applied earlier.

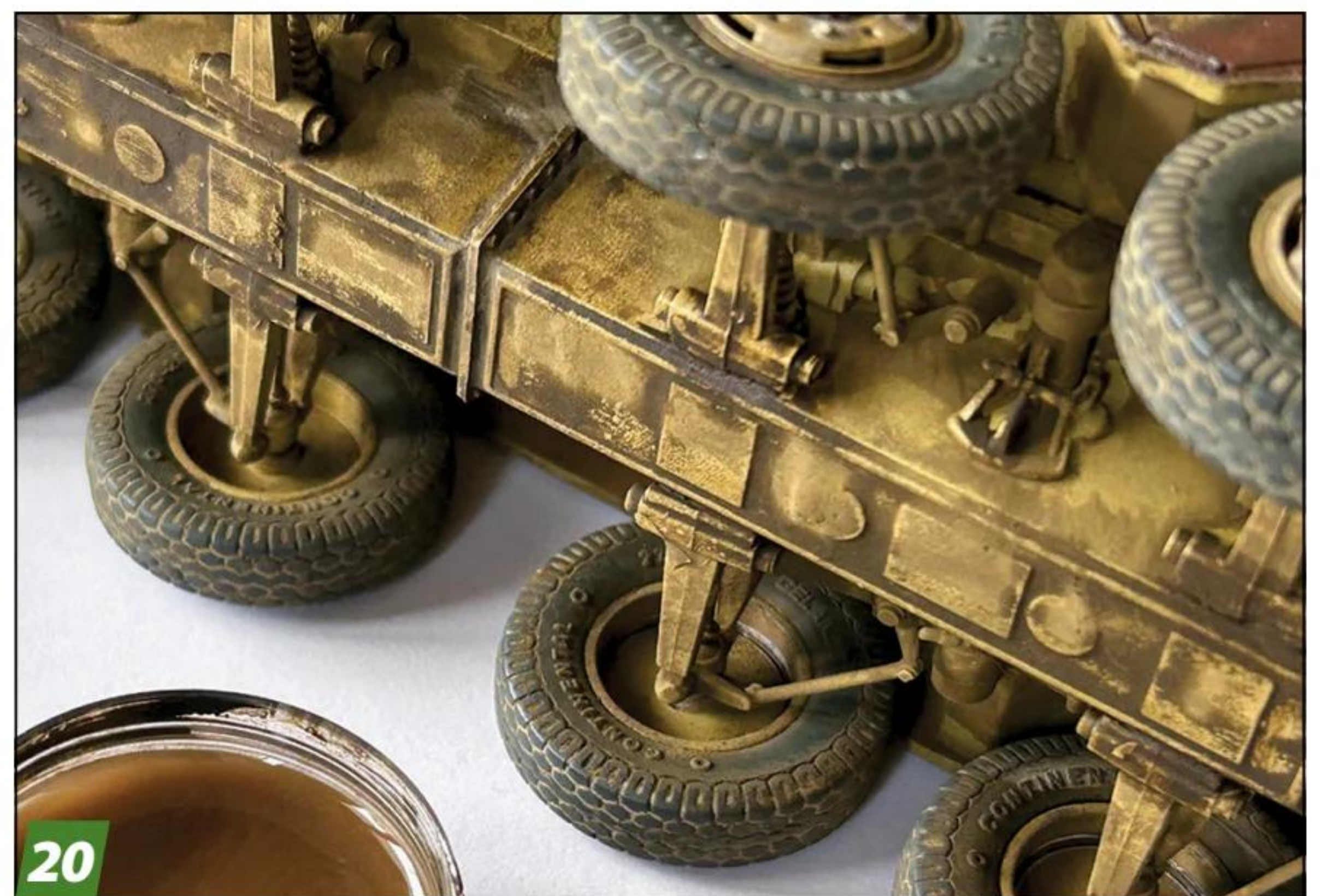


And here are the wheels ready to go on the model. I was happy with the final results, and the wheels were then ready to be glued (with superglue) onto the Puma. The spare tire mentioned in Step C was weathered similarly to the rest of the Puma.



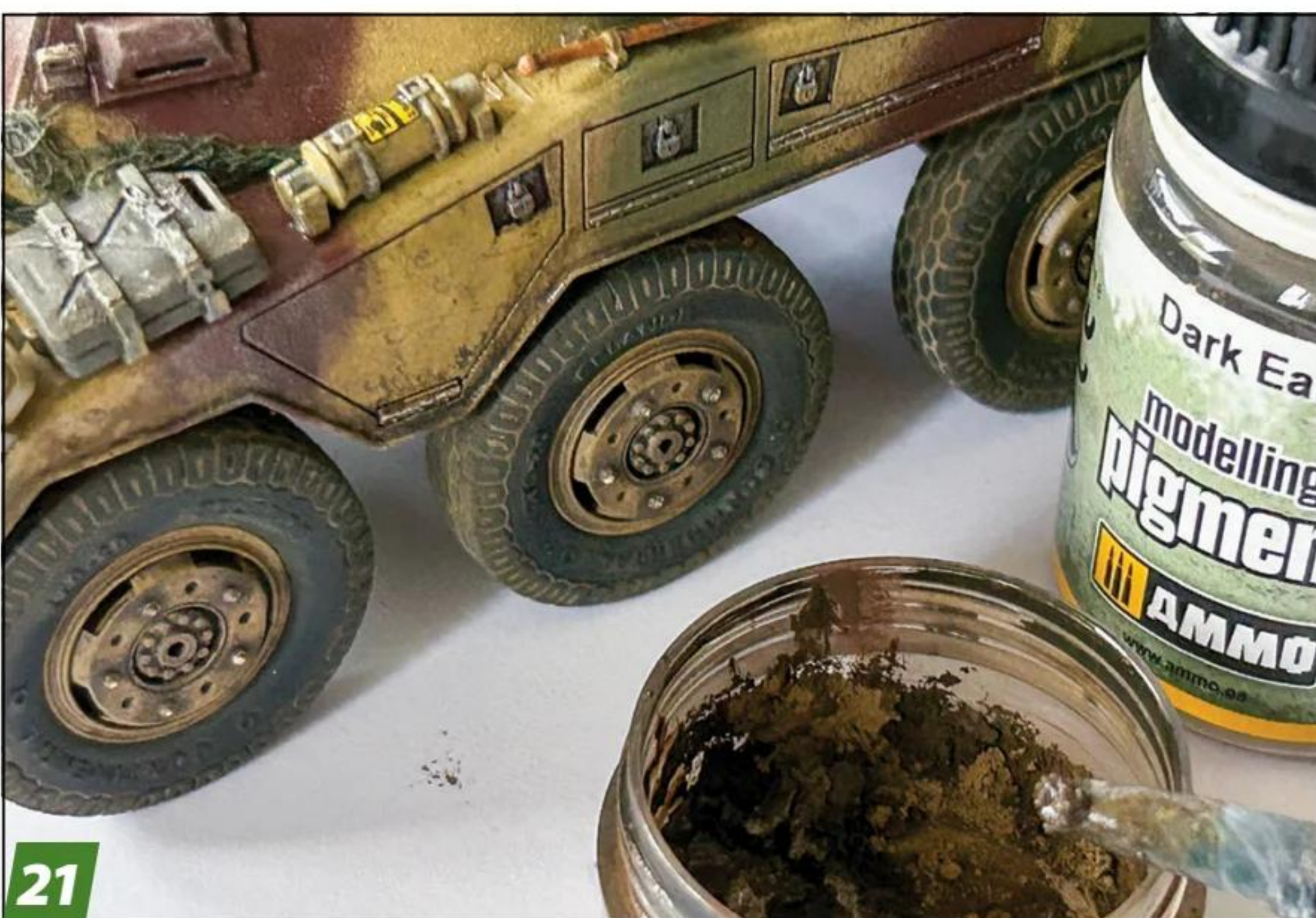
Three of the jerry cans for the front of the Puma were painted Tamiya Dark Yellow, and the fourth (a U.S. can) was finished in Olive Drab (No. XF-52). I painted the belts light gray and then applied Ammo Brown Wash for Dark Yellow (No. A.MIG-0700) over them all.

I lightly dry-brushed the edges of the turret and the jerry cans with light gray to bring out details. In the case of the jerry cans, I mixed in a little Revell Flat White (No. 32176) to help pop some of the smaller, raised details.



After going around the model and making sure to perform touch-ups and paint any details that I might have forgotten, I sealed it under several light coats of VMS Varnish HD Top Coats Matt (No. VMS-AX05M).

Not completely satisfied with the application of dirt, I applied more Ammo Nature Effects Earth with a brush to the undercarriage and the turret where the decals looked a bit too clean compared to the rest of the vehicle. There's always time to go back and adjust!



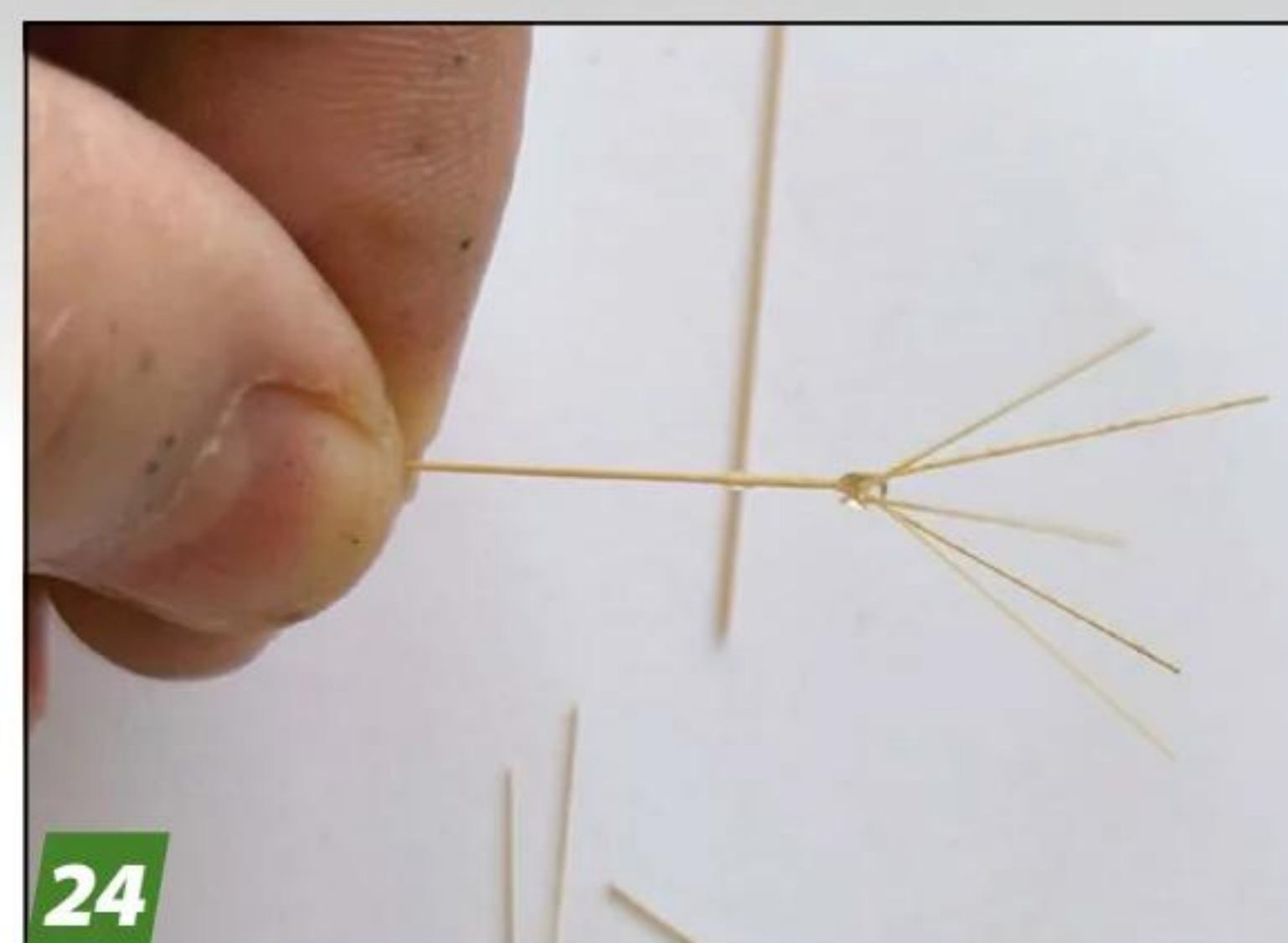
I followed up with a loose mix of Nature Effects Earth and Ammo Dark Earth Modelling Pigment (No. A.MIG-3007) applied with a brush to select areas close to the wheels and on the lower hull.

For a hint of foliage camouflage, I gathered some small plants from a nearby park and painted them Revell Flat Black Green (No. 32140). I distributed the camo over the Puma, but especially in the netting and affixed it with white glue.



23

For the thin cables run around the Puma to hold the camo nets in place, I turned to .020-inch, nylon fishing line. I painted it flat black before gluing it to the model.



24

The antennas were made from stretched sprue and carefully painted flat black. Then they were tacked in place with superglue.



25

Lastly, I applied pigments from a Revell Weathering Set (No. 39066) to give those final weathering touches that I thought the model needed, for instance, over the exhaust. As so much with modeling, this comes down to personal tastes and styles.

FINAL THOUGHTS

MY PUMA IS NOW READY for display! Years ahead of its time, the SdKfz 234/2 Puma just looks cool. Taking into consideration the kit's vintage — 1980 with hints of the 21st century in a few modern upgrades — I enjoyed the build and wouldn't mind building another of these old timers. Wait. Italeri has reissued its old SdKfz 234/3! Looks like I already know what I'm building. **FSM**



Clearing the air on FILTERS

Thin colors shift tones and add luminosity

BY AARON SKINNER

Using thin layers of color, filters subtly to alter the tones of paint. Depending on the shade of the filter, it can brighten a section adding luminosity, darken or mute the tone of panels, or lighten some sections for sun fading.

Unlike washes that most modelers use on all models, filters are more of a case-by-case choice

for weathering. I find them most useful to break up monochromatic finishes, such as an overall olive drab or dunkelgelb tank.

The major difference between washes and filters is the surface. Whereas gloss finishes ensure the thin wash flows into the recesses, filters need to stay on the panels. So, apply them to a flat or satin finish.

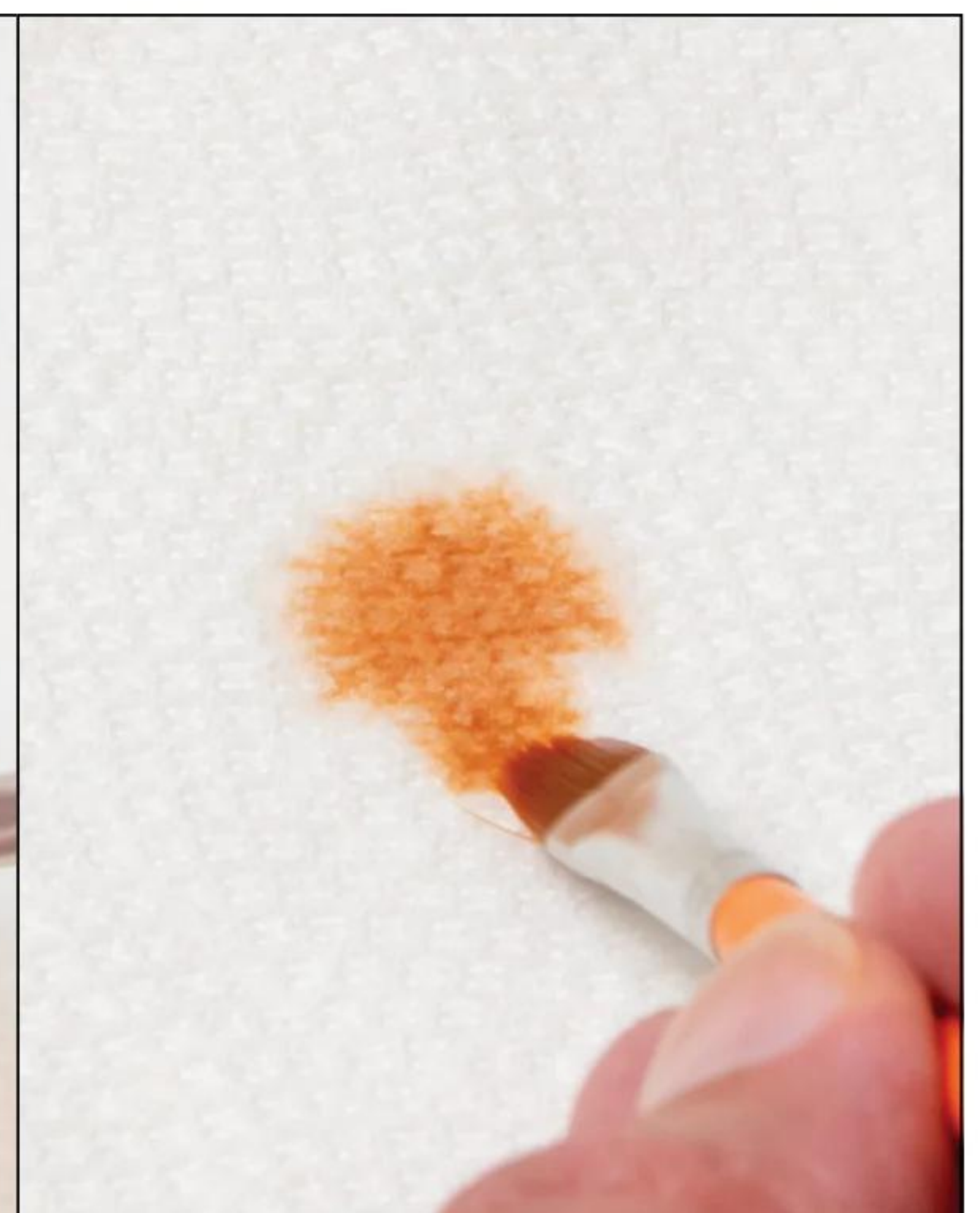
MIXING A FILTER



1 If you can mix a wash, you can mix a filter. Start with a ratio 15:1 thinner to paint and stir it until all the solids are thoroughly mixed.



2 Dip a flat brush into the filter mix and touch it to a paper towel to blot off much of the fluid from the bristles.



APPLYING A FILTER



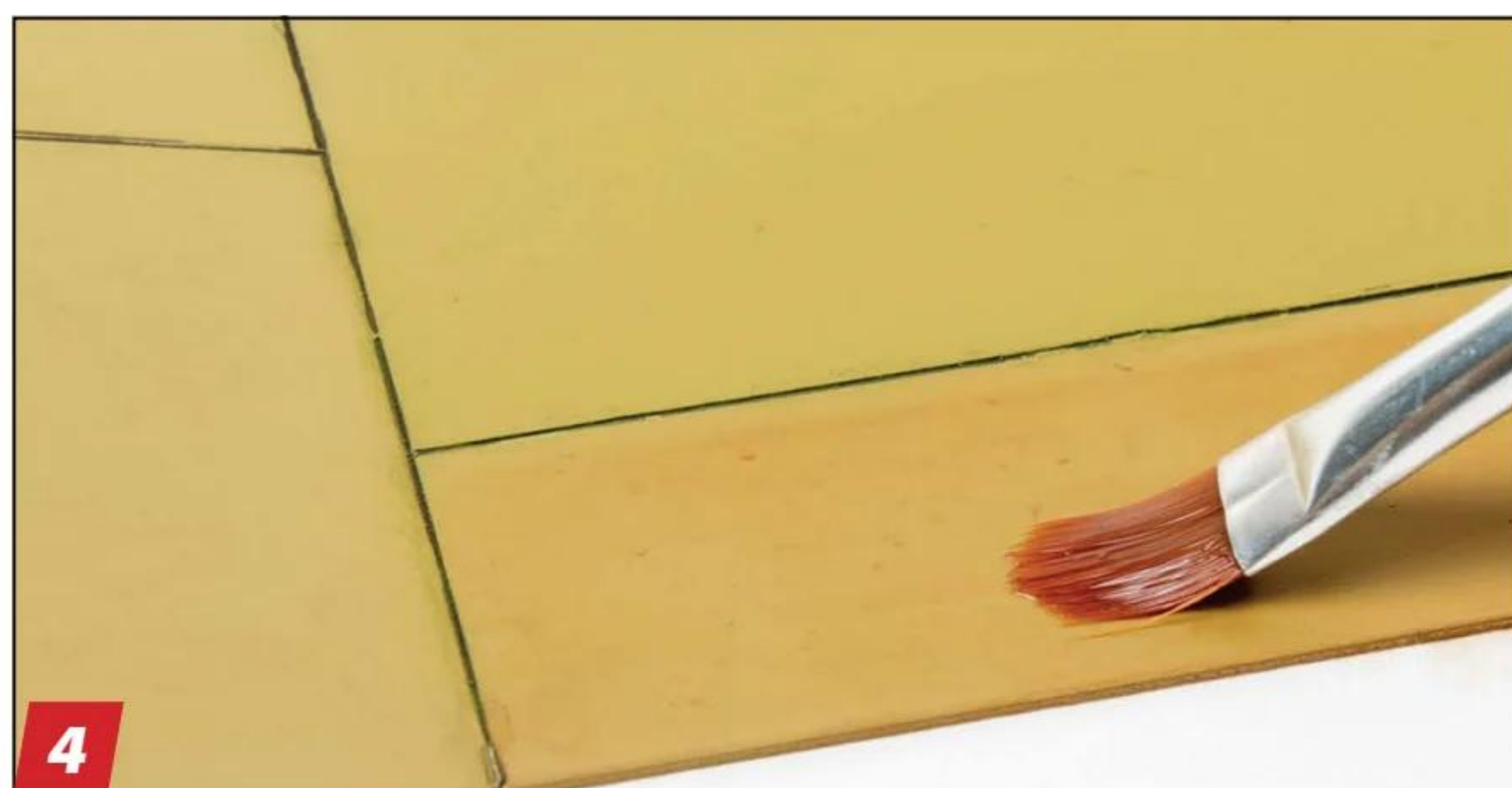
1 Using smooth, even strokes, brush the filter over the panel or area to be altered. Don't flood the surface. If the paint seems excessive, like the pool to the left, blot the brush on the paper towel again.



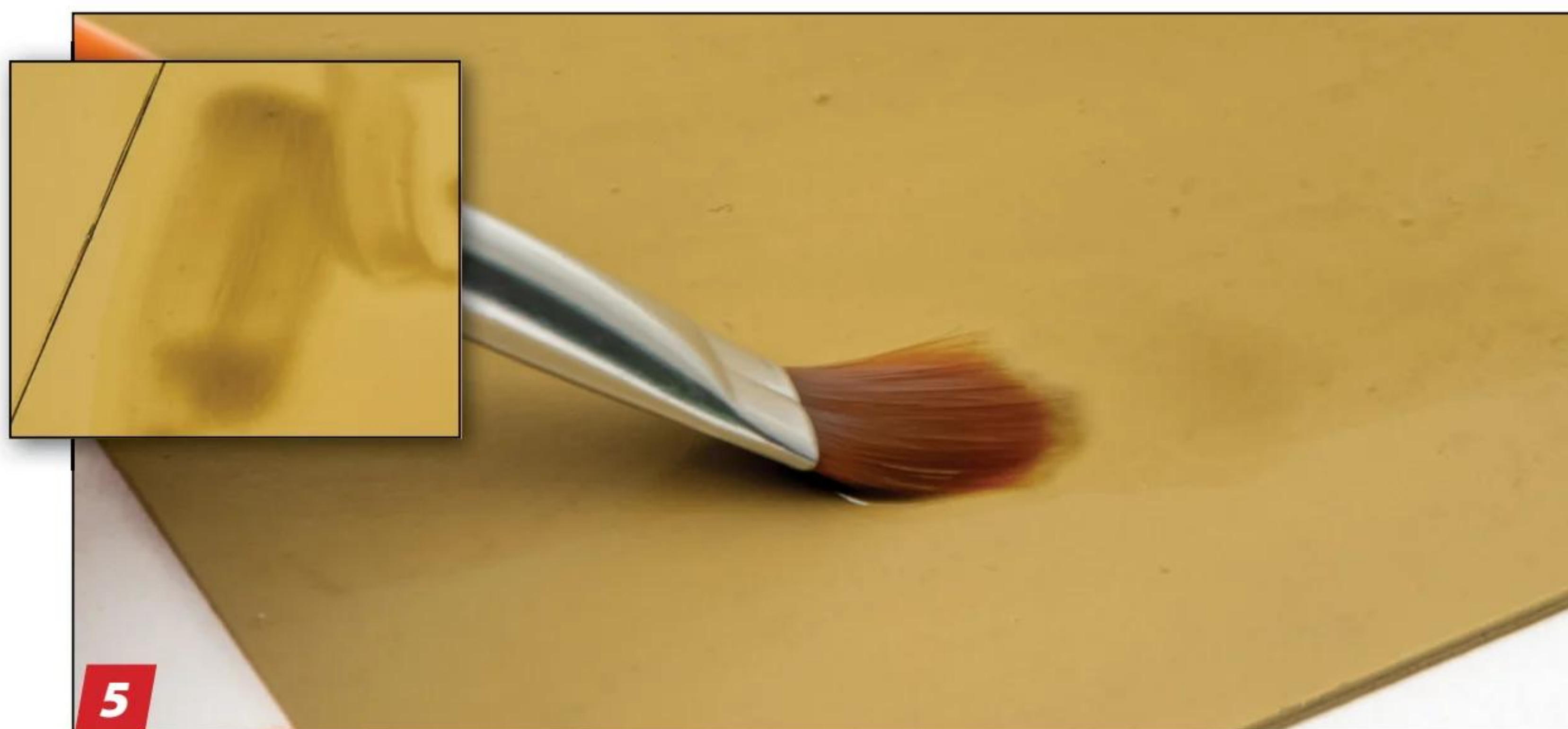
2 This is looking better with an even layer of the reddish brown oil-mineral spirit mix over the panel all the way to the borders. Keep your work level to prevent the filter from running and pooling.



3 After one layer, you can see the difference between treated panel and the surrounding panels that are still straight Tamiya Dark Yellow.



4 One of the great things about filters, is you can add more layers to increase the density of the filter and make the effect more pronounced.



If you are seeing a lot of brushstrokes while you are applying the filter, the mix is too dense. Blot away the color with a clean brush, add more thinner to the mix, and reapply.



On this example sheet, I applied filters of bright green to the upper right section, red brown to the lower right, and a dirty brown to the lower left. Only the triangle in the upper left is still the original Tamiya Dark Yellow.

FILTERS IN ACTION!

SCAN THE QR CODE to see our "Scale Model Basics" video about applying dot filters.



ADDING DOT FILTERS

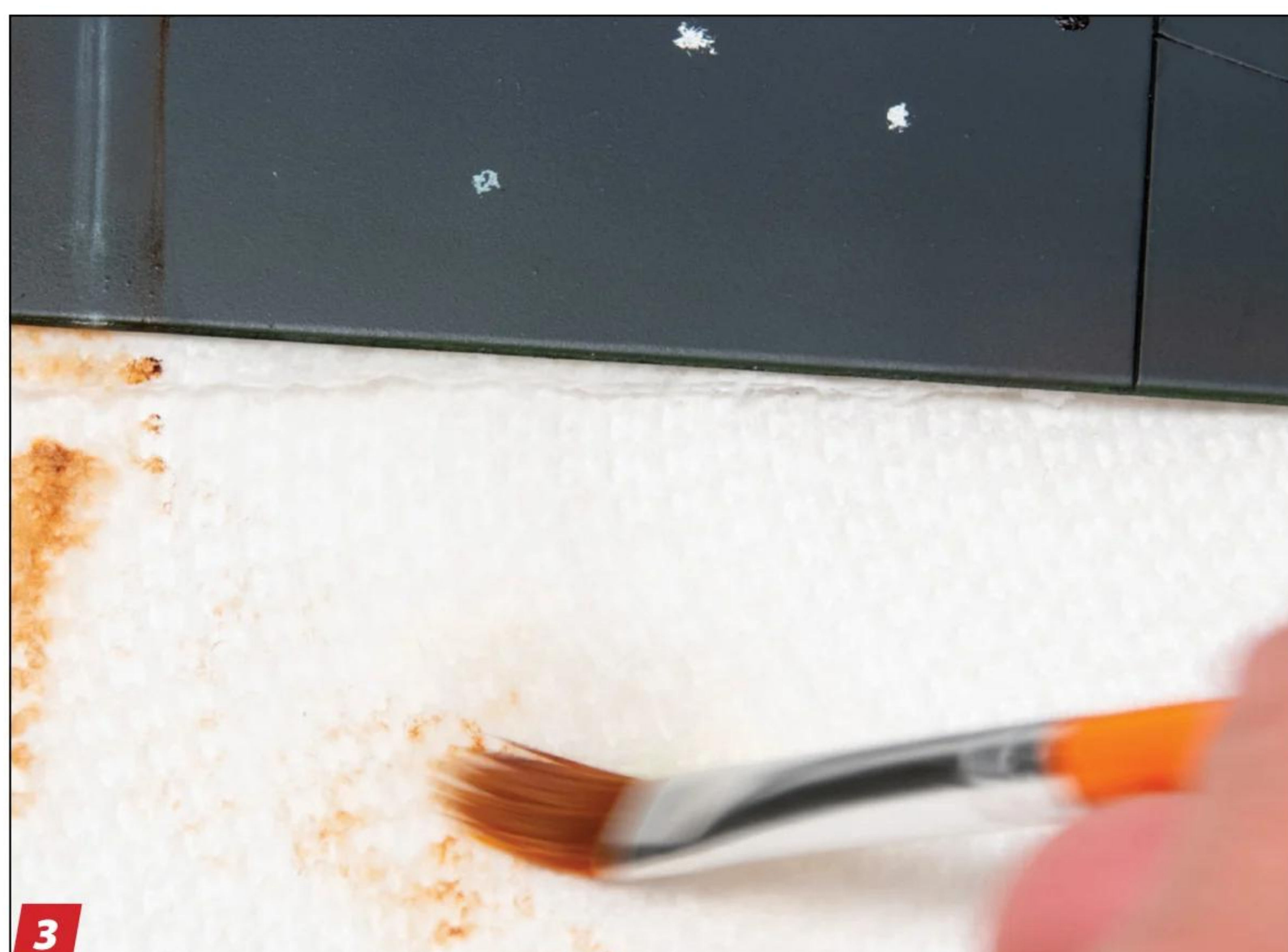
While a single-color filter alters the tone of an overall panel, a dot filter uses the same idea to break up areas with multiple shades. After painting a styrene sheet with Tamiya German Gray, I applied dots of white artist oils to one section with a micro brush. Use unthinned artist oils for dot filters for best effects.



I added dots of black and medium gray to the same area before dipping a flat brush in clean thinner and dragging it down the panel through a dot or dots. Draw the brush down vertical surfaces on ground vehicles, in the direction of airflow on aircraft, and use a dabbing or small circular motion on horizontal surfaces.



Resist the urge to make the next stroke to further blend the color, because it can transfer some of the paint that was just removed back to the model and muddy the effect. Instead, blot the brush on a paper towel and re-wet it between each stroke.



FILTERS AT A GLANCE

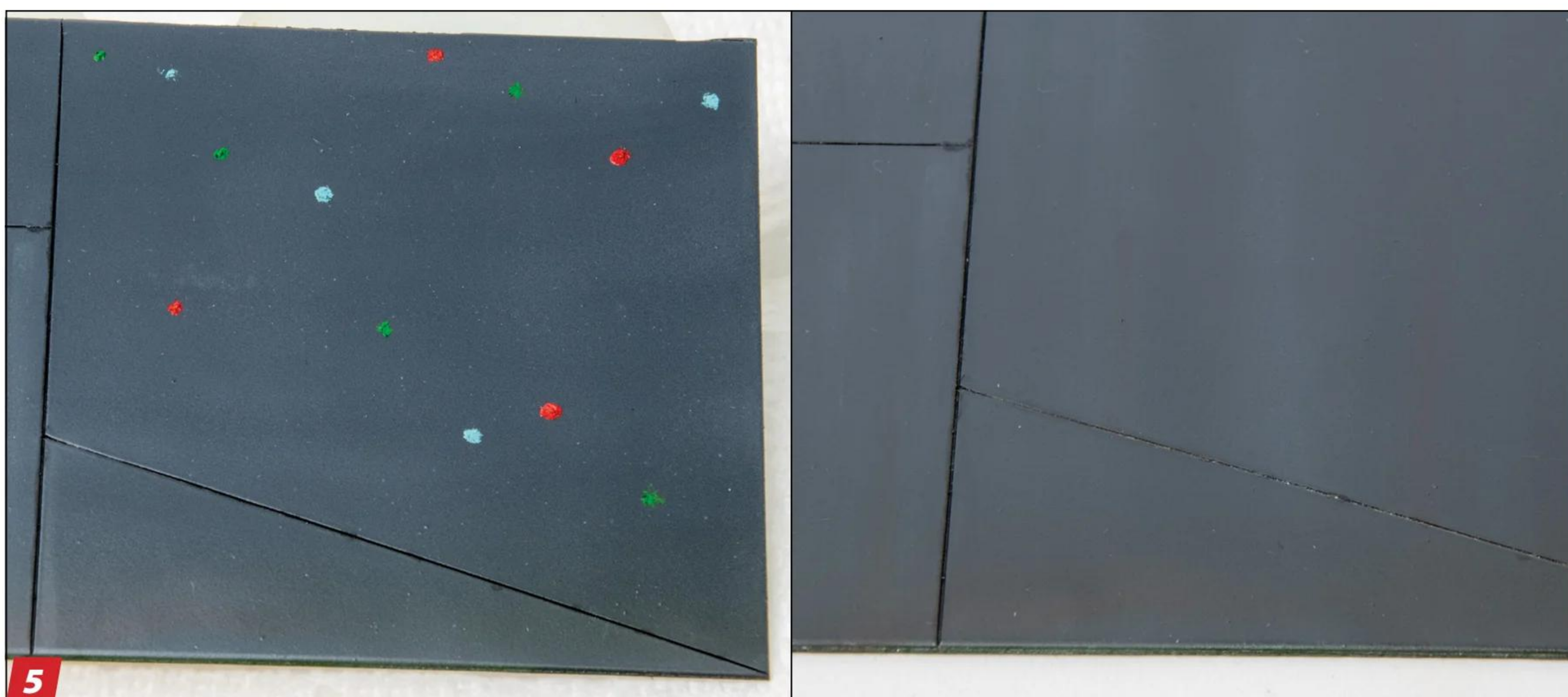
- Apply over flat or satin finish
- Err on the side of too much thinner
- Keep the brush damp, not wet

PAINT CHOICE FOR FILTERS

I tend to make filters from artist oils and mineral spirits or turpentine, but that isn't the only way to do it. Many modelers and a lot of paint manufacturers make filters from enamels. Obviously, the choice of filter medium can be affected by the base colors used. Generally, turpentine and mineral spirits won't attack acrylics, but there are no guarantees. Enamel products and thinner can affect acrylics and can strip enamels. It's a good idea to protect the paint with a couple of layers of flat clear. I have not tried them, but there are acrylic filters around, notably from LifeColor's Tensocrom. And some modelers report mixing filters using Tamiya acrylics and Tamiya acrylic thinner.



After two or three passes, the dots have been transformed into faint streaks and lines of color that subtly alter the underlying shade. After all the panel is done and dry, the result is a panel that is no longer monochromatic and has drama. It's a great foundation for more weathering to come.



Don't feel like the choice of colors is limited to those close to the base. Unexpected colors, such as the green, light blue, and red I applied to the panel here, can produce interesting and effective results. There are no wrong choices, just keep in mind your desired result. **FSM**

Talking DIRTY

Also, dusty and muddy with paint, pastels, pigments, and more

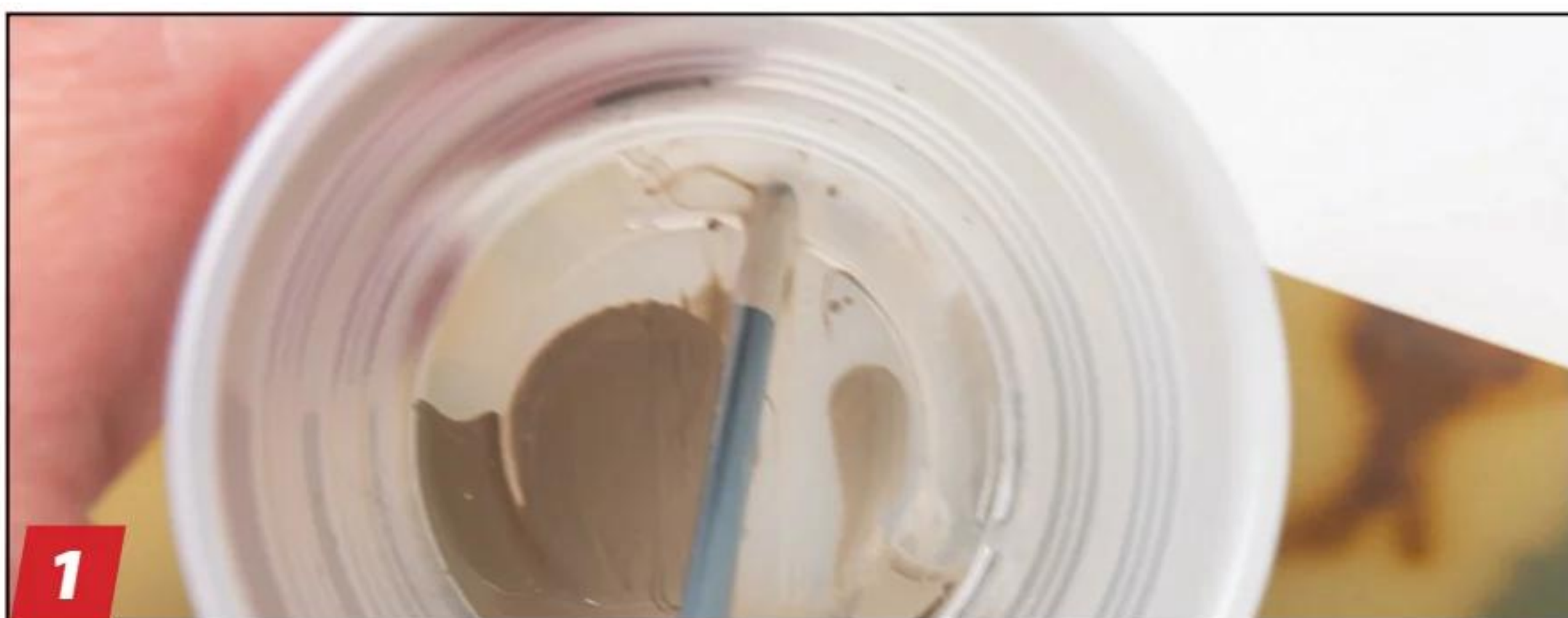
BY AARON SKINNER

One of the seminal influences on my modeling — I'm sure I'm not alone — was Shep Paine. In *Modeling Tanks and Military Vehicles*, he said, "Tanks love dirt. They wallow in it. They don't move over the terrain so much as they move through it, joyfully spreading mud, dust, and dirt all over themselves." While this is unquestionably true of armor, most

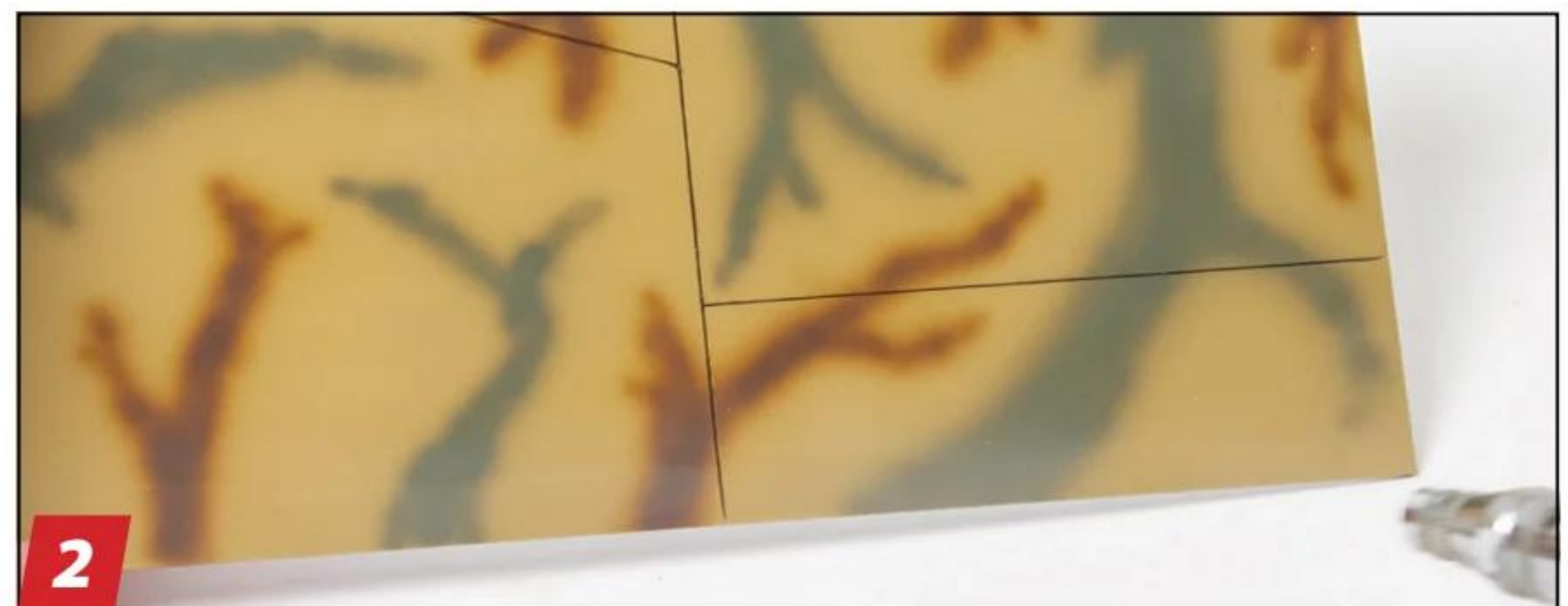
vehicles will get just a little dirty from general use, including cars, trucks, and trains. Even aircraft can show dirt underneath when operated from dirt strips. And, thanks largely to *Star Wars*, we know spaceships can get filthy.

There are multiple methods and mediums to make models dirty from a light coat of road grime to heavy, caked mud. Let's look at a few.

DUST AND DIRT



The light, feathered layering an airbrush can produce makes it an ideal tool to add a thin coat of dust. To keep it light, mix 1 part light gray or tan, such as Tamiya Deck Tan (No. XF-55) with 2 parts of a clear flat from the same paint range, in this case Tamiya Clear Flat (No. XF-86). The clear reduces the color's opacity as it's sprayed.



After adding thinner to the mix, airbrush it along the lower edges of the vehicle to replicate the light coat of dust kicked up by the wheels or tracks. Look at photos to see the areas dust will collect, but it is typically found around wheel wells and along rocker panels, under and on tank fenders, and tends to build up on the rear.



As a foundation for other dust to come, spray the mix around gaps, panel borders, and other areas where constantly churning dust may be blown.



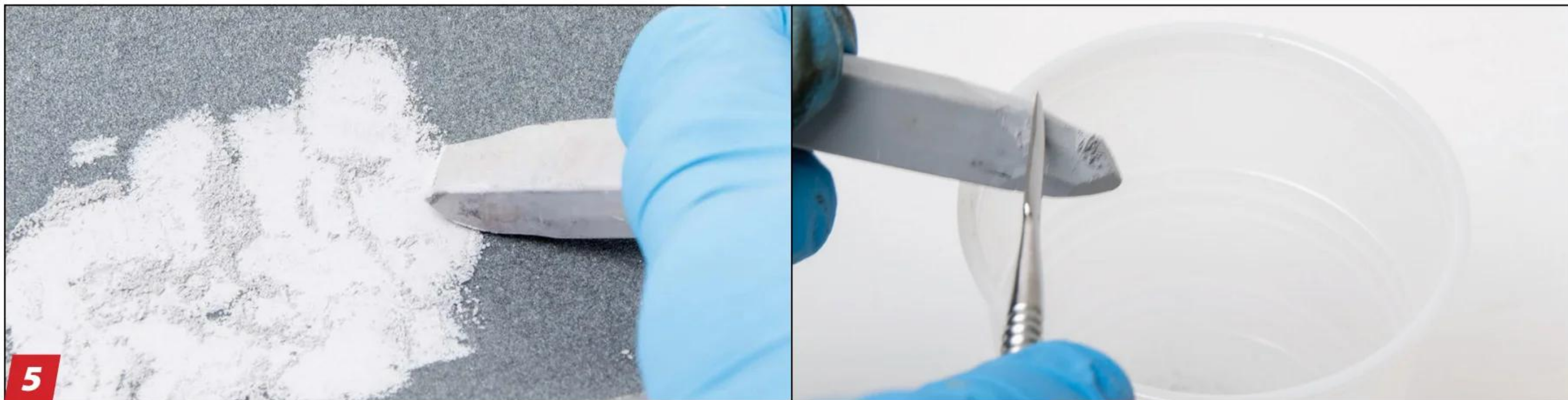
Don't neglect horizontal surfaces where dust gets caught, including the corners along tank fenders, the lower edge of car rear windows, and around the edges of truck cargo beds

WHAT KIND OF PASTELS DO I WANT?

Two kinds of pastels are sold in art stores and both can be used for weathering scale models.

Hard, sometimes called chalk pastels, are the ones most commonly used by modelers. They usually come as short square block of pigment held in a gum binder.

Soft pastels are blocks or cylinders of pigment with an oil binder. For most modeling applications, hard or chalk is what you want, but Tamiya and PanPastel sell something akin to soft makeup of individual containers that can be useful in certain applications.



Nothing looks quite like real dust the way dust does. This is where powdered artist pastels and weathering pigments come into their own. Let's start with the former. Grab the color you need. If it's a pigment you are ready to go. If it's a hard pastel, it will need to be powdered by either grinding it against coarse sandpaper or dragging a sharp edge across the stick.



Pick some of the powder up with a soft paintbrush. Dedicate brushes just for pastel and pigment application. For one thing, the process can be a little rough on the bristles. Secondly, even a stray particle of pigment caught in the brush will discolor any paint you apply later.

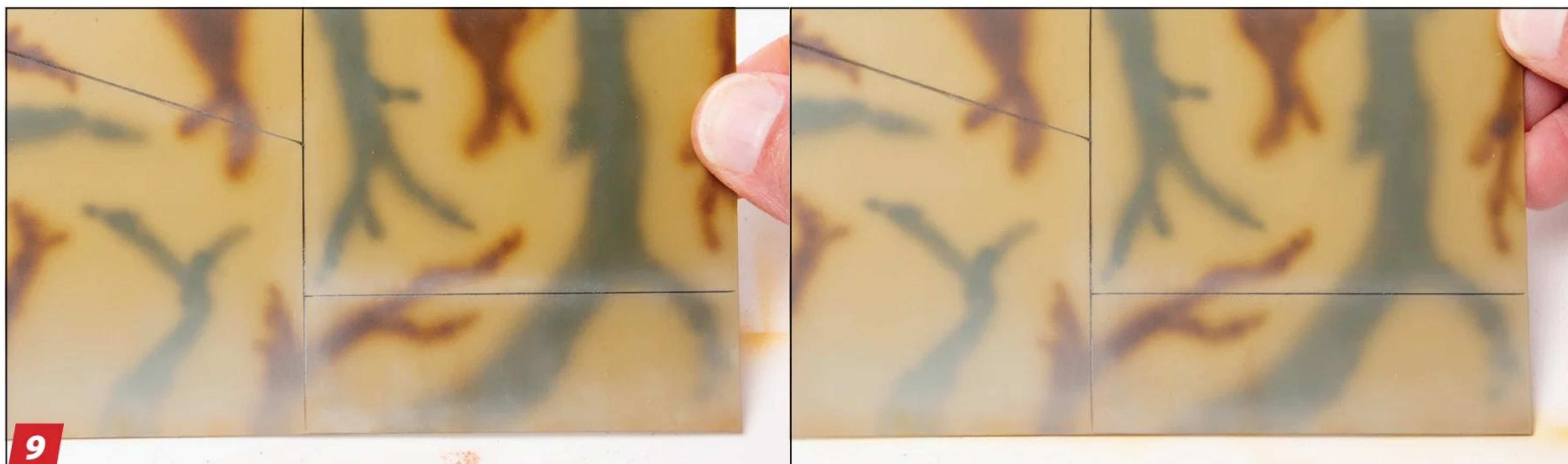


Deposit the powder in the area you want to apply it, in this case the lower area of the styrene previously airbrushed with the dust shade. There's no real secret to this step except to tap and spread the powder across the surface. Pressing slightly will grind a little into the paint. As you can see by the powder that is on the paper, this process produces excess pigment that will mark and color everything it touches. Maybe put of paper towel under the model while applying pastels or pigments.



Once the powder is where you want it, remove the excess by either shaking or blowing it off the surface (note previous caveat about pastels coloring everything) and continue working the color over the area. Think about where dust is deposited and that it is rarely uniform. Build some plumes higher and vary the density, adding more powder to build the effect.

DUST AND DIRT (CONT'D)



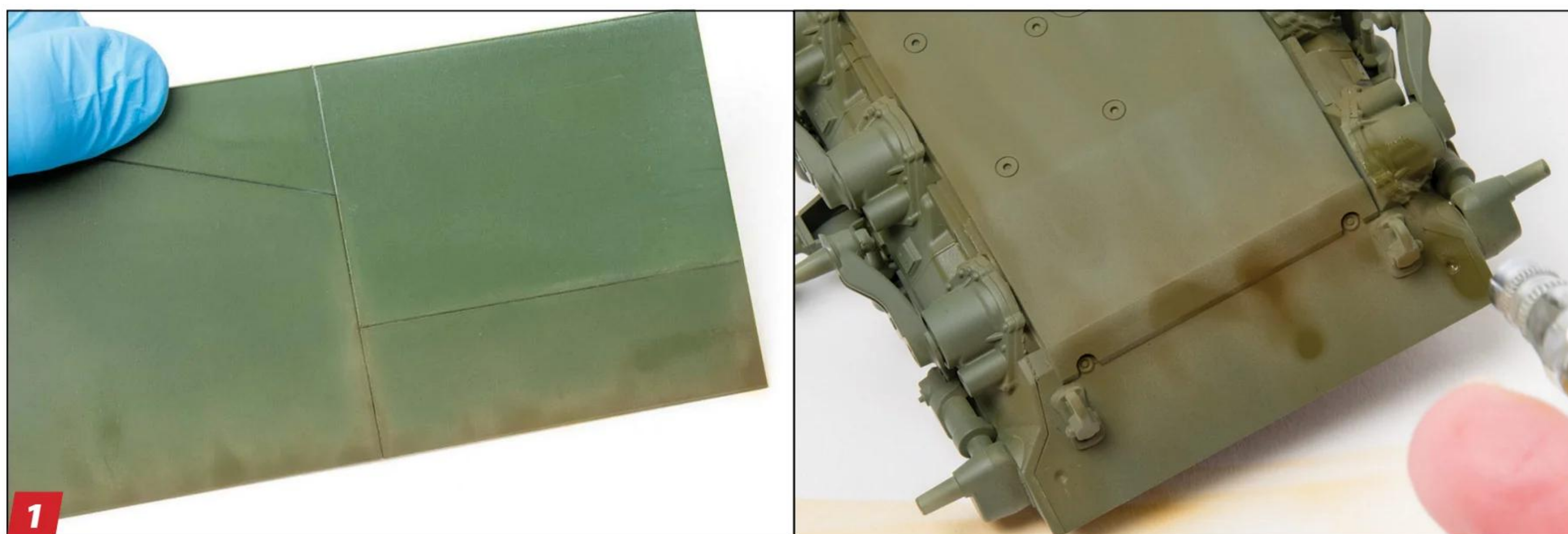
Being powders, pastels and pigments are easily disturbed on the surface of the model and will show fingerprints like a CSI tech has been there. These powders can be sealed with a light coat of clear flat, but that will dull the effect of the powder and lead to bitter disappointment and regret about your life choices. So, is there an alternative to expensive therapy and never touching the model?



Many pigment makers offer a fixer that, as the name suggests, fix the pigments, locking it to the surface without altering its appearance. Most of these are essentially enamel thinner and are best applied with an eyedropper or pipette. These also allow for larger deposits of powder to be built up to look more like clumps of dirt or soil.

You can also use a variety of solvents to do much the same thing. I tested a few common ones here, clockwise from top left: water dissolved the pigment producing a sludgy mix; enamel thinner, which worked well preserving the deposit as applied; mineral spirits, which worked much like the enamel thinner; and alcohol, which spread the powder slightly, but did not dissolve it.

MUD



Just as with the dust, it's not as bad idea to undercoat areas mud will go. I mix an earthy brown tone and clear flat and airbrush it over the lower portions of a vehicle. Building up the thin color slowly allows variation in the deposits including vertical lines.



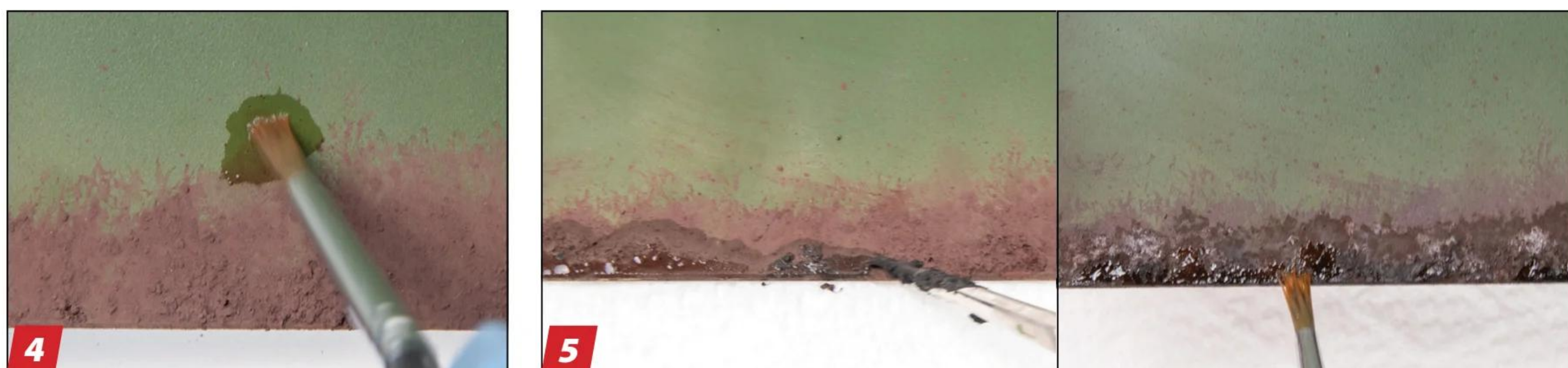
WEATHERING IDEA

Airbrush white or light gray before applying similarly colored pastels or pigments for a rime of ice or snow on a vehicle. This would look especially good on a heavy truck operating in winter or places like Alaska.

Knowing that pastels and pigments can be dissolved in water gives us a first step in creating mud. In this case, I ground an earth-tone pastel into a cup then added water a few drops at a time and mixed it to create a thick slurry.



Brush this mixture onto the surface in a relatively thick deposit. Using a stiff brush, push, prod, and stipple the mixture over the area, producing texture, speckles, and splashes. A fan brush stippled over the mud can create fine splashes.



Clean water on a brush will dissolve dry powder if you need to refine or remove mud. Note that it will likely not eliminate the color, but it will thin it so it blends into the paint.

Mud is rarely a uniform color. Applying a different shade will give the appearance that the vehicle has been over multiple types of terrain. Pastels and pigments dry flat, a good representation of dried mud. For fresh, wet deposits, you can brush clear gloss over some spots. This will also darken the powders.

PASTELS VS. PIGMENTS

Ostensibly similar in purpose and application — and even appearance — pastels and pigments aren't exactly the same.

Artist pastels have been part of scale modeling for decades. They are typically sold at art supply stores; look for a set with a decent set with black, white, and a various grays and browns, the kind of earthy colors that make for realistic weathering. The pastel pigments are pressed into a block and held together with a gum binder but can easily be powdered by scraping or sanding. The advantages are the cost — a typical pastel set will sustain you through a lot of models — and more control over the shade and tone.

The offspring of pastels, weathering pigments are available from a lot of model and paint manufacturers. Instead of using names like raw sienna, they are matched to soil types often by geographical region. They come as a powder and ready to use. It is my understanding that most modeling pigments have a binder that helps them not only adhere to models but responds to pigment fixers and other solvents to stick and maintain the shape they were applied in without dissolving. Pigments are convenient and easy to use.

MUD (CONT'D)



Thick mud is available from several manufacturers including Ammo, AK Interactive, and Vallejo. An acrylic paste usually comes in colors based on frequently modeled locations — this is Vallejo Weathering Effects European Light Mud (No. 73.807).



Apply it to the model with a spatula or stiff brush. Then, it can be pushed, prodded, and stippled into place. The paste is thick enough to hold shape as it dries and contains grit and some kind of vegetation texture. Other products in Vallejo's Weathering Effect range have static grass mixed in.



The way the material goes on and sticks makes it easy to move it around complex shapes like a tank suspension. As long as it's wet, it remains easy to work, but once dry, the mud will stay exactly where you want it to be.



Vallejo and other paint companies offer thinner mixes of the mud colors, usually referred to as splash or spatter effects. Mixing a little Vallejo Airbrush Thinner (No. 71.261) into the Vallejo Weathering Effects Light European Splash Mud (No. 73.801) allows it to be airbrushed before or after the Thick Mud and add some grime.



Acrylic products like the Vallejo Weather Effects can be colored with pigments or pastels simply by mixing in a little of the powder. Applying the new color to the existing deposit will add variety and interest.



MIXING YOUR OWN MUD

I like the convenience of premixed mud, but you can mix your own with pastels for color, a little dry plaster for body, and acrylic gel medium. The big advantages are probably control over the color and the cost, especially if you need to cover a large area of groundwork.

11

To soften the harshest ridges without eliminating all texture, dab the still-wet mud with a sponge. You can also blend the layers and feather transitions with a little water on a brush.



MUD, DUST, AND DIRT AT A GLANCE

- Best applied over a flat finish
- Build the effect slowly to avoid adding too much
- Copious mud is not the fix for bad modeling

12

Flick the thin Splash Mud from a brush with a toothpick to produce specks of mud flicked up onto the vehicle as it moves. A similar effect can be created by blowing clear air from an airbrush through the bristles of a paintbrush.



13

Flicking paint doesn't provide complete control, but it's easy to remove oversize droplets before they dry using clean water on a fine paintbrush. These acrylic products naturally dry glossy, perfect for fresh mud. For dry deposits, spray them with clear flat acrylic. **FSM**

Get down and dirty

HOB

Weather a 1/48 scale Spanish EF-18

BY JARI HEMILÄ



with a



One of my favorite planes is the F/A-18 Hornet, especially those in Spanish air force designated the EF-18. Spain received its first Hornets in 1985, and the fighters have been upgraded several times over the decades. Typically, the airframes are only partially painted during repairs or maintenance, so the general appearance is often weather-beaten, patchy, and dirty. Perfect for an armor builder like me.

I built the Kinetic kit out of the box, including a small fret of photo-etched metal (PE) parts. The fit of parts was excellent. I forgot to drill openings for wing pylons, but this turned out to be a lucky mistake, because it seems those holes are a few millimeters too far forward in the kit, so new holes needed to be drilled. A good reminder to check your references.



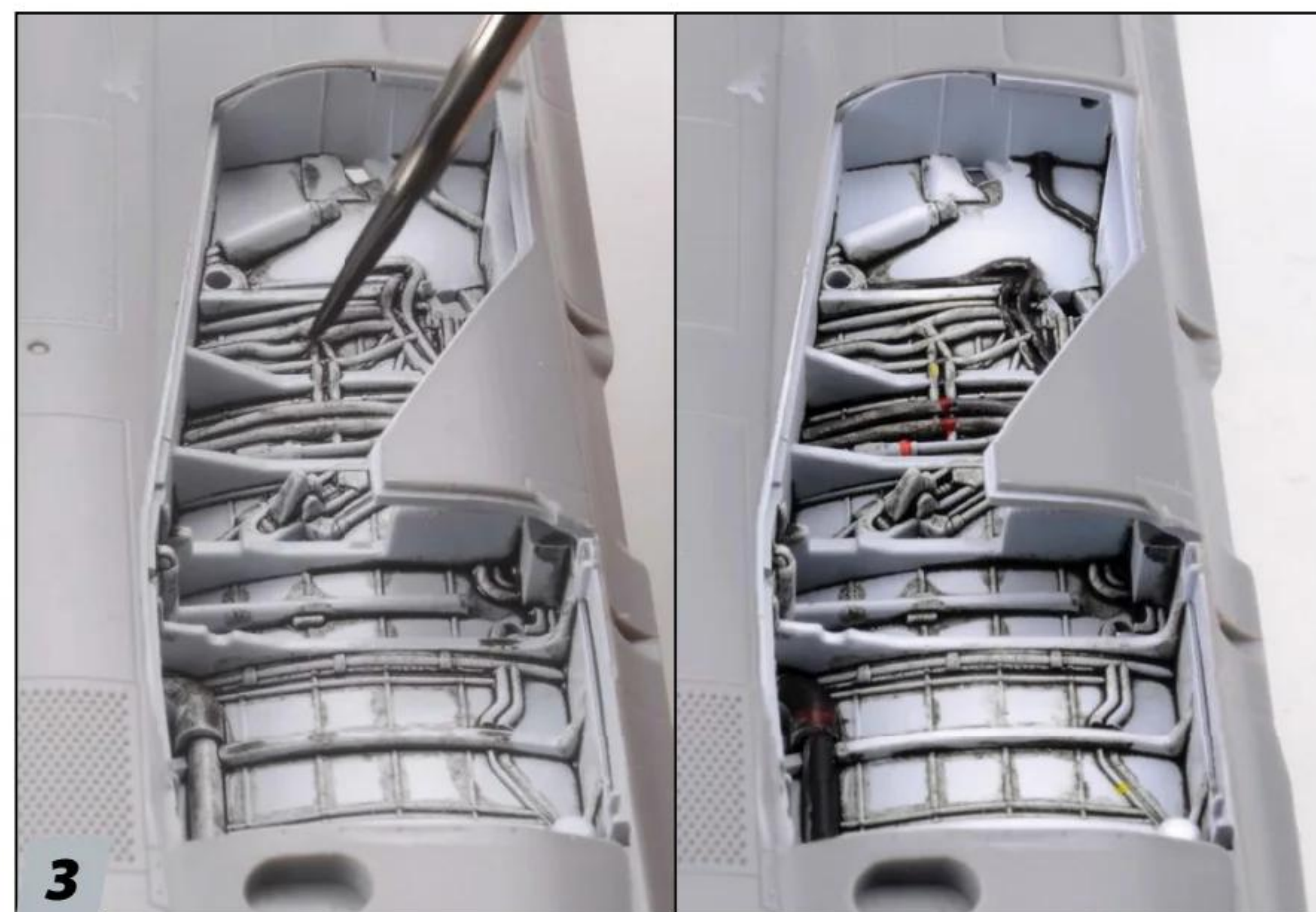
A Spanish EF-18 gets ready to refuel during an Operation Allied Force mission over Kosovo in 1999. U.S. Air Force photo



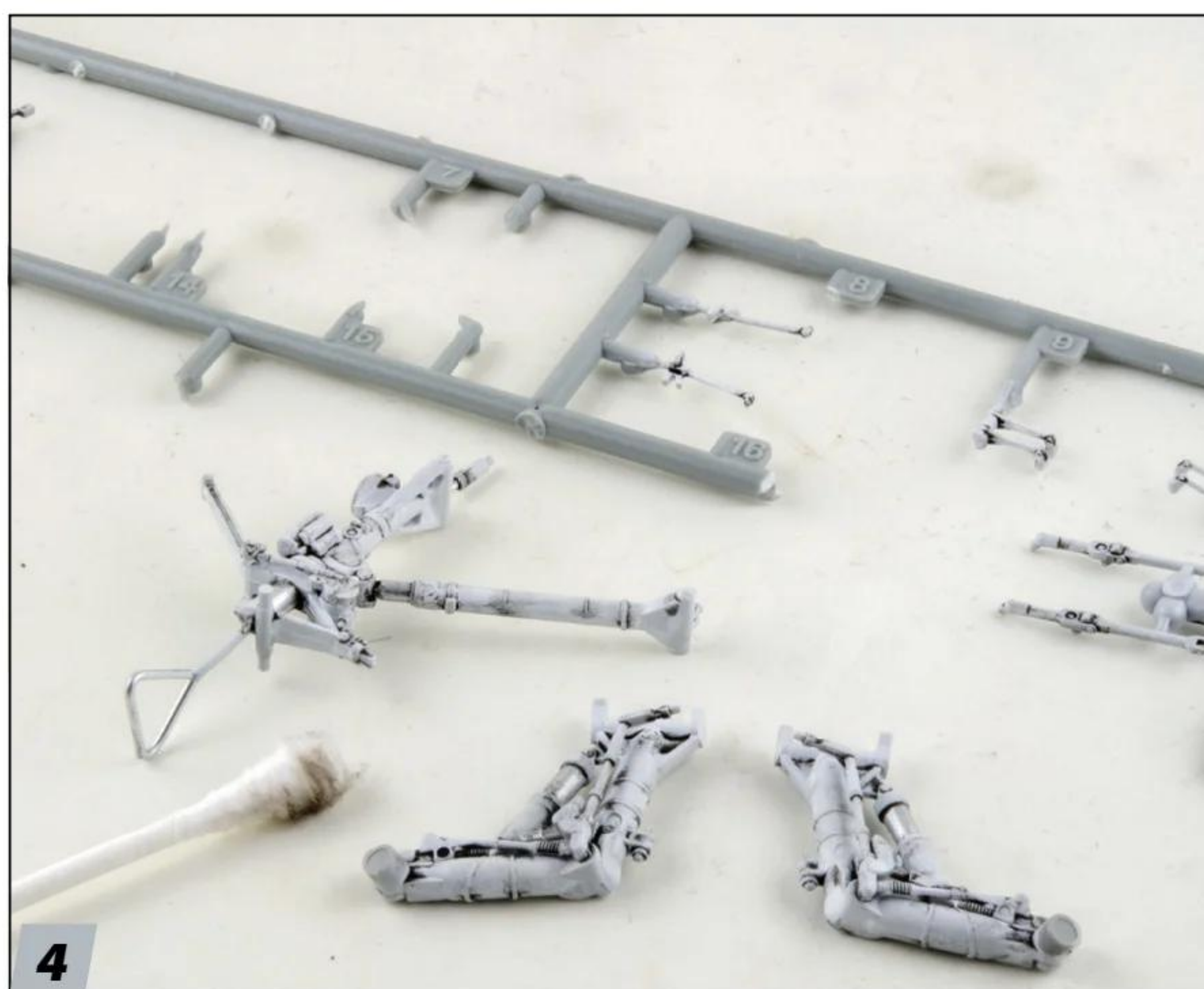
Under the crystal clear canopy, the cockpit area will be on full display. After priming the surrounding area black, I painted it with Ammo Schwartzgrau (No. A.MIG-0218). Next, I airbrushed highlights with Medium Gunship Gray (No. A.MIG-0204) and shadows with Flat Black (No. A.MIG-0046). As a final touch, I dry-brushed medium gunship gray over details.



I airbrushed and shaded the cockpit with various grays, hand-painted the panels, consoles, and seat black, and dry-brushed raised details before picking out details with colors as indicated in the instructions and references.



After priming the wheel wells white, I airbrushed a light gray base coat and pure white as highlights in the middle panels and on raised details. This was sealed with clear gloss before I applied Ammo Dark Wash (No. A.MIG-1008) around details, removing excess with clean enamel thinner on a fine brush. Following the kit instructions, I hand-painted plumbing and clamp details.



I airbrushed the landing gear with the same shades of gray and white used on the bays and hand-brushed Ammo Silver Metallic (No. A.MIG-0195) on the oleos. After sealing the legs with clear gloss, I flowed a dark wash around details and removed excess with a cotton swab.



After adding the remaining airframe parts, I masked the cockpit with Tamiya tape and the windshield with Eduard masks. The painted air intakes and wheel wells were filled with pieces of sponge. I airbrushed Tamiya Gloss Black (No. X-1) over the cockpit area, including the frames. The tip of the radome is an unpainted composite, a color I replicated with Tamiya Deck Tan (No. XF-55) and used it to prime the PE parts, too.



6 I masked a scale 18 inches of the nose with Tamiya tape, then airbrushed the entire model with a base coat of Tamiya Sky Grey (No. XF-19).



7 Spanish Hornets wear a single-color camouflage of FS36375 Light Ghost Gray. I applied this with the Mr. Color lacquer equivalent (No. C308) mixed with Tamiya Lacquer Thinner for airbrushing.



8 Photos show Spanish Hornets are heavily weathered with individual panels repainted during maintenance. I replicated this by airbrushing various panels with a mix of equal parts Mr. Color FS36375 Gray and Off-White (No. C69).



9 To soften the contrast of the individual panels, I airbrushed a thin layer of the lighter shade over other panels. I had several photos of Spanish Hornets and tried to match the effects on the model.



10 Post-shading continued with highly thinned Tamiya Dark Grey (No. XF-24) airbrushed along panel and rivet lines. I did some of the lines freehand, and for others, I masked one side of the line with tape. This step takes time to get the look right and the lines faint.



11 I cut tape masks and airbrushed black for the fake cockpit found underneath Spanish Hornets. With this final painting step out of the way, I sealed the finish with a couple of thin coats of Tamiya Semigloss Clear (No. X-35).



I applied the kit decals for aircraft 12-08. The nose numbers and fleet markings on the rudders were easy, but there are more than 200 tiny tiedown, warning, and other stencils. I believe I got everything where it needed to go. Tamiya Semigloss Clear (No. X-35) sealed the markings.



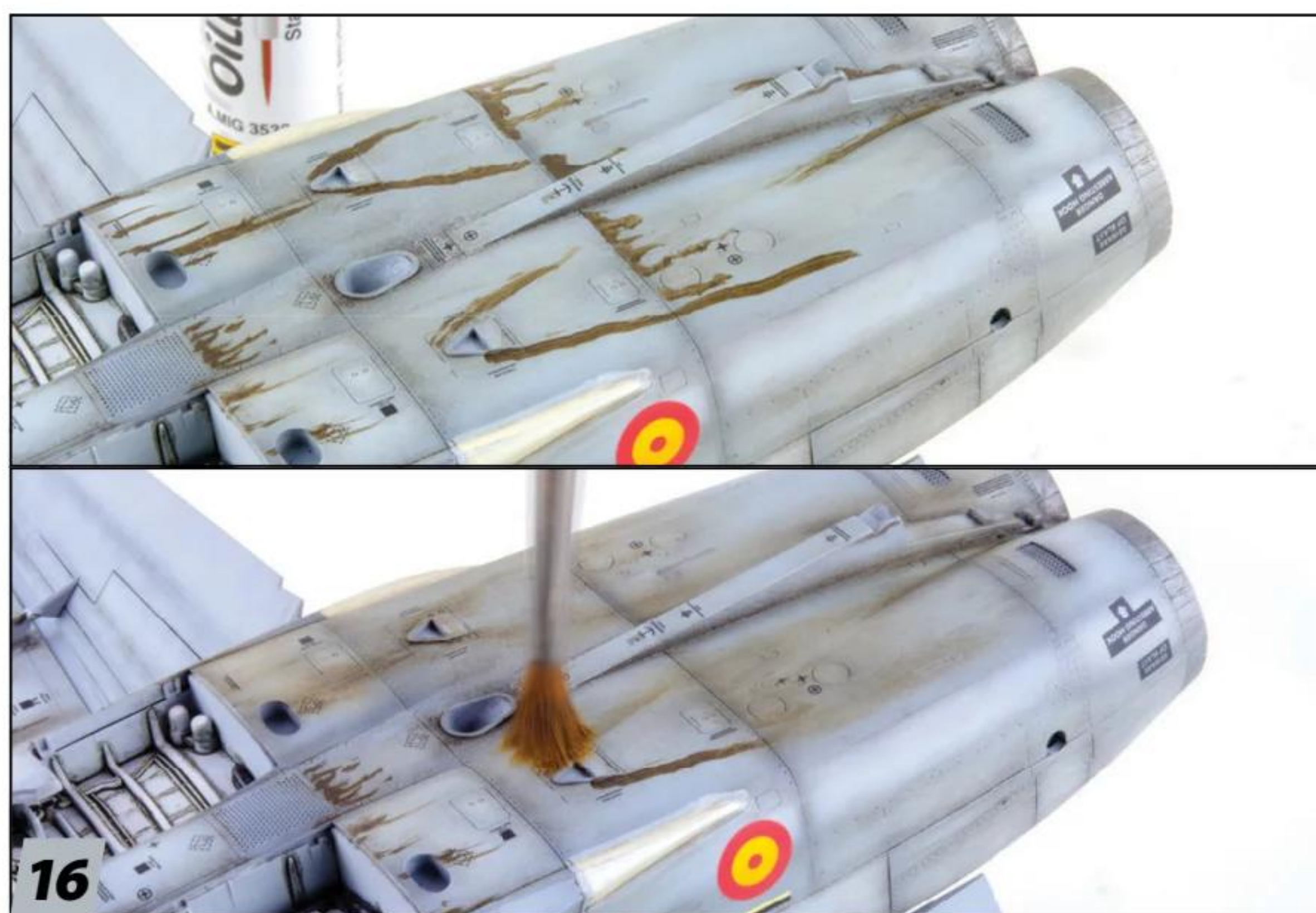
I started weathering by brushing Ammo Panel Line Washes Deep Grey (No. A.MIG-1602) directly from the bottle along panel lines and rivets. I applied this to one section of the airframe at a time — the underside of a wing, for example — and let it dry for 15 minutes.



When the washes turned flat, I removed excess with a dry cotton swab, moving across the lines rather than along them. The wash usually comes off a gloss or semigloss finish easily. If it sticks, moisten the cotton swab with a thinner, but don't remove the wash completely.



Deep gray is a perfect wash for light gray surfaces, adding both contrast and breaking up the monochromatic camouflage. It starts the process of making the fighter look used and dirty. I treated the entire model, making the effect heavier as I moved aft.



It surprises me how dirty a modern fighter can be, especially underneath with heavy streaks around inlets, exhausts, and gear bays. Referring to photos, I applied Ammo Oilbrusher Starship Bay Sludge (No. A.MIG-3532) in these areas and let it dry for about 10 minutes before blending the streaks with a round No. 4 brush drawn back in the direction of airflow. Keep the paintbrush perpendicular to surface.

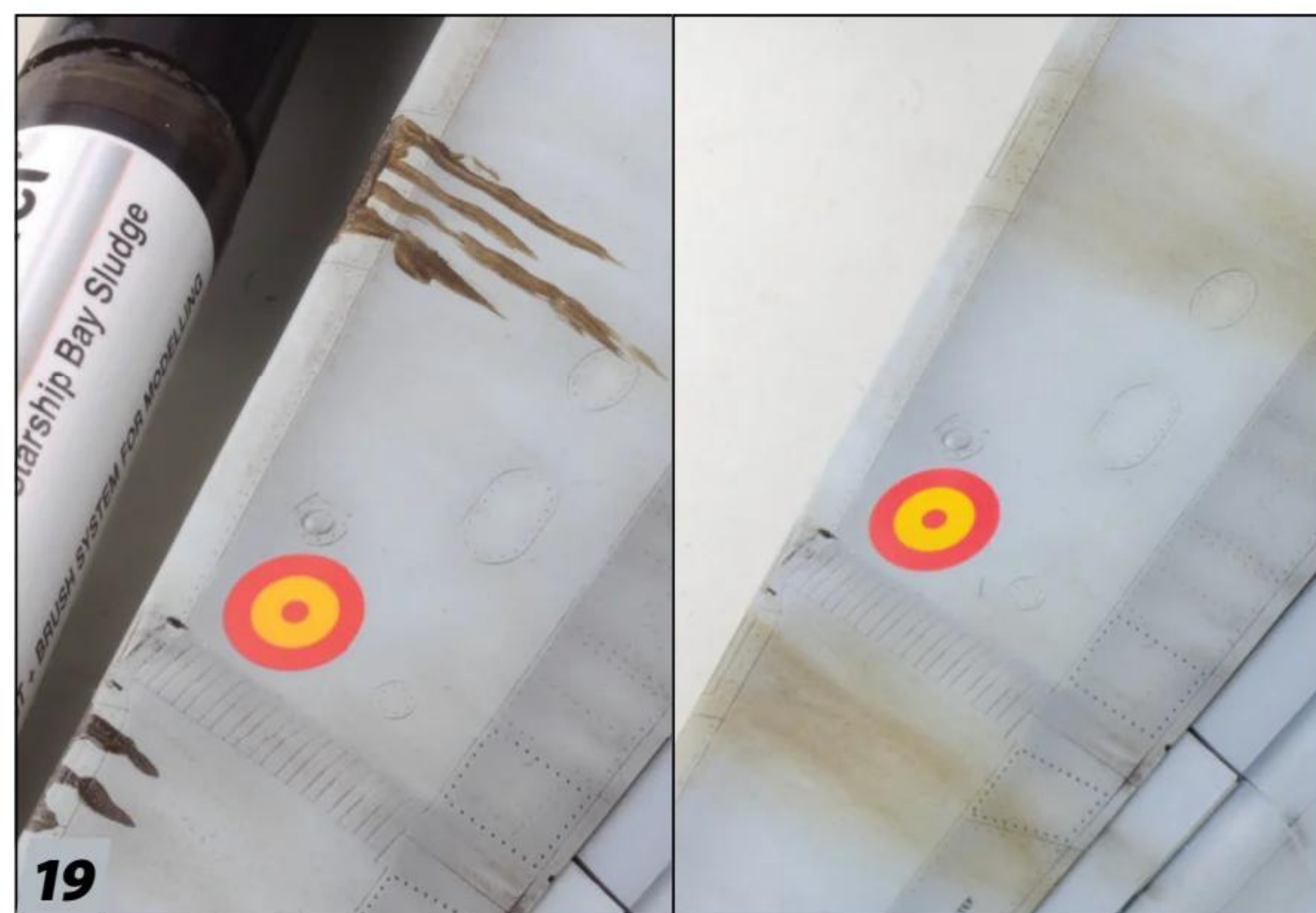


To deepen vents, intakes, and other openings under the Hornet, I applied Ammo Dark Wash. After letting it dry for 15 minutes, I wiped away excess with a makeup sponge.



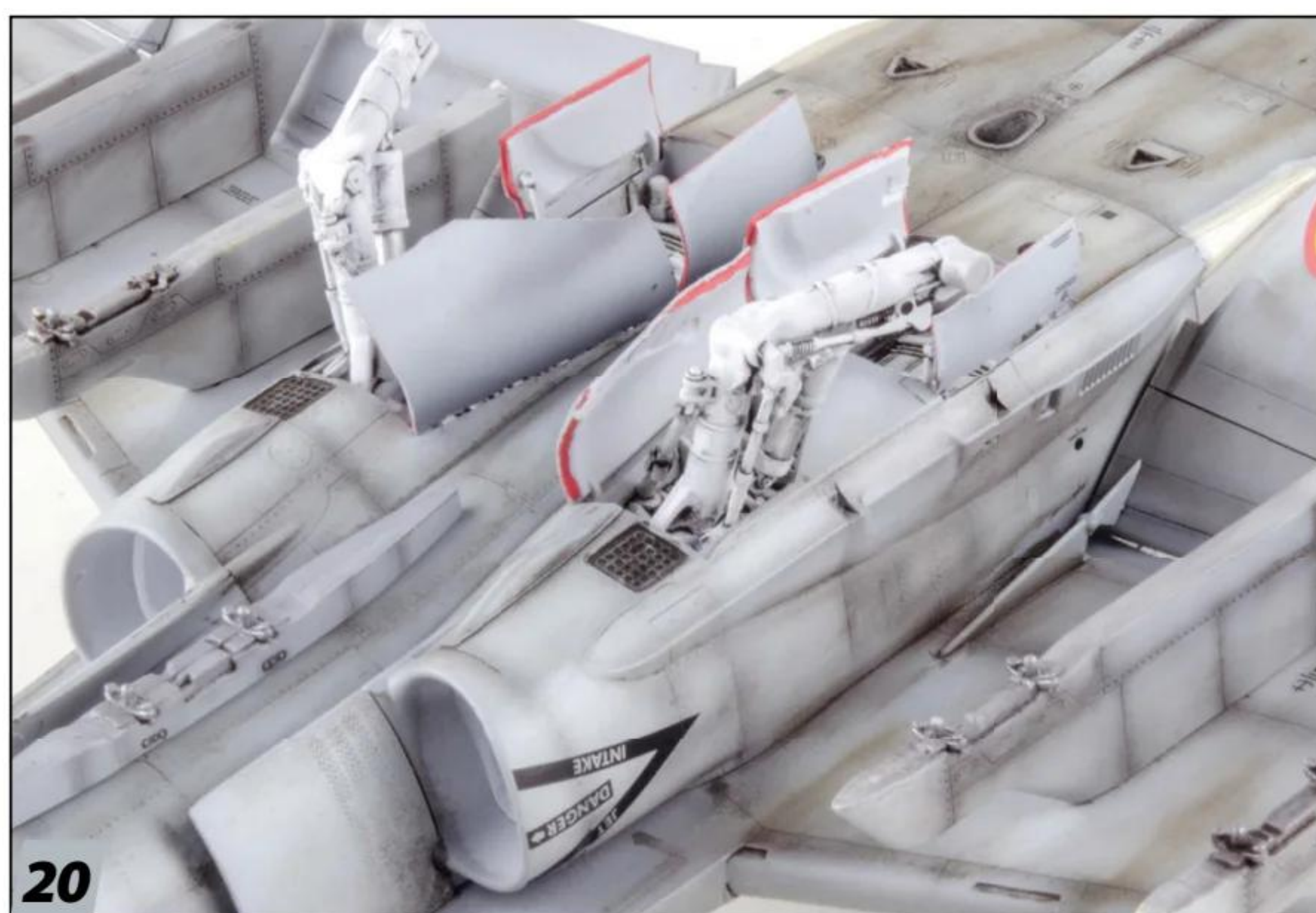
18

The upper engine surfaces received the same treatment as the underside. Photos showed the streaking from the right vent is heavier than the left, something I tried to reflect when I applied the Oilbrusher before blending.



19

Lubricants on the aileron and flap actuators produce dirty marks. The colors and patterns vary, but the solid part of the wing can be heavily stained. I applied several stripes of starship bay sludge back from the hinge area and drew them back along the wing with a dry paintbrush.



20

When it was time to install the landing gear, I superglued the legs into the bays first and then added the doors and their actuators. The rear doors provide a nice contrast because they are relatively clean; the doors get only a light wash of heavily thinned dark gray.



21

Before installing the lights, I painted the spaces for them with out-of-production Citadel Boltgun Metal, which dries quickly. I painted the the rudder beacons and the port nav lights Tamiya Clear Red (No. X-27) and the starboard nav lights Clear Green (No. X-25).



22

I primed the jet nozzles with Mr. Hobby Mr. Finishing Surfacer 1500 White (No. SF291), which will also represent the ceramic coating inside.



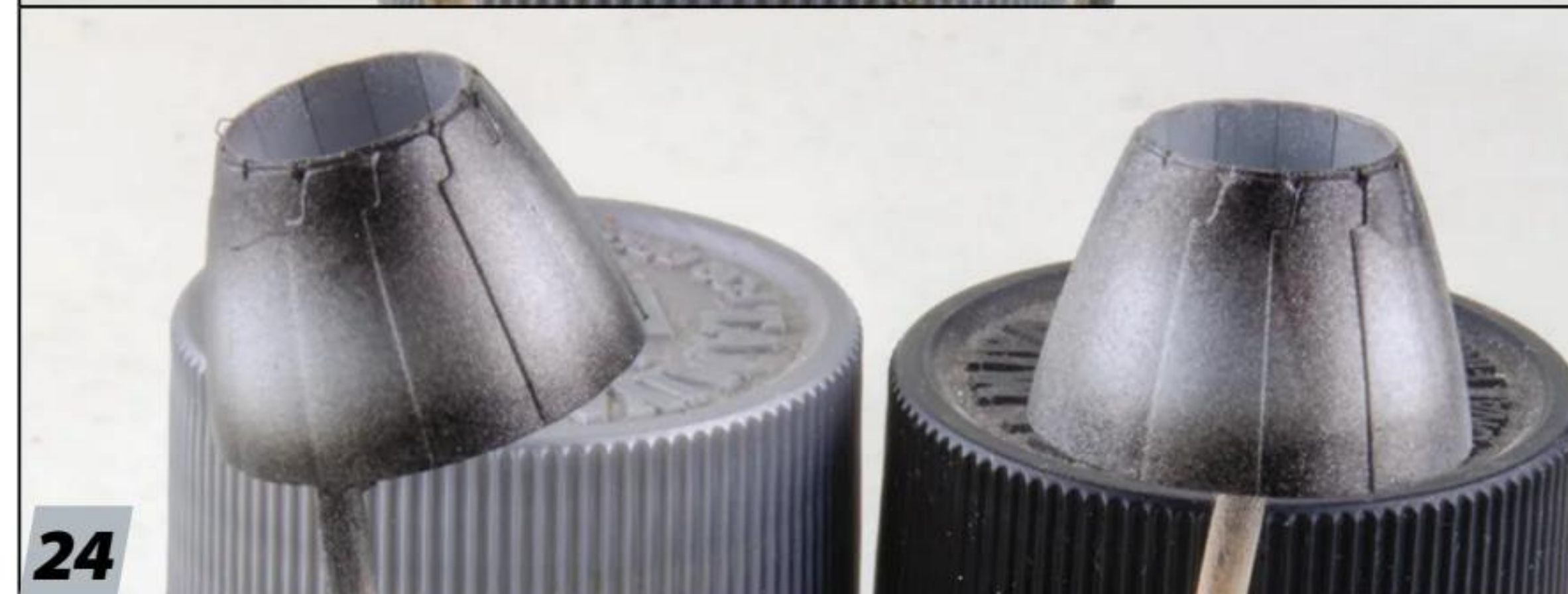
23

After spraying the outer surfaces with a thin layer of Tamiya Gloss Black, I airbrushed a mix of gloss black and Tamiya Chrome Silver (No. X-11).



24

To brighten the centers of the nozzle, I airbrushed straight Tamiya Chrome Silver. I refined the effect by spraying the top and bottom edges with the mix of gloss black and chrome silver.





25

For the gaps between the nozzle petals, I brushed on a mix of Ammo Oilbrusher Black (No. A.MIG-3500) and Starship Filth (No. A.MIG-3513) with a drop of enamel thinner. After 15 minutes, I removed excess with a dry cotton swab. I wanted to brighten the center of each petal, so I applied Oilbrusher Gun Metal (No. A.MIG-3535) to each and blended it with a dry cotton swab.



26

To highlight detail inside the nozzles and show heat discoloration, I applied a wash of thin Vallejo Iraqi Sand (No. 70.819) followed by Ammo Oilbrusher Rust (No. A.MIG-3510) and removed excess with a cotton swab. After airbrushing the nozzles with clear flat, I attached them to the model.



27

To match the underwing tanks to the airframe, I base-coated them with Mr. Color FS36375 Gray, and added light, panel-line shading with Tamiya Dark Grey and post-shading with the same FS36375 Gray I used earlier lightened with Tamiya Flat White.



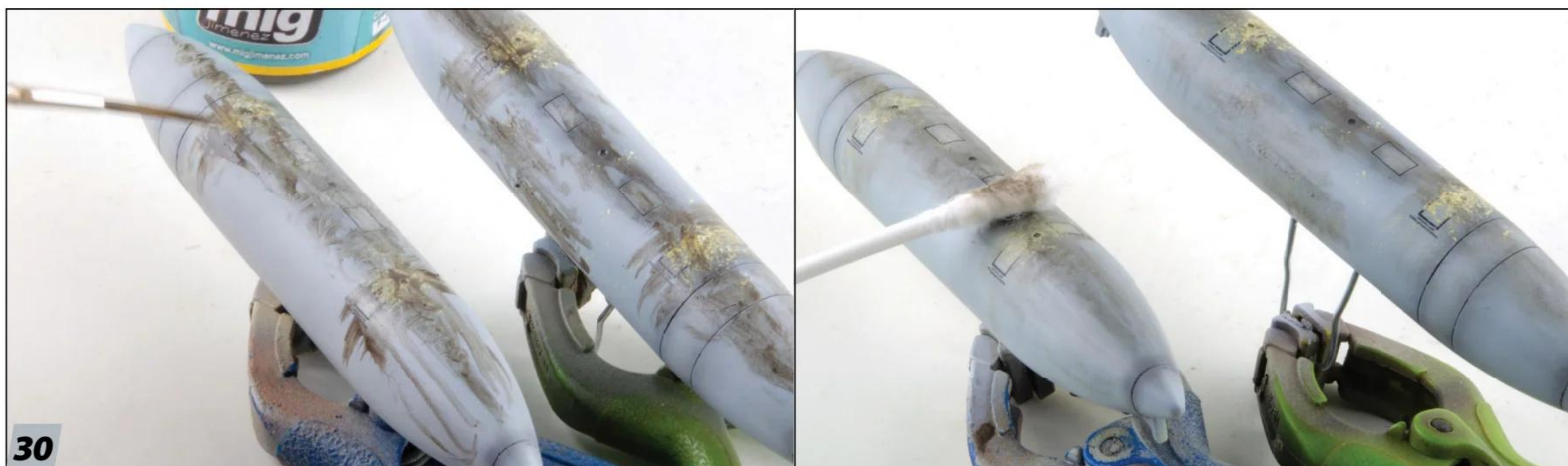
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After painting the attachment points with Vallejo Natural Steel (No. 70.864) and sealing the tanks with Tamiya Semigloss Clear (No. X-35), I applied a wash of Oilbrusher Black and Ammo Dark Brown Wash for Green Vehicles (No. A.MIG-1005). Excess was removed with a cotton swab about 10 minutes after application.



29

To show yellow primer under chipped paint on the pylons and tanks, I mixed equal parts Ammo Zinc Chromate Yellow (No. A.MIG-0221) and Vallejo Model Color Matt White (No. 70.951) and applied it with a sponge ripped from a kitchen scourer. After dipping the sponge in the paint, I blotted it on a paper towel and carefully tapped it on the parts.



Photos show the fuel tanks get really dirty. I brushed a heavy, deep gray wash mostly on the underside of the tanks and left it to dry for 10 minutes. Out came another dry cotton swab to blend and feather the color. I repeated this process until I was happy with the result.



I wanted just a little more grime on the airframe and turned to a technique I use on armor: speckling. I diluted Ammo Streaking Grime for Interiors (No. A.MIG-1200) about 20% with enamel thinner and dipped in an old, stiff brush. After blotting excess on a paper towel, I held the brush over the surface and dragged my finger across the bristles, spattering small droplets over the paint. Over-size drops are easily removed or blended with clean thinner on a soft brush. Remember that droplet size is the key to realism; it should be like a mist. Test the viscosity of the paint on paper.

FINAL THOUGHTS

AS A MODELER who usually has a tank on the workbench, the Hornet was a fun departure, especially working with weathering techniques I could use to replicate the appearance of the Spanish EF-18s I found in references. I am pretty sure this *isn't* the last aircraft model I will build. **FSM**



Making STAINS

Add fuel, oil, and grease stains and spills

BY AARON SKINNER

Many of the vehicles we model feature big motors and engines that require regular maintenance to keep running and eat fuel like it's going out of style. Especially on military vehicles in service during war, much of that maintenance or fueling is done in a hurry and often at night. Even well-maintained engines and running gear will show oil and grease staining after a short time — just look

under the hood of your car after a few years. Adding spills and stains to a model produces a sense of the vehicle's usage and length of service.

Look at real fuel and oil spills and you'll notice the translucency. Grease on wheel bearings tends to be more opaque. The other thing to notice is that these stains appear glossy, a nice contrast with the flat camouflage they are typically applied over. These effects are fun to replicate.

MAKING FUEL



1

There are plenty of products on the market, both enamel and acrylic, that are designed to produce effective looking spills. This is from Vallejo's Engine series of acrylics. If you prefer to mix your own, read on.



2

Fuels and oils vary in color from dark browns to light yellows and oranges. To mix something in the middle, I added a little Abteilung 502 Engine Grease (No. ABT160) to Ochre (No. ABT092).



3

I added roughly the same amount of Turpenoid to the container and thoroughly mixed the thinner and paint until all the solid was dissolved.



Oil paint naturally dries flat, great for many weathering applications but not petroleum products. To fix that, stir in clear gloss varnish for oils. This is designed to be applied over the top of oils on the canvas but works well for small applications like fuel spills.

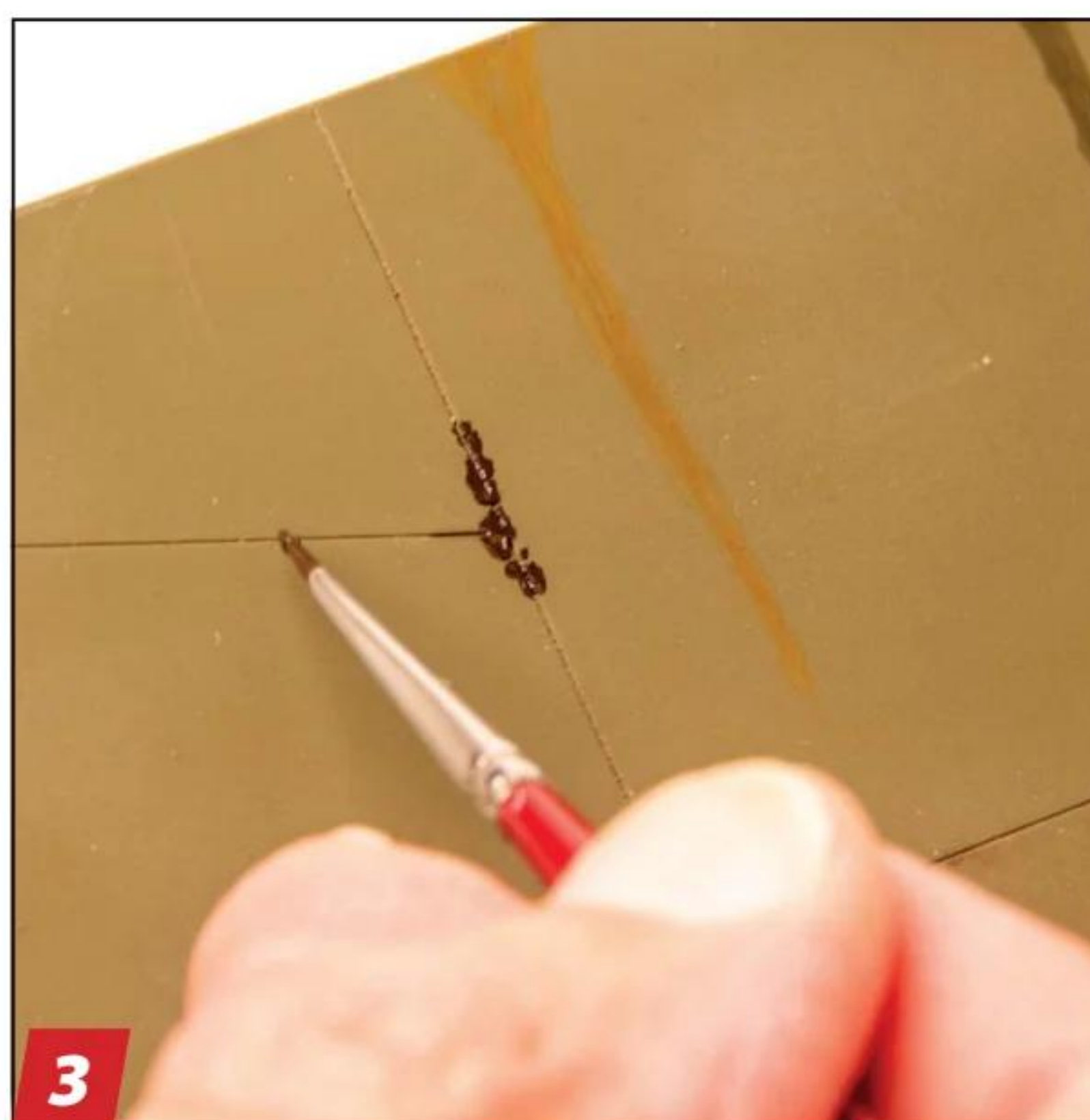
APPLYING SPILLS AND DRIPS



On vertical surfaces, run paint down the sides to mimic the way fuel would flow. I make the stain a little thicker at the top and taper it to a point. This mix is thicker than washes, so runs shouldn't be a concern.



For spills on horizontal surfaces, such as engine decks, blot much of the color from the brush and then gently paint a larger spot surrounded by a few small drips. Using the tip of a fine brush is perfect for this process. A little thinner will spread the color and increase the translucency.



AK Interactive Engine Grime (No. AK082) is thick enamel that does a good job of replicating greasy deposits on and around motors and heavy equipment, but dark oil paint produces similar results. Apply the color in the area to be affected and then apply mineral spirits to thin and feather it.

APPLYING SPILLS AND DRIPS (CONT'D)



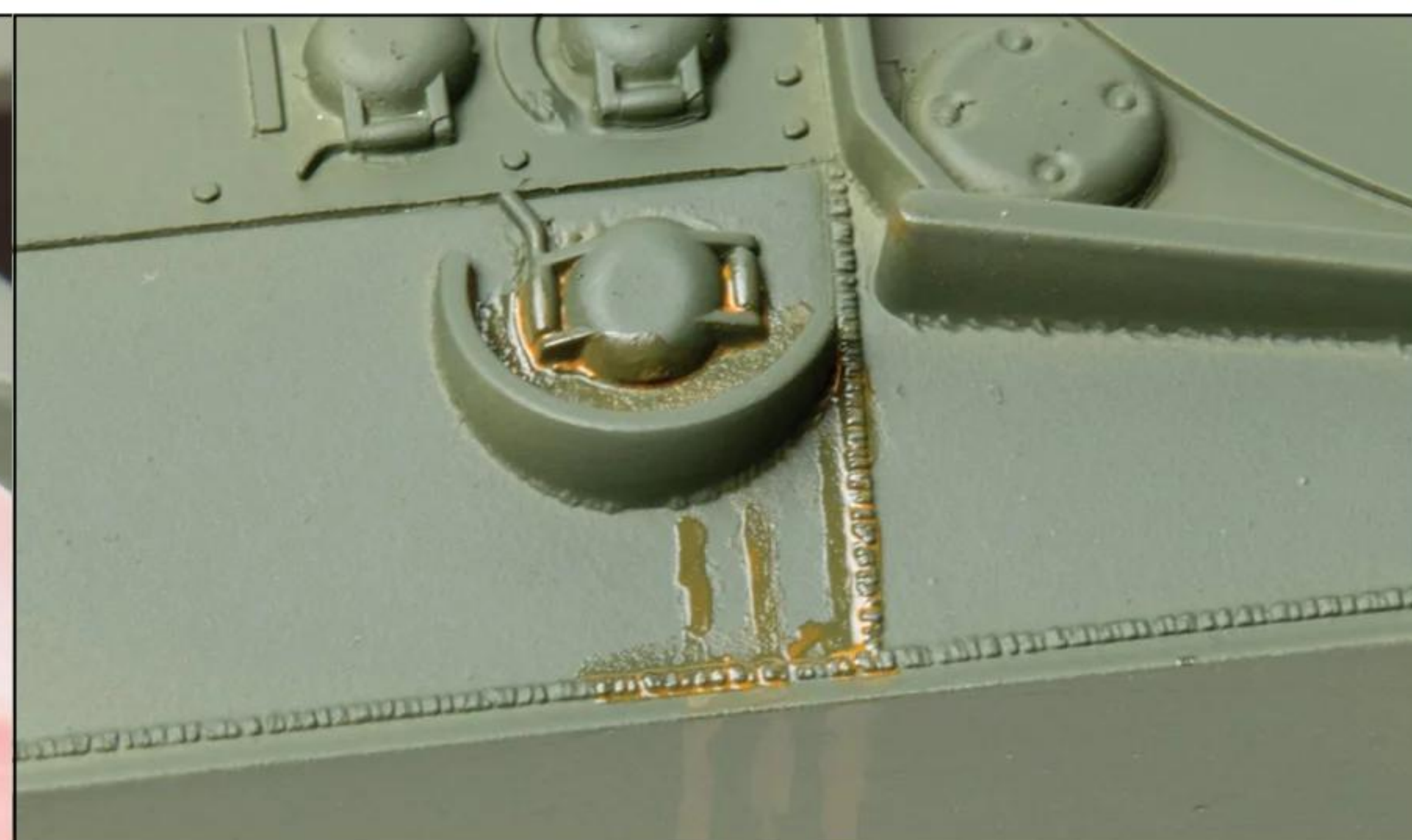
4 When applying spills to a model, keep in mind that fuel is a liquid and obeys the law of gravity. I started on a Sherman engine deck by brushing color around a fuel filler cap and letting it collect inside the metal guard.



5 To show fuel that has flowed around the guard, I brushed it down the sloped side along the adjacent weld seam. Fluid will naturally follow edges, so I applied a little around the base of the guard to the lowest point. From there, I painted a narrow streak toward the edge.



6 Finally, I ran a little of the color along the weld seam at the edge and painted a few streaks over the edge and down the side. This was done with oil paint and can be manipulated and refined with clean thinner on a brush. This color looks good for fresh gas, but this stain would quickly collect dirt in operation and turn darker.



FLUID STAINS AT A GLANCE

- Best applied to flat or satin finishes
- Should be one of the later steps in the process
- Don't over coat with clear flat to maintain the glossy sheen

7 Playing with various products, I continued to weather the Sherman engine deck with spills, stains, and grime. Obviously, the crew maintaining this tank was either in a hurry or careless, but it demonstrates what can be done with these effects. Plus, it shows how easy it is to overdo it, too. A little goes a long way. **FSM**

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By Tim Boyd

Testing its metal

Mixing die-cast and plastic parts in model car kits foretold advances, but ultimately failed

Monogram Models management embarked on a quest to expand the relevancy and market coverage of its brand in the late 1970s. Two initiatives encompassed choosing kit subjects with a broader appeal for overseas markets and developing a line of styrene kits augmented with die-cast metal bodies. Monogram's 1/24 scale Jaguar XK120 and MG-TC kits overlapped both goals.

While pre-assembled die-cast replicas are commonplace these days, Monogram's project to develop a series of high-end, metal-bodied kits was revolutionary in the late 1970s. The box side panels summarized the intended appeal of these kits, reading "[w]hen fully assembled and painted, it will be a beautifully detailed showpiece with the look and feel that only metal can give."

The "die-case metal and plastic kit" series included classics (Duesenberg and Packard) and 1950s domestic convertibles (Thunderbird and Corvette). The final two subjects were these 1950s British sports cars from Jaguar and MG. (For more about Monogram's die-cast metal kits, see the July/August 2022 *FineScale Modeler*.)

Any questions about Monogram's intention for newfound appeal in the European hobby market were addressed by the box top text and country flag illustrations not-

ing the assembly instructions were provided in French, German, Italian, Spanish, Dutch, and Swedish as well as English. The upscale box art featured dark backgrounds and extravagant illustrations of the kit subjects rendered in an unusual vertical portrait format. Studio color photography of the assembled models appeared on the side panels and bottom.

Comprehensive in content and design, both the Jaguar XK120 and MG-TC kits bore more resemblance to Monogram's highly regarded Classic Kits series of the 1960s than the simplified approach of most of its 1970s releases. These two kits included complete, stand-alone engines and transmissions, full frame and suspension detail, and intricate surface engraving as seen in the convertible tops of both kits.

The Jaguar XK120 kit could be built with either right- or left-hand steering configurations. A single frame and underbody part provided a base for mounting a separate interior. Parts combining the engine compartment, interior door panels, and trunk walls foreshadowed what would become a common kit design approach in subsequent decades. Final assembly options included a roadster top with or without side curtains, rear fender skirts, and (though



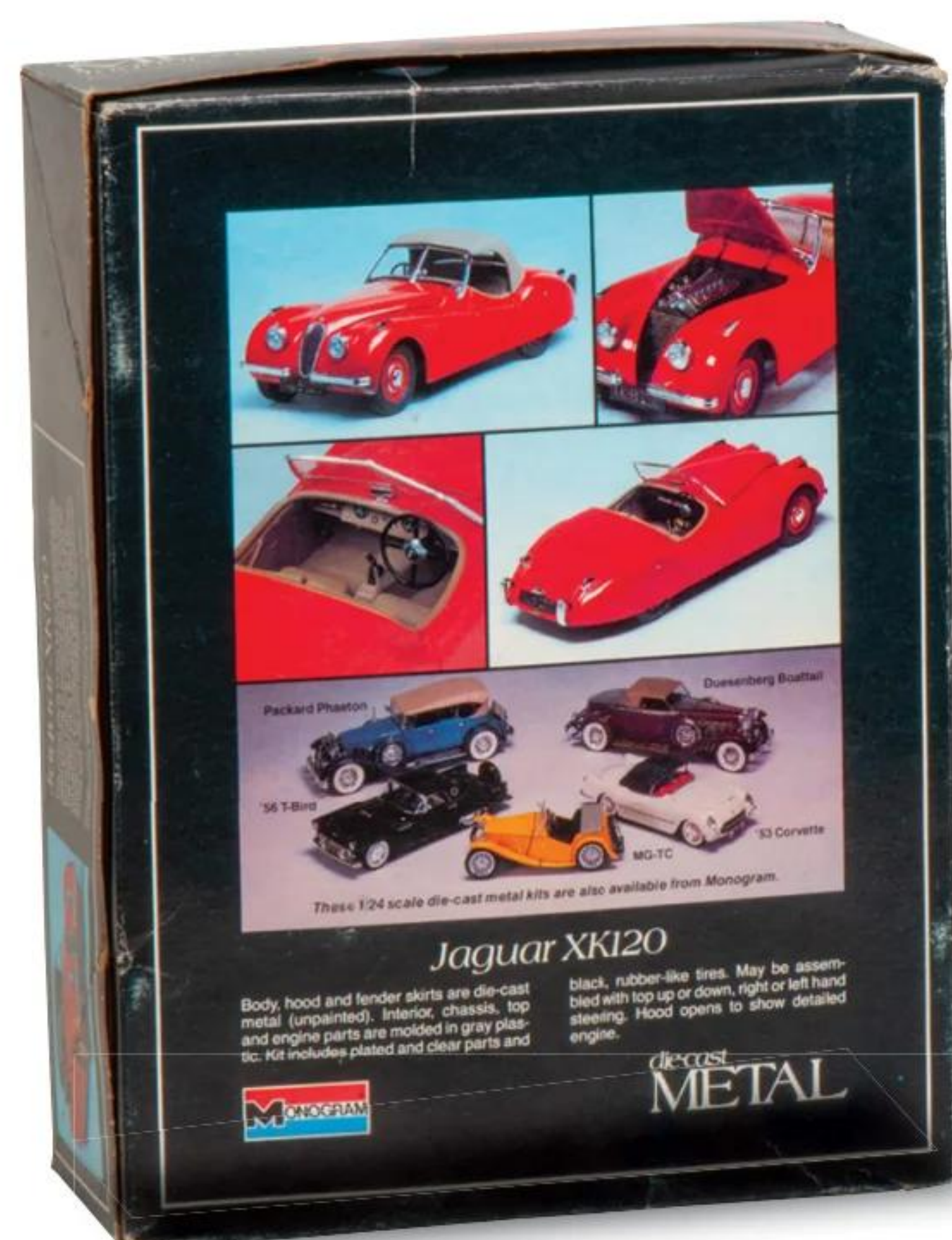
MONOGRAM 1/24 SCALE JAGUAR XK120 AND MG-TC

Kit Nos.: 6103 (Jaguar); 6102 (MG-TC)
First Introduced: 1979; never reissued in this form
Current Value: \$50 each

unmentioned on the box art) individual driver and passenger foldable racing windshields.

Equally detailed, MG-TC builders would first encounter a four-cylinder OHC engine with a separately molded oil pan, something virtually unseen in other contemporary Monogram kits. While this kit incorporated only a right-hand driving layout, the comprehensive tooling effort included many separately molded body trim items typically engraved into the body in kits of this era. Two full trees of plated parts included both left and right registered knock-off hubs. Assembly concluded with the builder's choice of a folded or raised convertible top.

Originally, all exterior body components were rendered in die-cast metal, with the remainder of the parts molded in styrene. However, perhaps due to the price of the kits or the extra effort required to prepare the metal bodies for paint, these kits did not catch on. A redesign of the tooling allowed Monogram, and subsequently Revell, to intermittently reissue the two kits in a completely styrene format into the early 2000s. **FSM**



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• Comes with solid synthetic rubber tires.
• Masking stickers are included for the painting of windows and headlight covers.



• The model can be assembled as the left-hand drive (European Spec.) with recreations of sporty "Weissach package" wheel shape, carbon fiber sections (hood, roof, rear wing and side mirrors), roll cage, door straps, shift paddles and headrests' logos.