

Desert War Modeling

FALL 2020

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Yoav Efrati
builds an Israeli
ace's Skyhawk.
p. 44



WEATHERING FOR HARSH CLIMATES

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AIRBRUSH SAND CAMOUFLAGE

Scratchbuilt
armor and
details finish
an Iraq War
Humvee. p. 58



Despite build
delays, Bill
Morin's M13/40
is ready for
action. p. 34

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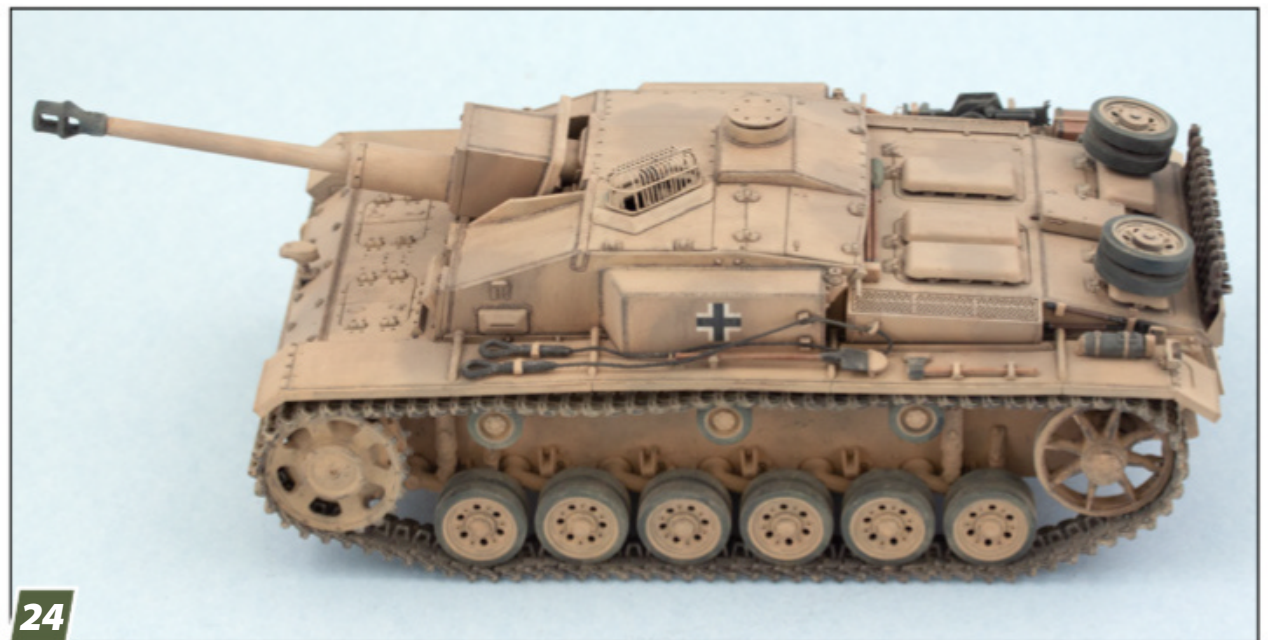
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Desert combatants from model contests



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By Aaron Skinner



DON MARTIN
GAINESVILLE, FLORIDA

To build a British army vehicle deployed to Afghanistan, Don dressed up Accurate Armour's 1/35 scale Coyote with extra stowage, a 40mm grenade launcher from Tamiya, and M.V. Products lenses. He painted it with Tamiya acrylics mixed with Tamiya lacquer thinner after pre-shading with dark gray; Winsor & Newton artist-oil washes enhanced the details.

Modeling combat in sand

Over the last century, wars have been fought across almost every continent and in all manner of geography — the islands and atolls of the Pacific, the jungles of Burma and Vietnam, the mountains of Kashmir and Kokoda, and the frozen hells of the Ardennes and Chosin.

But one place that has seen combat in World Wars I and II up to today is the desert. Open terrain, long distances, and the lack of cover make the use of armor and aircraft essential in taking and holding key strategic locations. But the harsh combination of sand, sun, and heat is taxing on soldiers and machines alike.

That may be why modeling desert war subjects remains popular; a tour of any model club or contest room reveals plenty of models of tanks, trucks, and aircraft finished in desert sand, tan, or gray. In reality, many of these vehicles were hurriedly repainted from deployment to the arid battlefields where wind and sand as well as the crew can quickly wear paint from corners and edges to reveal underlying colors. Ground vehicles may be away from supplies for long periods, so tanks and armored cars are frequently loaded with water, fuel, and other supplies.

That's why we decided it was time to pull together a bunch of stories and builds focused on the art of building desert war combatants. The collection includes WWII standards like Frank Cuden's 1/48 scale P-40 and Bill Morin's Italian M13/40. As you might expect, North Africa features prominently with a Deutsche Afrika Korps armored car detailed by Ernest Urriaga and an uncommon StuG built by *FSM* stalwart Bill Plunk.

Moving forward chronologically, the volume includes an Israeli ace's A-4 Skyhawk, a French Mirage and British Chieftain from the 1991 Gulf War, an Iraq War up-armored Humvee, and a USAF Strike Eagle and Canadian LAV III in Afghanistan. Ripped from the headlines, there's even a Syrian Civil War self-propelled gun. And those are just some of the stories you'll find inside *Desert War Modeling*. We hope you'll find the projects, techniques, and tips useful as you build your next model.

Happy modeling!

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TANK techniques &

Basic armor modeling skills
are all you need

BY GLENN BARTOLOTTI

Sometimes it's nice just to build something. When I picked up Italeri's Carro Armato L6/40, I decided to eschew aftermarket products and use only what was in the box (which even provided a little photo-etched metal (PE) to detail the light tank).

Alignment

Some armor kits come with the lower hull molded as a single part. But Italeri chose to make the L6/40's hull from four flat components.

It fits well, but it's important to pay attention to the alignment of the major components. A slight deviation at this stage is magnified as construction progresses, causing parts not to fit. So, take your time, dry-fit, and double-check any less-than-positive fits before finally committing glue to plastic.

I didn't have any major problems with the L6/40's hull, and I fit the interior parts at this stage before painting. It's basic, but it looks good, **1**.

Wheels

Building the rear idler assemblies, I discovered the part numbers were mislabeled in the instructions — another reason to check fits before gluing, **2**. When I attached the idlers to the hull, I was very careful about how they lined up, checking references to be sure they were right. It is important that they line up because the kit's link-and-length tracks are designed to fit a certain arrangement, **3**.

The suspension builds up in two units on each side. This arrangement allows for articulation but, because I was using the kit's link-and-length tracks, I wanted all of the wheels, from the idler to the front road wheel, level. Ensuring that I had the right parts and dry-fitting them helped. I glued Part 23A last to make sure it lined up, **4**.

I clipped the long runs of tracks from the sprue to ensure the wheels lined up, **5**.

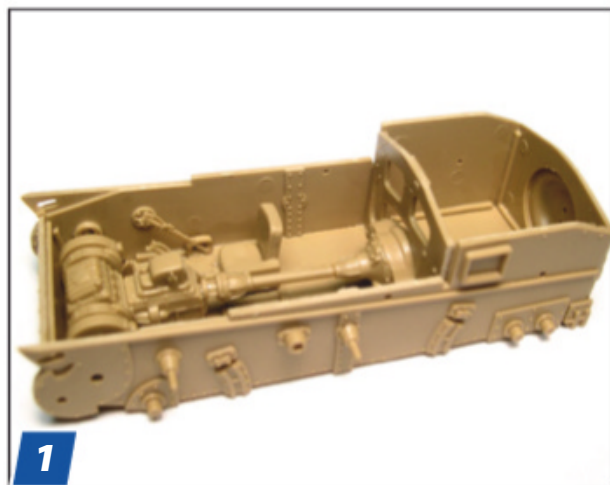
Tracks

When working with link-and-length or individual-link tracks, I glue a side's entire

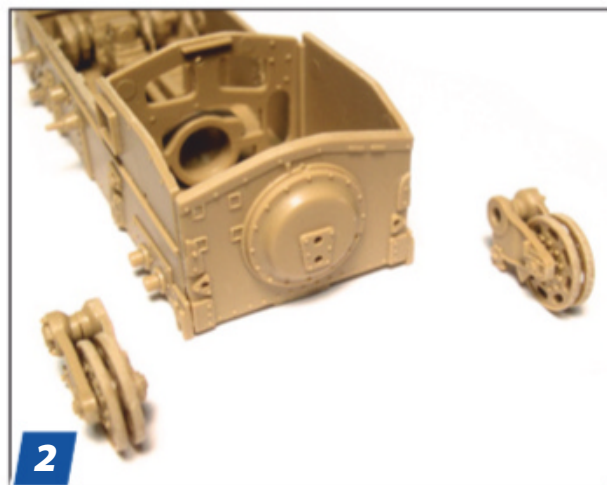
run together first, then wrap it around the wheels. This may seem more difficult than dividing the runs into sections, but experience has taught me I get straighter runs doing it this way.

I assembled the runs according to the instructions, but added a few links at the end; it's better to take off extra links than to come up short, **6**. (I'm glad I did, because I needed 21 individual links rather than the 17 called for!) With the links pushed together, I brushed Testors liquid cement (the stuff with a pink label) over the back of the track run, letting the glue flow into the gaps between the links. Then I let the glue dry for about five minutes until it was tacky enough to hold the links together but still flexible.

When I started to wrap the tracks around the running gear, I discovered a problem: The drive sprockets' teeth were too big for the corresponding holes in the links, and the spacing was off. To make a long story short, the tracks wouldn't fit on the sprockets.



I made sure the four-part hull of the little Italian tank squared up. A misalignment this early in a build can cause big problems later.



Dry-fit twice, glue once: While putting together the idler assemblies, I discovered the parts were mislabeled in the instructions.



When building a tank that will sit on a shelf, it's important that all of the road wheels touch the ground. I made sure the idlers were positioned correctly before gluing.

tips

This may discourage some builders from using the kit tracks and/or drive sprockets in favor of aftermarket items. My solution, while less elegant, works well and is largely invisible: I cut the teeth off the sprockets wherever the tracks touched them, **7**.

After that, the tracks needed a little maneuvering to look right. But I'm happy with the results, **8**.

I feel tracks make or break an armor model. I attach them before painting so I know they are glued on well and look right. Some modelers question adding tracks this early, especially when it comes to getting paint into all the nooks and crannies. My theory: If you can see it, you can paint it ... well, kinda. First, I airbrush everything I can. Then, I apply controlled washes and let thin paint run around the road wheels to cover color shortfalls. Weathering washes

and pastels blend everything together, further disguising any unpainted areas. If I built a factory-fresh tank, my finishing style would not work.

Upper hull

After gluing the fenders to the lower hull, I assembled the superstructure. Once again, test-fitting showed that the upper hull didn't quite fit. I had to sand the edges of the section marked on the fenders to get a snug attachment, **9**.

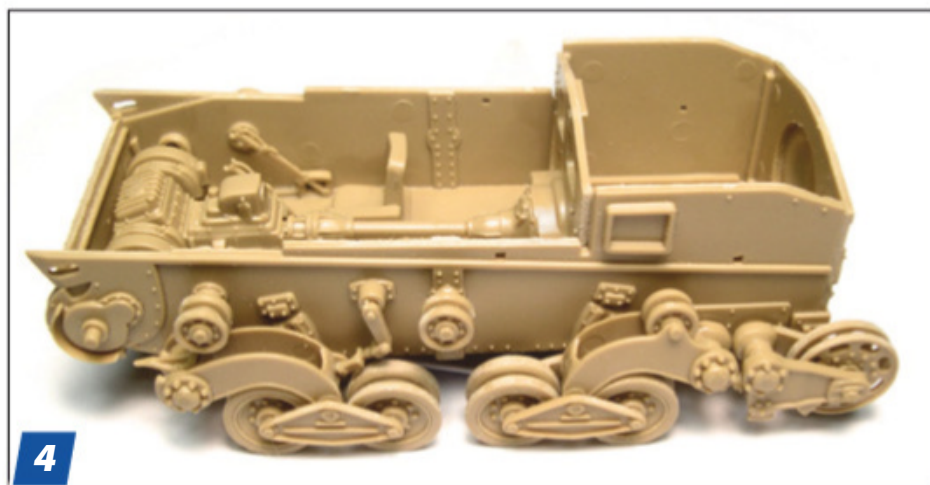
I masked the interior and airbrushed it

flat white, **10**. If more of the fighting compartment were visible on the finished model, I would have airbrushed shadows and highlights. This tank is tiny, so I left the interior alone (except for picking out details and a little pastel weathering), **11**.

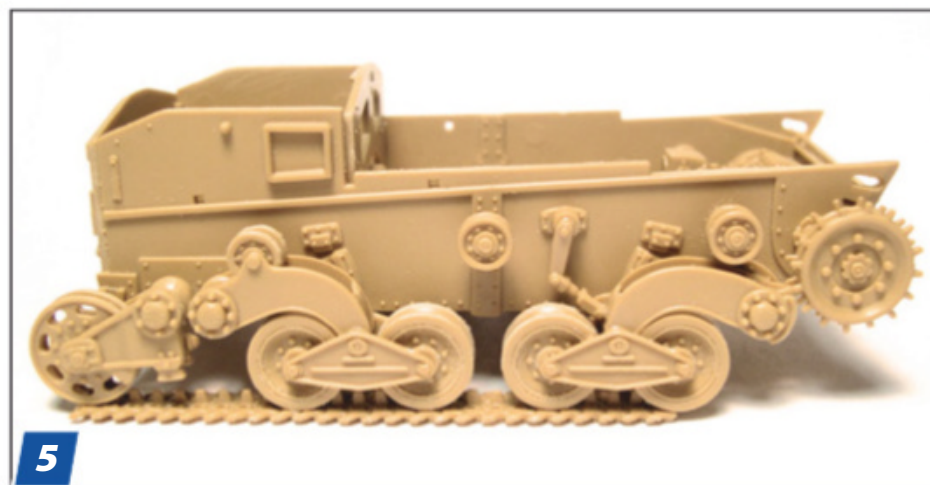
After gluing the upper hull in place, I attached the PE details and other equipment, **12**. References are handy for positioning details when instructions are vague. I used Mr. Surfacer to eliminate minor gaps between subassemblies.

The kit's engine hatch clasps (parts 6B)

Glenn is known for his detailed models and well-built dioramas, but his straight-from-the-box build of Italeri's 1/35 scale L6/40 shows his foundation in good, basic skills.



Italeri's clever design makes it possible to animate the L6/40's suspension. I wanted his straight, so I test-fitted everything before adding glue.



A handy alignment jig? I use the kit's continuous bottom link to ensure that the wheels touch the ground and are aligned, front to back.



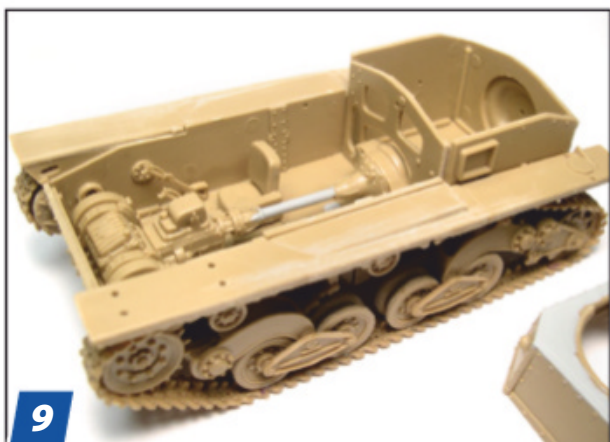
6 I glue one side's entire track run with slow-setting liquid cement and let it set for about five minutes, then attach it to the model.



7 When I discovered that the drive-sprocket teeth were too big for the tracks, my simple solution was to trim the teeth.



8 Modifying the sprockets made it easier to install the tracks. I prefer to attach them early in the build to ensure a good fit.



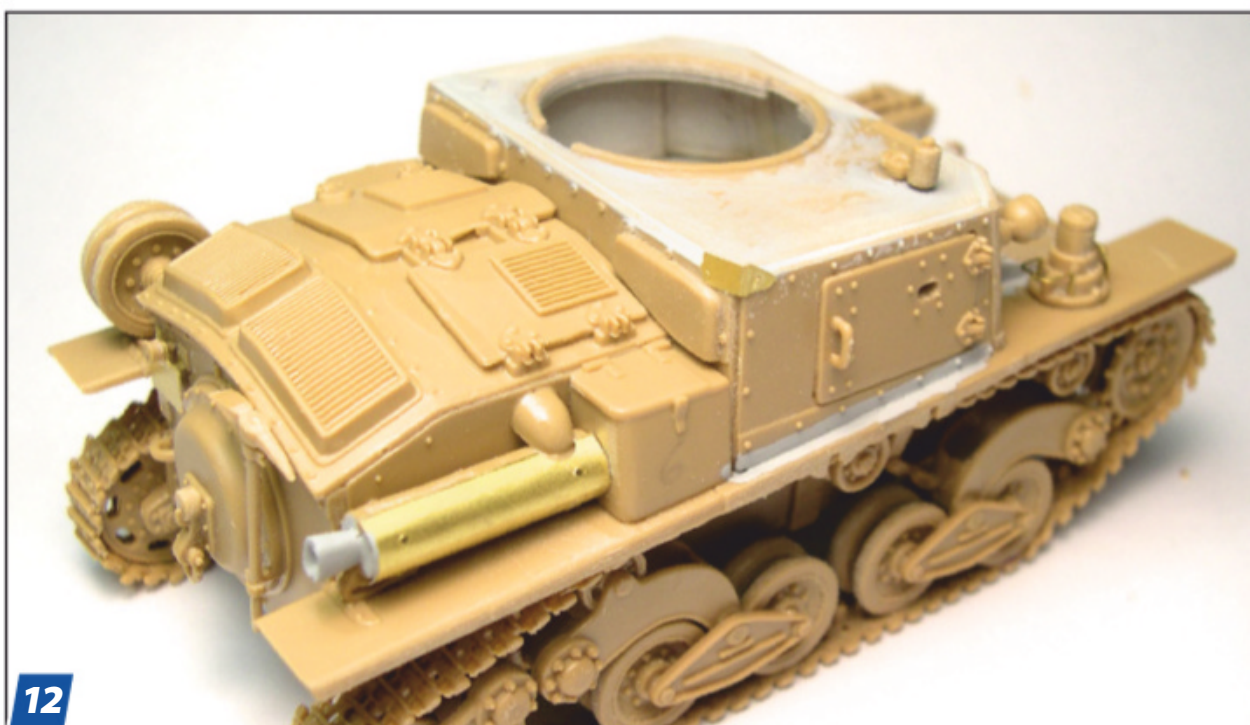
9 I filed the sponson locator on the fenders to produce a tighter fit between the upper and lower hulls.



10 To minimize scraping and sanding of mating surfaces, I masked the edges of the hull components before airbrushing them flat white.



11 Rommel-approved! With very little of the interior visible from outside, I painted details and added a little pastel weathering. It's just enough to look OK when the turret is off.



12 After assembling the major parts, I added the kit's PE details and brushed on Mr. Surfacer to hide gaps.

were out of scale, so I replaced them with fine wire, **13**.

Turret and gun

The turret assembled easily and, although the details were spartan, Italeri included nice touches, such as bolt detail inside the turret.

The gun came in two parts; I damaged the barrel removing it from the sprue, so I replaced it with a piece of styrene rod, drilling out the muzzle and flaring it slightly

with a metal needle to replicate the original, **14**. After painting, the turret was complete, **15**.

Painting

I sprayed the model with Testors Model Master gray enamel primer, then airbrushed Model Master Afrika braun (No. 2012) lightened with a little white. After a coat of Model Master clear gloss I applied kit decals for an Italian tank, then sealed the decals with a coat of clear flat.



13 Dissatisfied with the kit's over-scale engine-cover clasp, I replaced them with short pieces of fine wire.

I painted the road-wheel tires with a black wash and painted the tools, **16**.

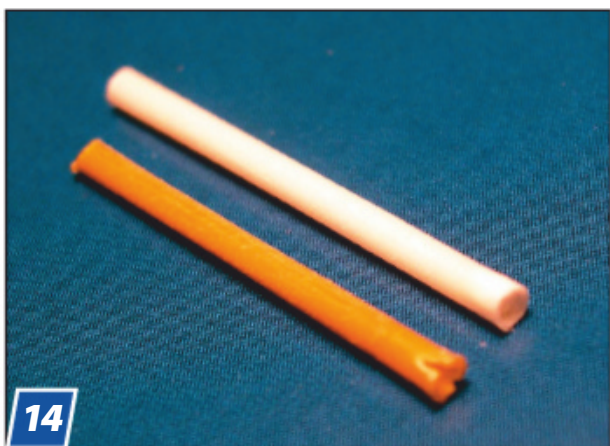
The figure has a Tamiya body with an Italian tanker head from Hornet.

I thought the kit's headlight lenses were too small, so I replaced them. First, I glued aluminum foil inside the light, **17**. Then I filled the light with tacky glue, a thick PVA adhesive used for crafts, **18**. It dries clear, looks realistic, and is cheap, **19**.

Weathering

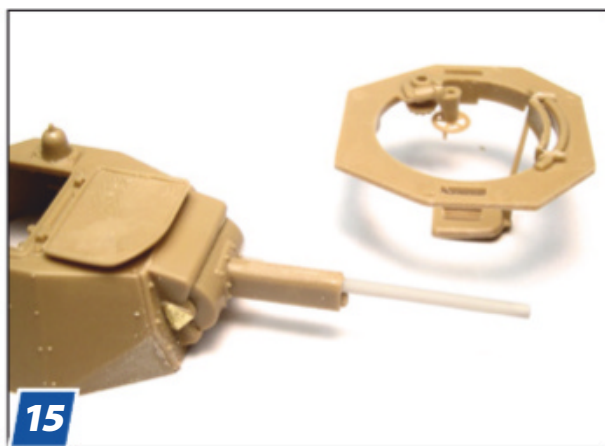
I use pastels and artist oils for weathering.

The pastels are cheap, art-store sticks ground to a powder with a file. I mix them with odorless turpentine and apply them selectively as a filter, not over the entire vehicle.



14

After damaging the gun barrel, I replaced it with styrene rod, drilled out the muzzle, then flared it with a needle to match the L6/40 gun.



15

Mounting the barrel on the turret completed major construction.



16

I primed and painted with Model Master enamels, then gloss-coated before applying the kit decals to model a tank in North Africa.



17

The kit's headlight lenses looked too small, so I replaced them. First, I pushed aluminum foil into the bezels ...



18

... then, I filled the light with tacky glue, a thick and inexpensive craft glue that dries clear.



19

Dried and weathered, the tacky-glue headlight lens looks the part.

I applied rust shades in wet glazes to the muffler and used slightly darker tones on the shovel blade. I mixed light desert sand-colored pastels with white artist oils and brushed on a thin layer to highlight prominent areas.

To apply a raw-umber wash, I first wet the area with clean turpentine. Then I use a fine brush to add thin paint around recesses and add streaks of color.

I never dry-brush my models. To my eyes, a dry-brushed finish looks OK from a distance — but put a macro lens on a camera and the model looks like a frosted cake. I've used this technique in the past and hate the way my older models look. I think it's easier and takes less time to add shadows and highlights with an airbrush, then fine-tune them with washes and filters.

Italeri's little L6/40 is a nice kit that builds up well out of the box — and sometimes that's just what the doctor ordered. A build like is a great way to practice the basic skills every model requires. **FSM**



Weathering with oil washes and pastels finished the L6/40. I spent about a month on this out-of-the-box build.

Step-by-step *desert weathering*



Challenger 2s used by the British during Operation Telic, the 2003 invasion of Iraq, suffered a lot of abuse and have the scars to prove it. I used pre-shading, washes, dry-brushing, and powdered pigments to give Tamiya's 1/35 scale model that war-weary appearance.

Giving Tamiya's Challenger 2 a beat-up look for Operation Telic

BY AARON SKINNER

In preparation for the 2003 invasion of Iraq, British army vehicles were sprayed with desert sand camouflage over the standard green and black. This lighter paint wore on edges and corners, giving heavy vehicles, such as the Challenger 2 main battle tank, a slightly tatty appearance. In addition, the heavy MBT churned up lots of sand and dust, quickly coating surfaces.

I wanted to recreate this look on Tamiya's 1/35 scale Challenger 2 (desertized) model. Here's how I did it.

Keep in mind that while these combined techniques work well for this modern AFV, they are also applicable to German and Allied armor in North Africa during World War II, as well as many vehicles used in the Arab-Israeli wars.



1

To prime the model, I airbrushed it with Tamiya NATO brown (XF-68). I started by spraying paint along seams and around hatches and fittings with a fine spray pattern to ensure the dark color covered everything.



2

Then I filled the larger areas with the airbrush on a wider spray pattern. This dark brown base coat will give the following desert sand color warmth while adding shadows in corners and recesses.



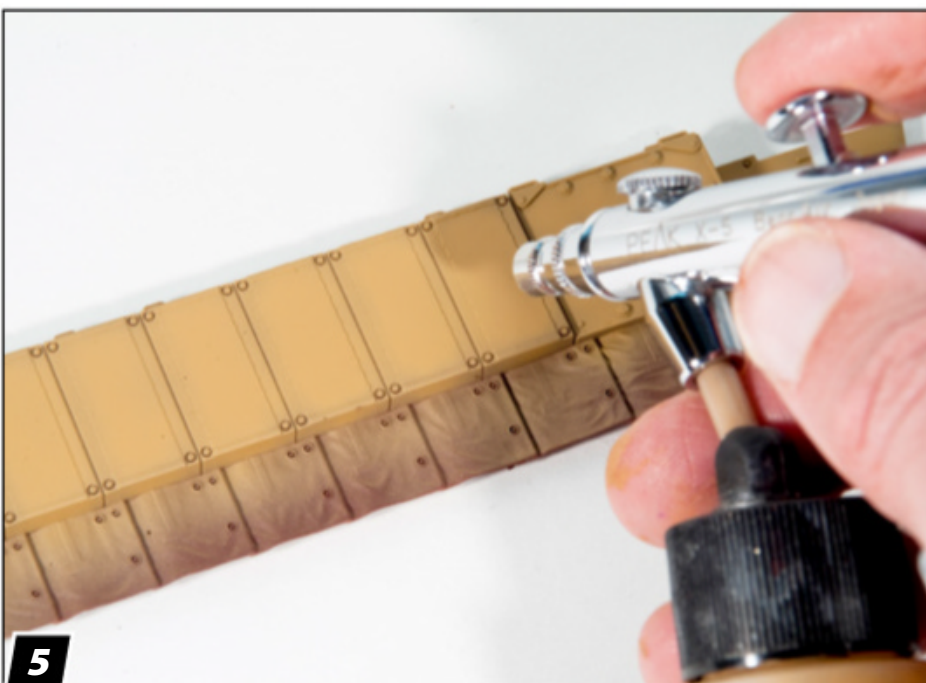
3

Although the kit recommends Tamiya desert yellow (XF-59), it didn't look yellow enough for British armor. I added lemon yellow (X-8) until it looked right. I started by airbrushing between details and in panel centers.



4

Then I widened the spray pattern and filled the panels but stayed away from panel lines and edges. Don't worry too much about trying to make each layer even; variation makes a monochromatic finish more dynamic.



5

Finally, I misted the entire surface with the body color. Build the effect up slowly; you want a hint of brown to show around panel edges.

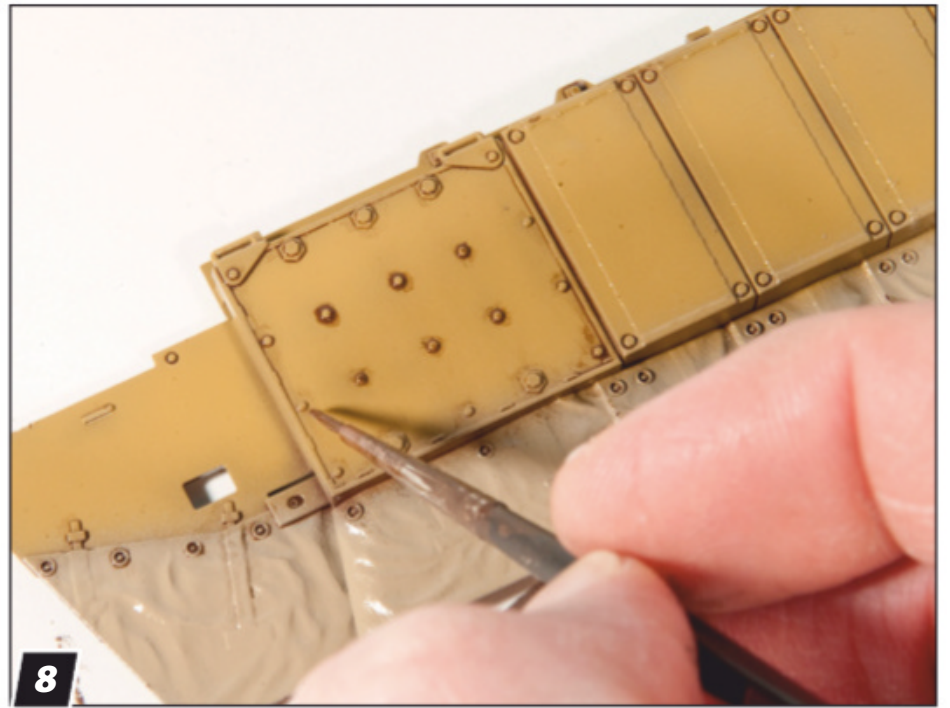


6

Challenger 2s in Iraq had sand skirts fitted under the armor side plates, and photos showed they were usually a lighter color than the sand camouflage. I mixed Tamiya buff (XF-57) and dark yellow (XF-60), then airbrushed the fabric areas. I held a strip of thin styrene to mask the armor. (Heavy paper would have worked also.)



To seal the paint and prepare the model for decals and washes, I airbrushed Tamiya clear (X-22) and let it dry for two days.



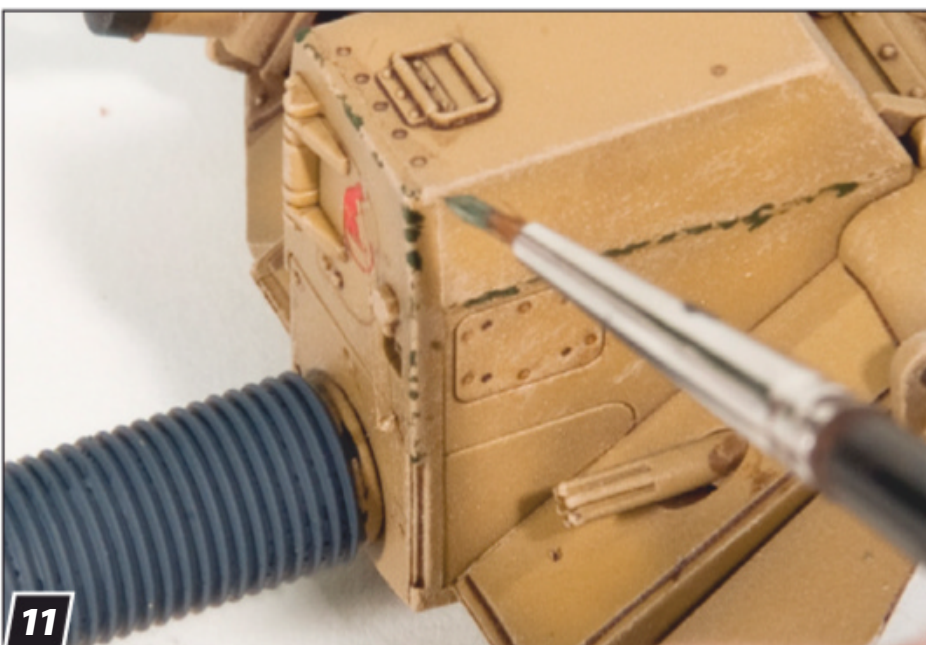
I mixed burnt sienna artist oils with Testors enamel thinner. I prefer pinwashes to overall washes, which tend to darken light colors too much. I touched a fine brush of the wash to panel lines, bolts, and other details, letting the thin paint flow around.



The density of the wash will diminish as the thinner evaporates, but if you feel there is too much on the model, you can remove it with a clean brush or a fingertip. Remember to stroke downward so that any streaking looks like natural water runoff.



After the washes dried, I applied a coat of acrylic clear flat. Then I dry-brushed on a mix of Model Master British Gulf light stone (No. 2137) and flat white (No. 1768) enamels. I prefer dry-brushing with enamels because they go on smoother; acrylics can turn gritty.



After assembling the model's components, I was ready to chip the desert yellow paint. I dipped a fine brush in Tamiya NATO green (XF-67), then lightly touched the brush to the model. Photos show damage to the paint at the corners of the turret and along the stowage-bin lids.

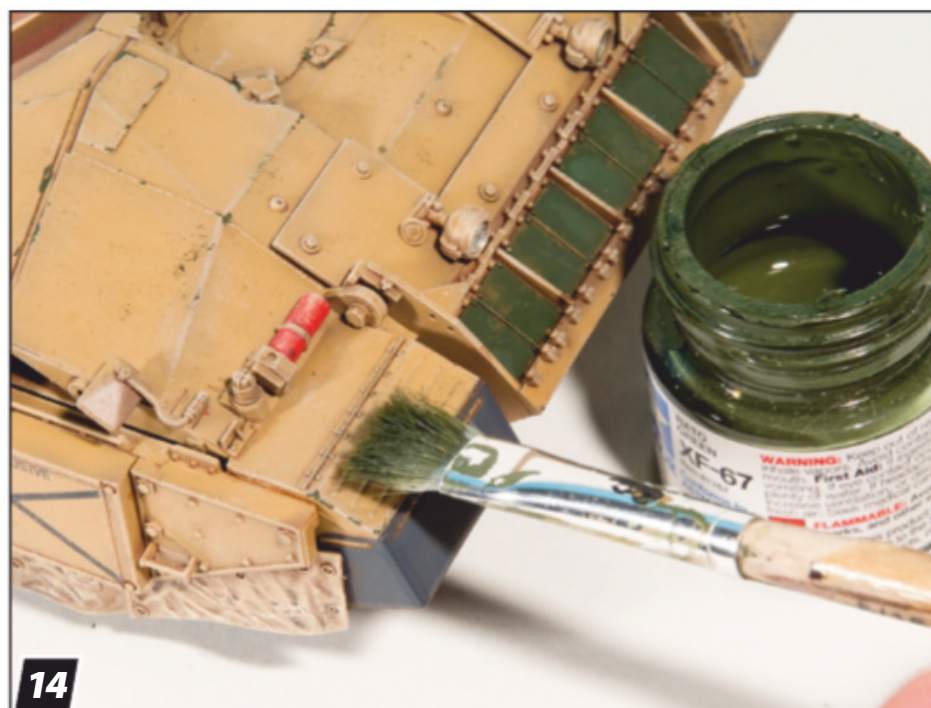


Dipping a small piece of foam in the paint and lightly touching it to edges creates fine chips. Blot most of the paint off the foam on a paper towel to avoid unsightly accidents.



13

Referring to photos of Operation Telic tanks, I painted the explosive-reactive armor blocks around the nose green. I also painted one of the mud flaps dark gray to make it look like it had been replaced in the field.



14

I dry-brushed a little NATO green around high-traffic areas such as the turret top and glacis plate to replicate wear from boots.



15

I airbrushed out-of-production Polly Scale dust (No. 414305), concentrating on the lower hull, then added a few drops of sand (No. 414302) to a mix of equal parts clear flat and thinner and airbrushed it over the tank's lower parts.



16

Next, I sprayed a thin mix of clear flat and Polly Scale dirt (No. 414308) low on the vehicle, especially around the exposed running gear.



17

The best way to replicate dust is with powdered pastels or pigments. Use a large, soft brush to apply the powder along ridges and in corners where it would collect. Blow the excess off the model between applications.



18

You can use alcohol, thinner, or water to fix powders to the surface and create effects like rain streaking and mud splatters. **FSM**

Now at www.FineScale.com

To see how Aaron masked and painted the Challenger 2's 24 road wheels, view the video, "Painting Road Wheels," at www.FineScale.com. Look for it under the "Videos" tab at "How to."



World War II color photos of desert P-40Ks taxiing for takeoff inspired Frank to build Hasegawa's 1/48 scale kit and dress it in the sand-over-azure scheme used in North Africa in 1942.

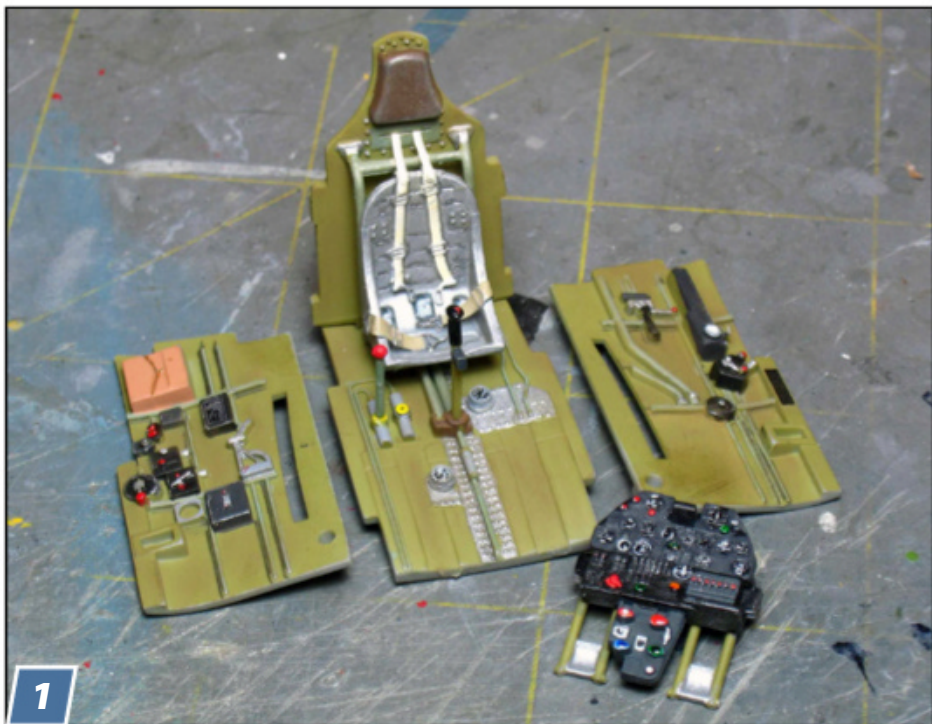
“First in the Blue”

Finish a USAAF P-40 Warhawk in North Africa colors

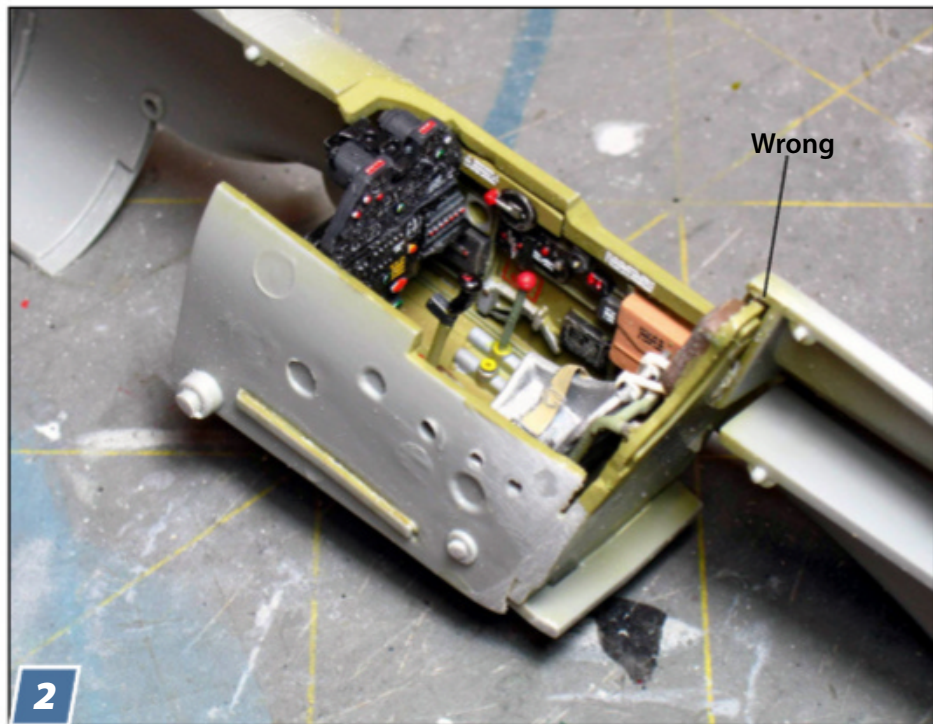
BY FRANK CUDEN

The China-Burma-India theater usually comes to my mind when someone mentions the P-40 Warhawk. Almost instinctively, I imagine an airplane with a threatening shark mouth painted on the lower engine cowl, Gen. Claire Chenault at the stick. I also remember the 1942 film *Flying Tigers* with John Wayne racking up enemy kills.

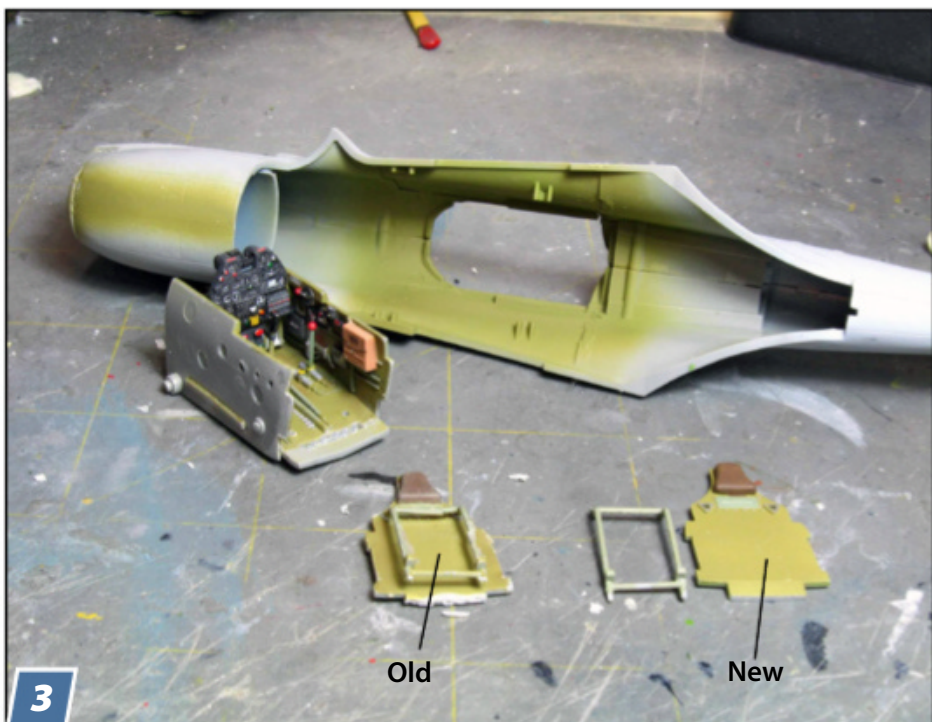
Rarely did I think of P-40s flying over North Africa. Then I saw color photos from World War II showing Warhawks doing just that, and I was hooked. I picked up Hasegawa's 1/48 scale P-40K (No. 09659) and SuperScale's markings for a P-40K-1 from the 64th Fighter Squadron, 57th Fighter Group, in North Africa, 1942 (No. MS481261) — one of the first U.S. fighters in action there.



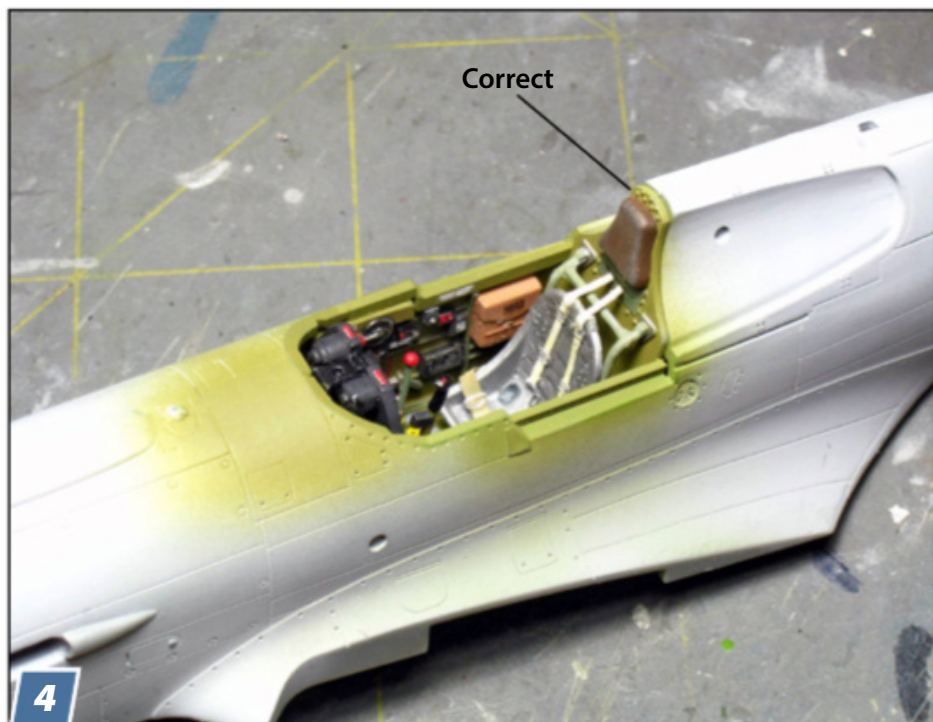
1 A coat of interior green covered most of the cockpit. Careful detail painting gave it a realistic look.



2 My ineptitude rears its head: I glued the rear bulkhead *inside* the fuselage halves, when it should sit *in front* of them.



3 Luckily, a friend had extra parts. I rebuilt the rear bulkhead, and, this time, glued the fuselage halves together, which informed the cockpit's final position.



4 At last, the cockpit is where it should be. What? Me read instructions? We live. We learn.



5 Construction proceeded with only minor filling at the wing roots. I sanded off the over-scale rivets on the panels just behind the cockpit.



6 One of my references showed a P-40K with a 500-pound bomb on the center rack. I happened to have an AeroMaster resin set (AMD 609C) in my spares.



7

I sprayed AeroMaster azure blue, lightened with a little Testors Model Master flat white, on the airplane's underside. I masked the wheel wells with spongy material from a gift-box liner.



8

Having weathered and nicked up the bomb a bit, I couldn't resist test-fitting it on its rack underneath the fuselage.



9

For the topside sand color, I began with Humbrol slate and continued to lighten it with white until I was close to what I saw in references.



10

Not all P-40s had the panels behind the cockpit painted the same as the other upper surfaces. I finished mine with interior green according to references.



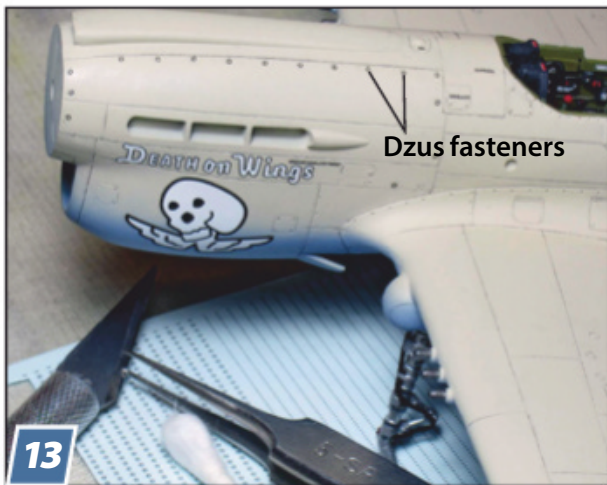
11

Once the antenna was mounted behind the cockpit, I applied the decals and accented panel lines with a drawing pencil.



12

I assembled the landing gear legs in their locator holes, then removed them for a coat of Alclad II aluminum. A little detail painting and thin solder for brake lines finished them.



13 I painted the wing guns Vallejo Model Color gunmetal gray (No. 70.863), then dry-brushed dark gray to dull the sheen. Individual Dzus-fastener decals adorn the cowl.



14 I substituted some Mike Grant rivet decals for the over-scale rivets removed from the panels behind the cockpit.



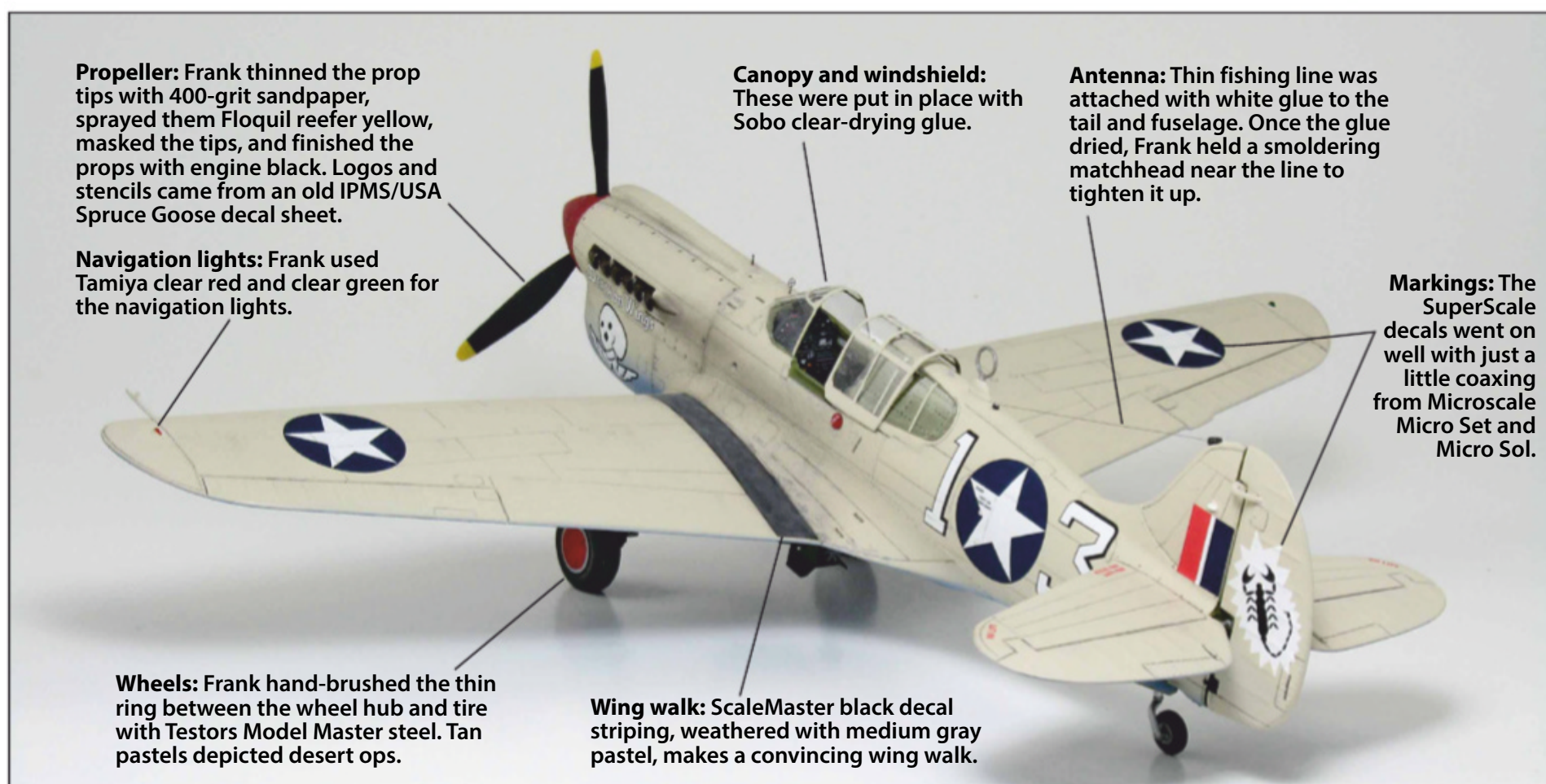
15 The exhausts were primed with Vallejo Panzer Aces dark rust (No. 302), followed by dry-brushed Testors Model Master leather and just a touch of Model Master steel for some glint.



16 Ultracast supplied the resin wheels (No. 48156). Vallejo black gray (No. 70.862) served for the tires; the wheels got a shot of Floquil caboose red.



17 I vacuum-formed new canopy parts from .015-inch K&B clear plastic. I masked the frames, painted them interior green, then followed with the overall sand color. The sand-colored strips on the rear cockpit windows appear in reference photos.



Hasegawa's kit is up to its usual standards — and if I had followed the instructions, I'd have avoided some work. Thankfully, I had no trouble after the cockpit fiasco, producing a satisfying example of a P-40K in North African desert camo. **FSM**



Carmine gave a Minicraft 1/72 scale B-24D a thorough going-over to model a Liberator of the Snow White Squadron, a famous participant in the low-altitude raid on the refineries at Ploesti in August 1943.

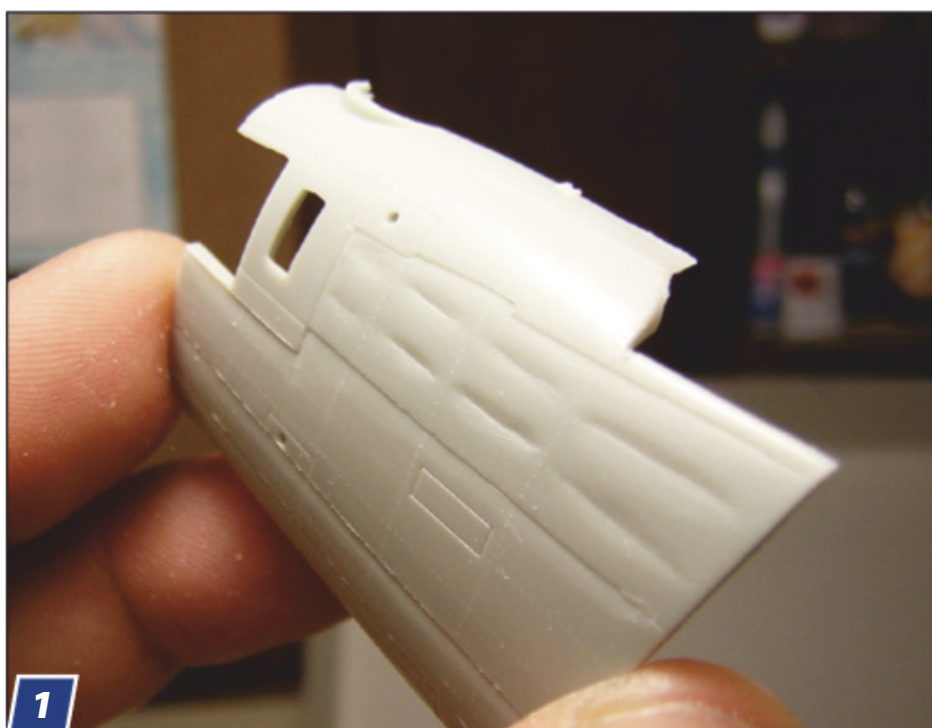
Modeling a **Minicraft B-24D**

Hand-painting and heavy weathering deliver a Liberator

BY CARMINE MARI

I had wanted to build a B-24 Liberator for a long time — but I didn't have the space for a 1/48 scale bomber, and the only 1/72 scale Liberators I knew were old kits.

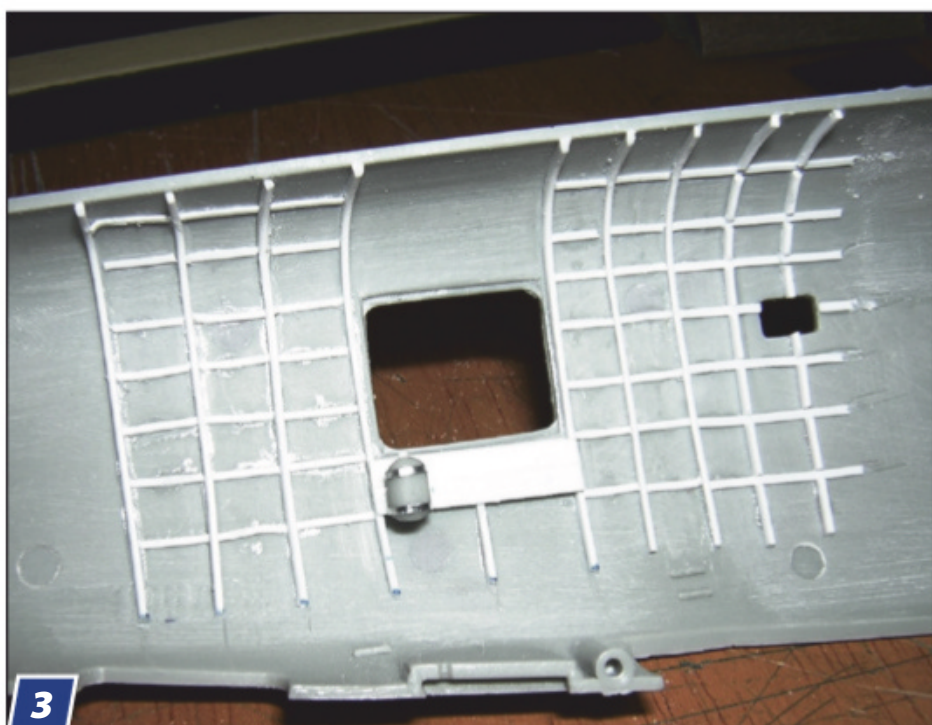
However, my friends talked me into giving Minicraft's B-24D a try. It dates from 1991, but it's not a bad kit. Still, I could see plenty of room for improvement.



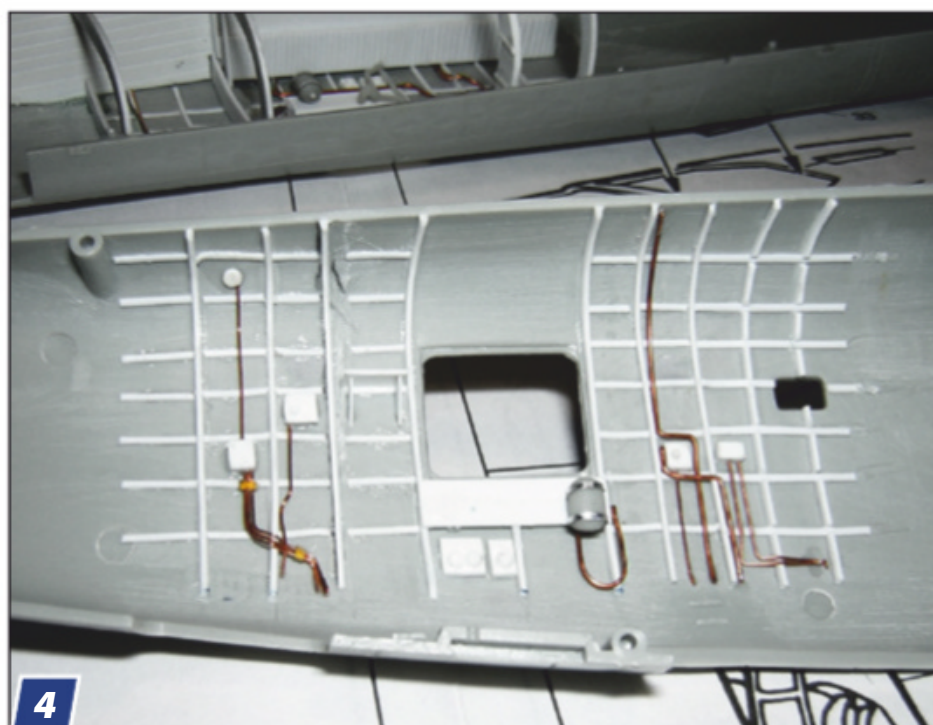
I thought Minicraft's molding made too much of the B-24 panel lines and not enough of the rivets.



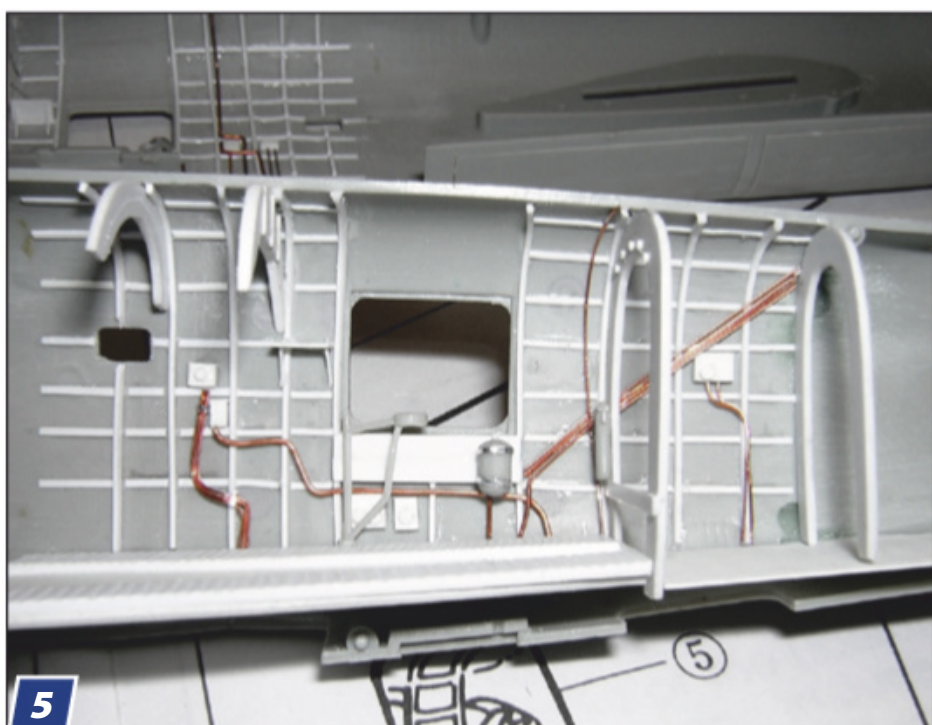
So, carefully following scale plans, I used sandpaper and a hobby knife to smooth out panel lines and engrave new rivets.



Knowing much would be visible, I scratchbuilt interior details. Here, strip styrene replicates frames and stringers in the fuselage.



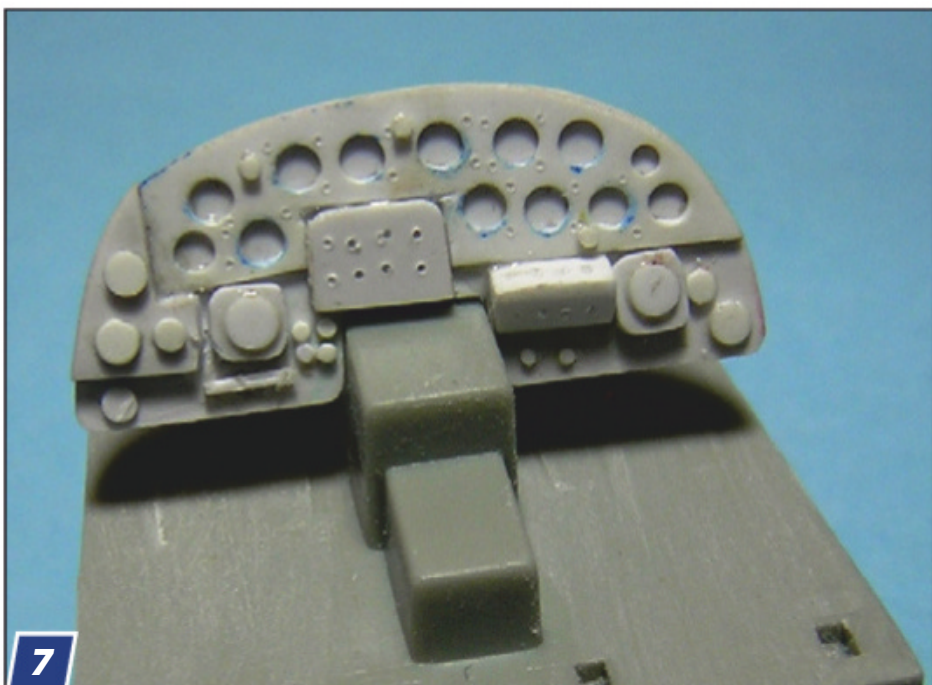
Copper wire, tin foil, and bits of scrap plastic replicate oxygen bottles and electrical conduits for additional detail.



To avoid wasting styrene, I fitted cardboard templates to the walls and used the templates as guides to cut sheet-styrene fuselage formers. Then I filed and sanded the formers to fit.

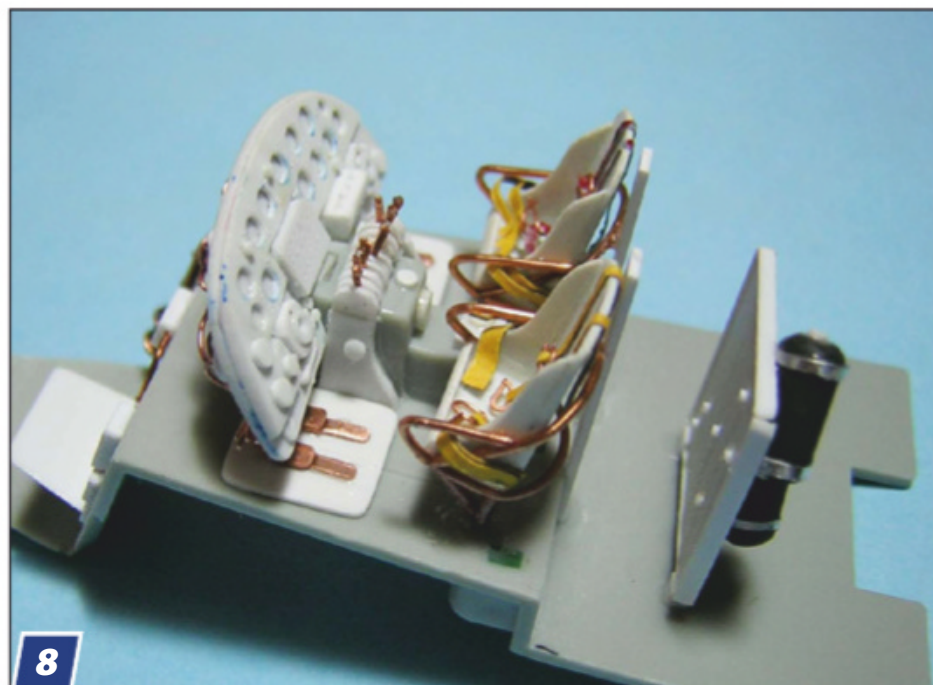


Carmine wanted to show more detail in areas he knew would be highly visible. He began by dressing up the front walls with styrene and sprue strips and scraps.



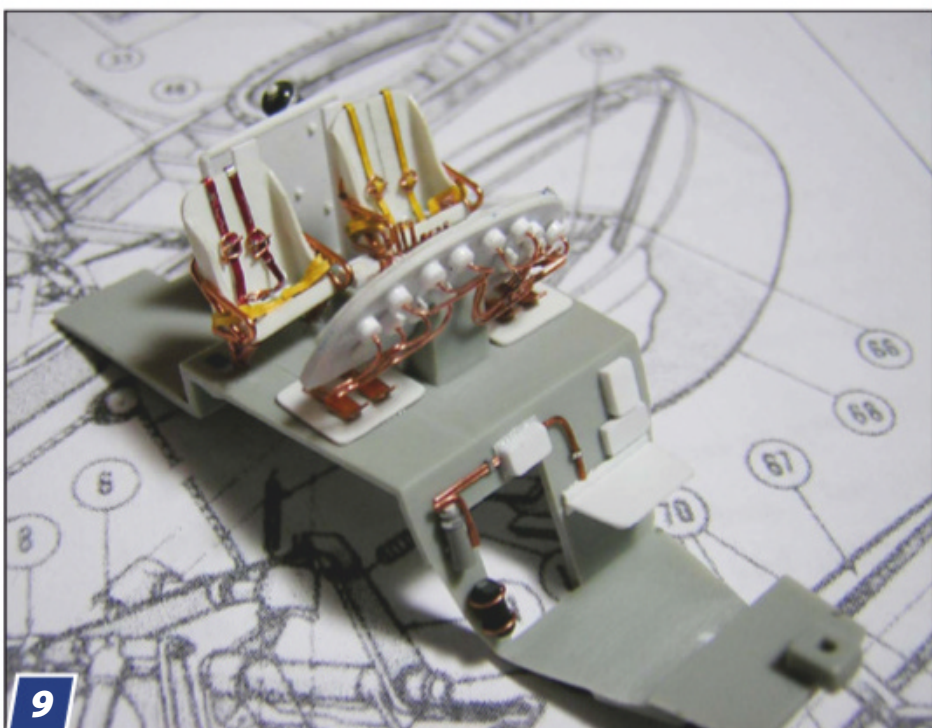
7

Bits of sprue and plastic scraps are added to the main instrument panel, which also has been bored and drilled to help replicate instruments, switches, and lights.



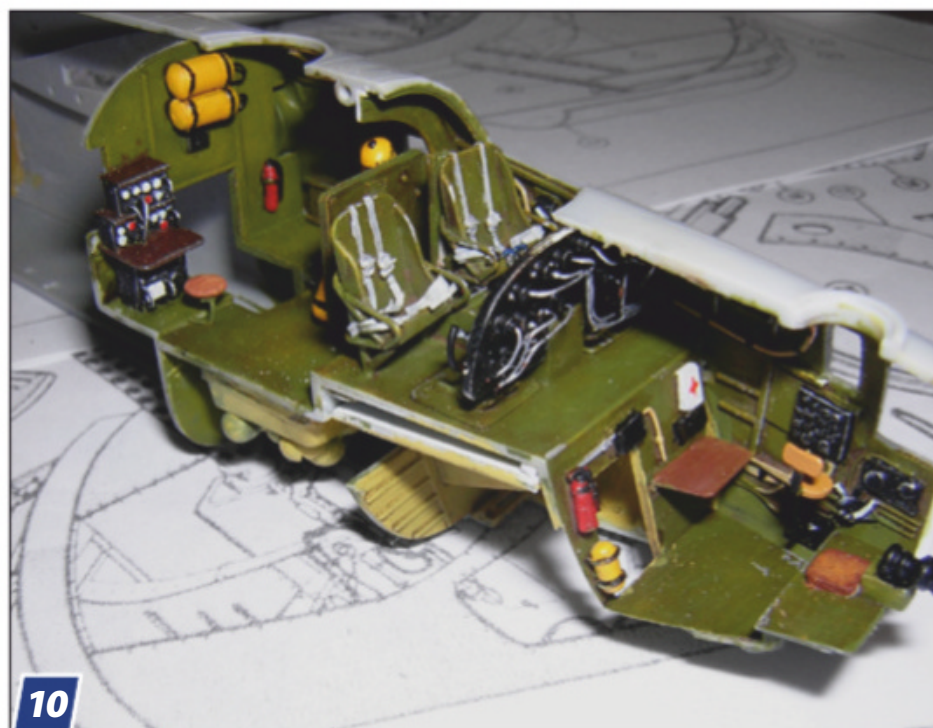
8

Masking-tape seatbelts and various gizmos made of copper wire and sheet begin to fill the cockpit. Scratchbuilding instead of resorting to the aftermarket is a great satisfaction.



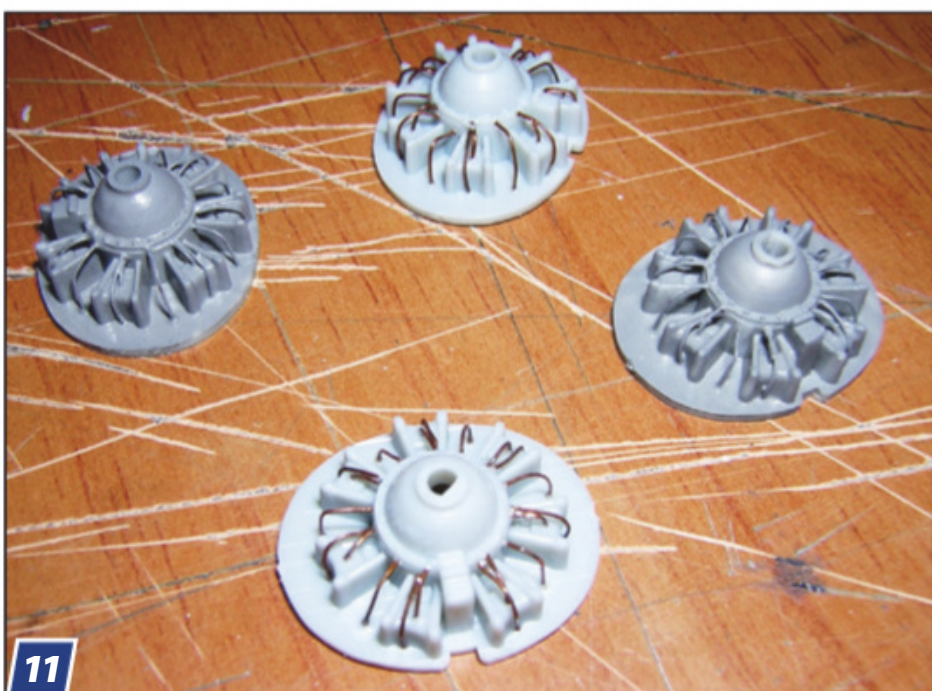
9

Working from numerous references, I loaded the cockpit with details. I even wired the instrument panel!



10

It's amazing what a little paint can do for the place. Up front features begin to look much more familiar after colors are applied.



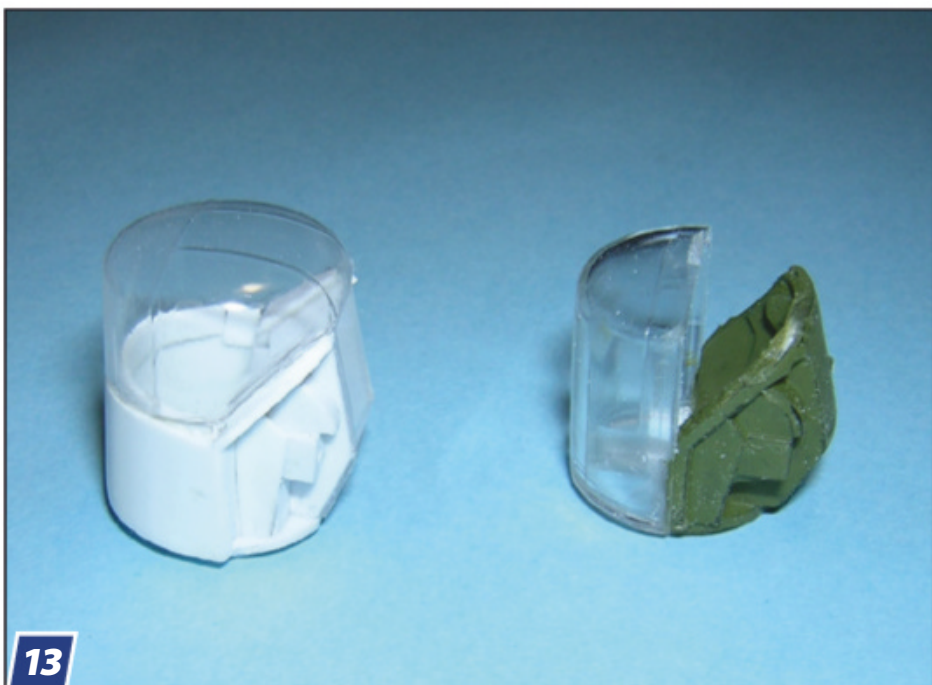
11

I knew the engines would be all but hidden by their cowls, but I still added wiring.



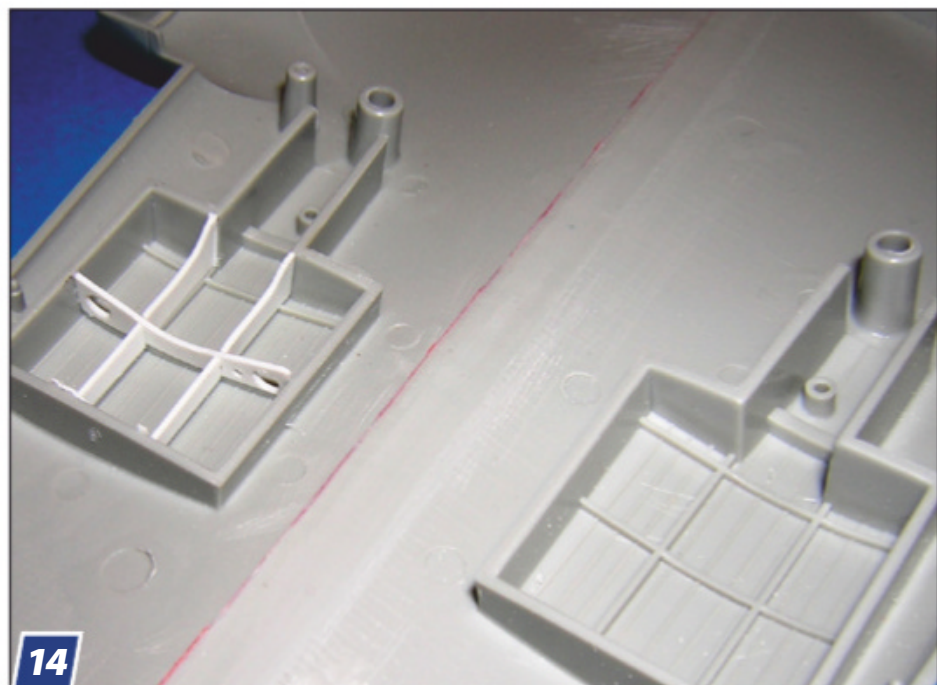
12

I streaked light base coats of blue and gray with flat black and modeled bare metal with matte aluminum, an effect he sometimes moderates with tiny streaks of black or gray artist oils.



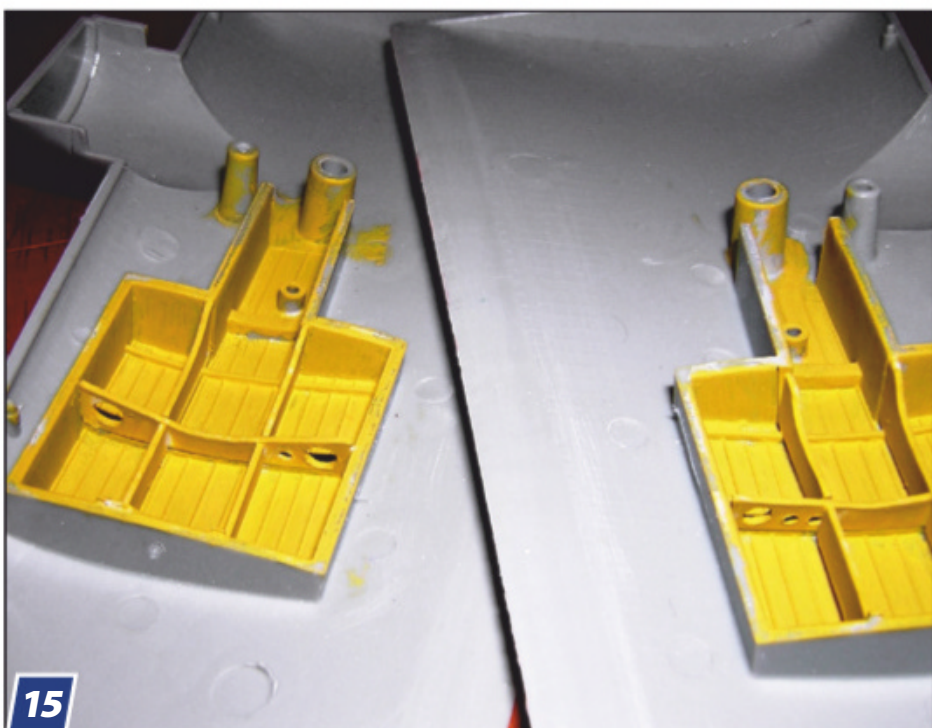
13

The kit's clear parts were replaced with vacuum-formed parts from Squadron. I scratchbuilt a rear turret (left) for a better fit than the kit turret (right).



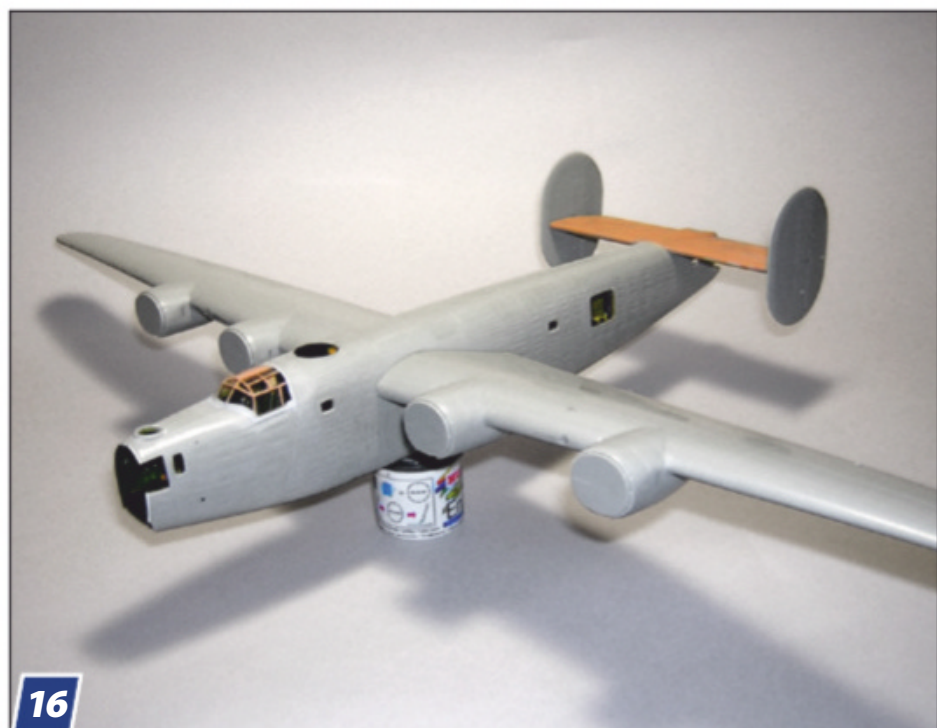
14

The landing-gear bays are shored up with sheet-styrene framing. I cut lightening holes in the framing (left).



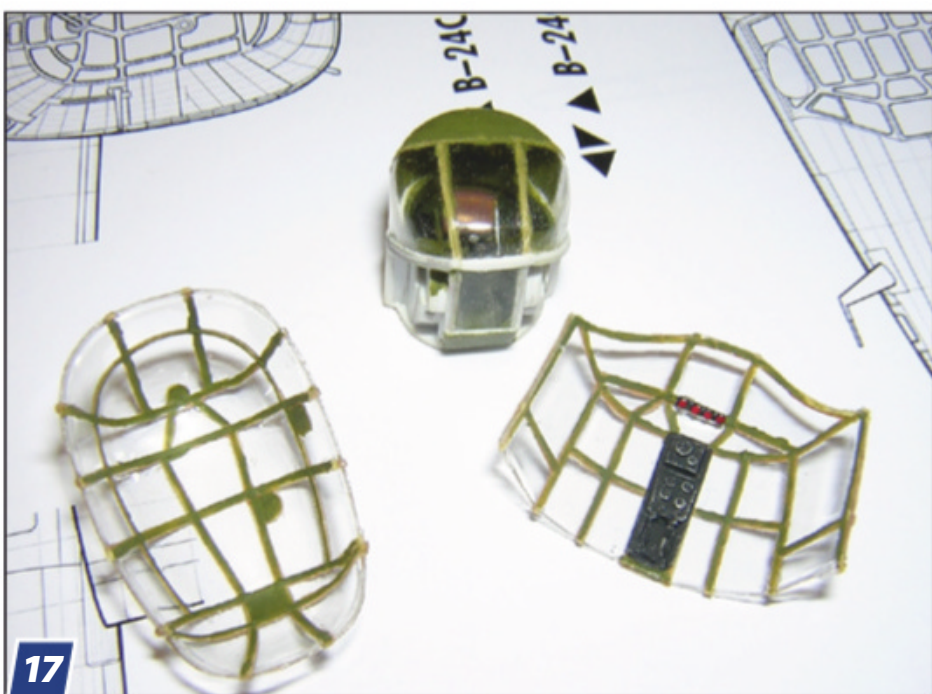
15

As elsewhere inside the plane, I used a yellow base coat to tinge the interior green top coat. I thinned the trailing edges of the wing halves before joining them.



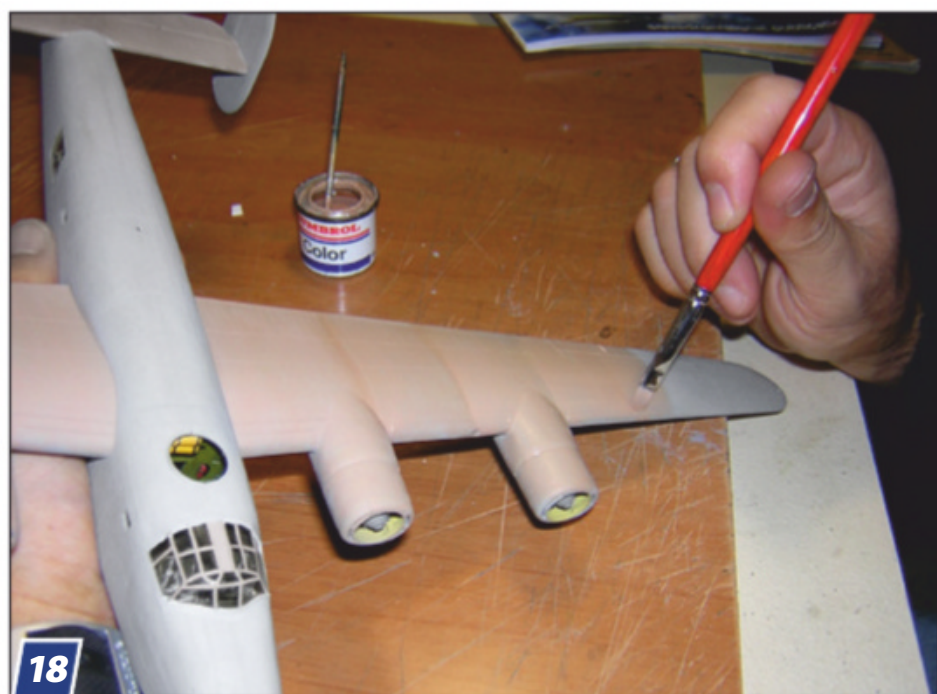
16

After weighting the nose with fishing sinkers, I assembled the plane. With loads of filler putty in the balance, go heavy with the counterweights to keep the nose on the ground.



17

I scratchbuilt overhead lights and a control panel for the canopy (right), then cut thin strips of Tamiya masking tape to replicate framing on the nose (left) and rear turret (center).



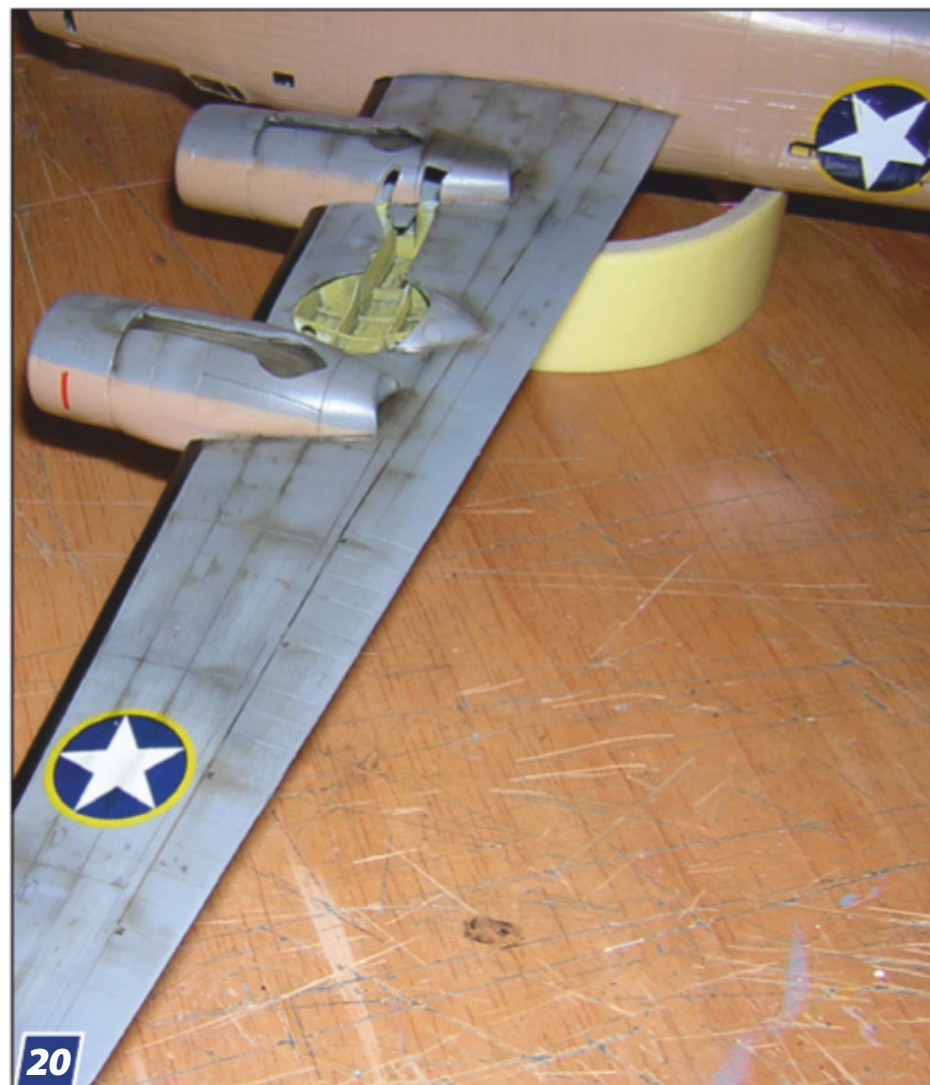
18

I chose desert pink (Humbrol No. 250, FS30279) for the top surfaces and a neutral gray underneath. He hand-brushed the enamels, thinning them with mineral spirits for a smoother, unhurried application. He recommends waiting five hours between coats.



19

After prepping decal areas with Microscale acrylic gloss, I used markings from a SuperScale "Snow White" sheet (currently out of production) to dub his B-24 *Sneezy*.



20

I selectively shaded undersides with a mix of raw umber and burnt sienna artist oils precisely applied with a fine-point brush and feathered with a flat brush.



21

To weather upper surfaces, I applied watery thin coats of acrylic glazing paint (a 1:10 mix of water and paint), starting with dark stains and faded paint ...

References

Consolidated B-24

Liberator, Vol. 1, K. Janowicz & A. Jarski, ISBN 978-83-7237-130-0, **Vol. 2**, ISBN 978-83-7237-141-6, **Vol. 3**, ISBN 978-83-7237-145-4

B-24 Liberator, B. Holder, ISBN 978-0-89747-489-4

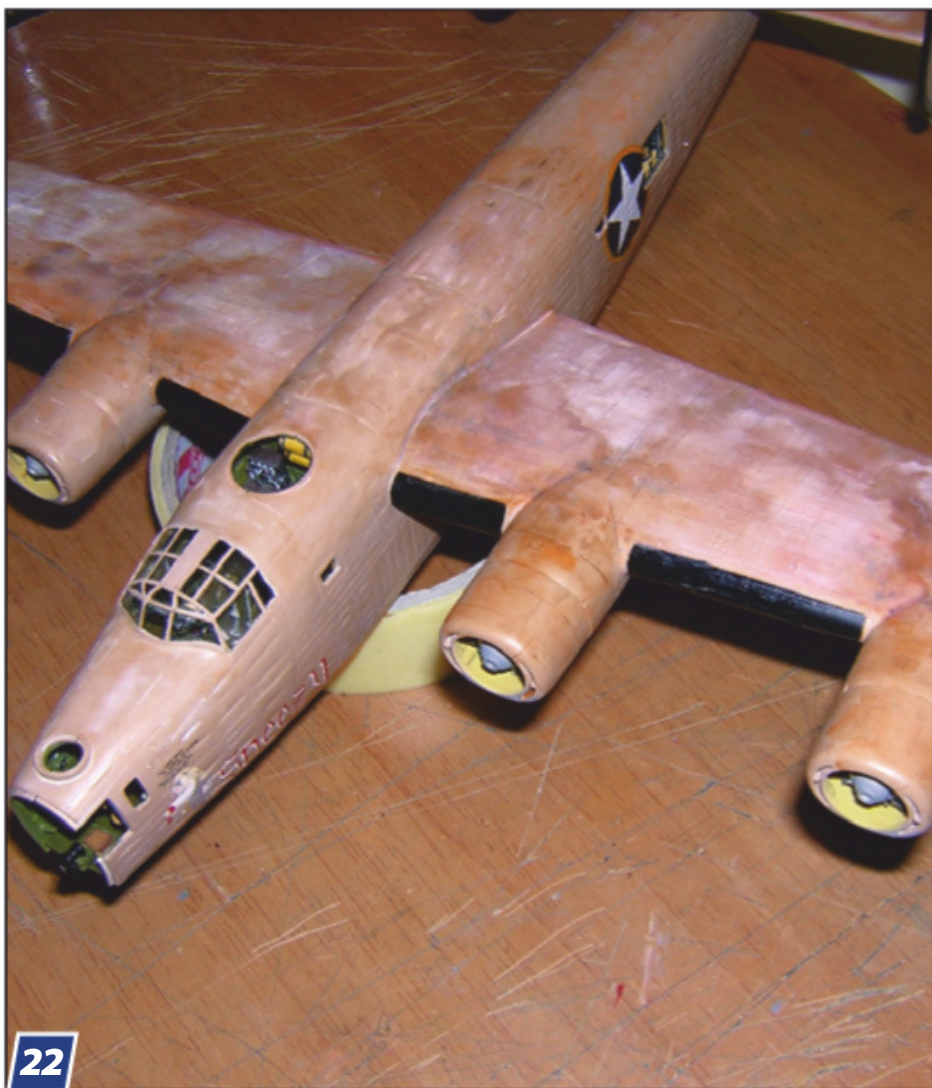
Combat Legend: B-24 Liberator, M. Bowman, ISBN 978-1-84037-403-2

Planes, Names & Dames, Vol. I, L. Davis, ISBN 978-0-89747-241-8

Detail & Scale: B-24 Liberator, B. Kinzey, ISBN 978-1-888974-17-1

Sources

Vacuum-formed canopies and turrets, Squadron, 972-242-8663, www.squadron.com



... adding assorted tints and shades to model stains and worn spots ...



... for a heavily weathered finish that evokes wartime photographs ...



... and helps tell just a small part of *Sneezy's* tale. **FSM**



Of the 334 StuG Ausf F/8s produced, only four made it to Tunisia in time to see combat. Bill reproduced one of those.

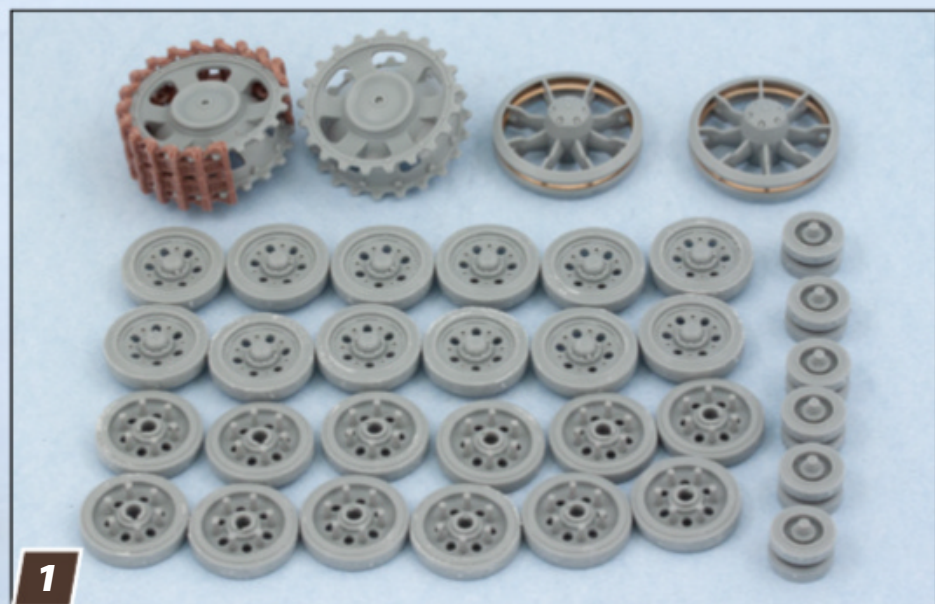
Model a rare African StuG

A few changes to Dragon's 1/35 scale kit make one of four vehicles in Tunisia

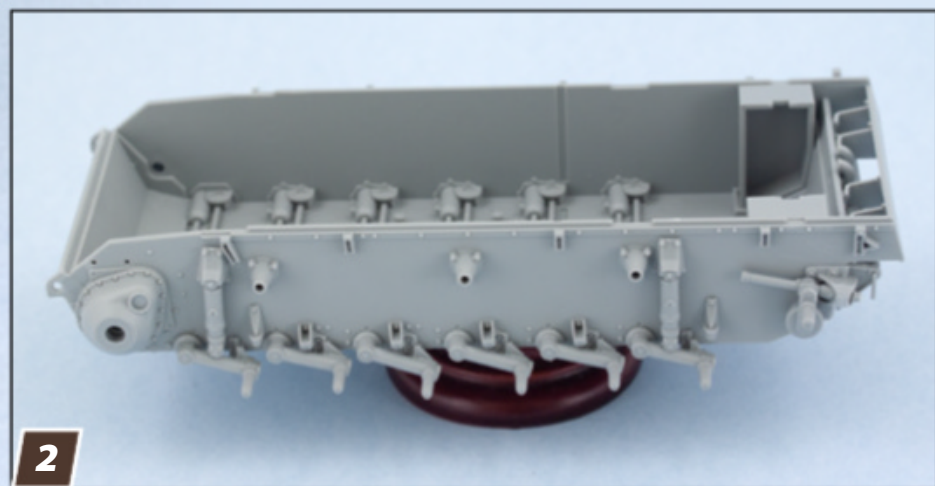
BY BILL PLUNK

The Sturmgeschütz III (or StuG) was originally designed to provide self-propelled artillery support for infantry as an assault gun with a short-barreled KwK 37 L/24 7.5cm gun in a casemate on the PzKpfw III chassis. As the war progressed, the StuG evolved into an antitank role and its armament changed to long-barreled StuK 40 7.5cm guns starting in 1942. Few StuGs saw combat in North Africa, but in January 1943 six Ausf F/8s were shipped to Tunisia 10th Panzer Division and designated StuG Battery 90. Two were lost at sea but the four made the crossing and served until Axis forces surrendered in May 1943.

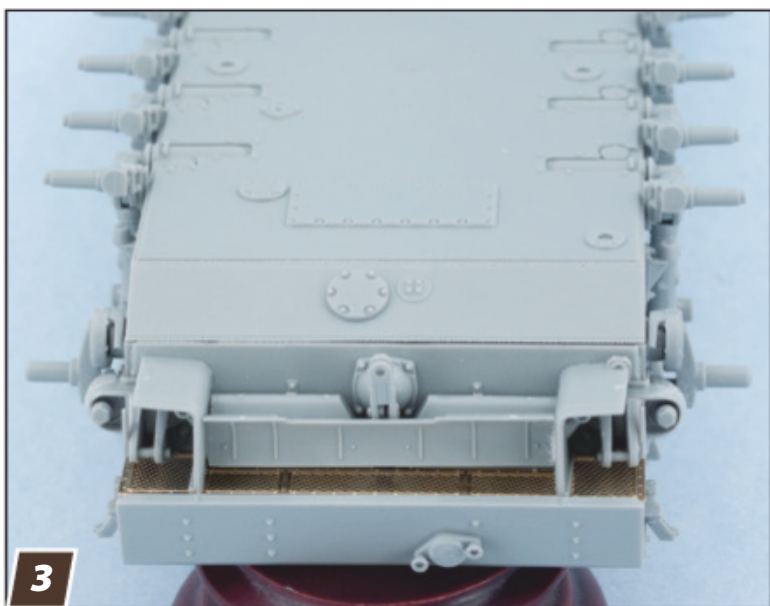
To re-create one of these rare vehicles, I selected Dragon's 1/35 scale StuG III Ausf F/8 Late Production kit (No. 6644). It comes with Winterketten tracks, appropriate for the frozen Eastern Front, not North Africa, so I replaced them with Modelkasten workable Panzer III/IV tracks.



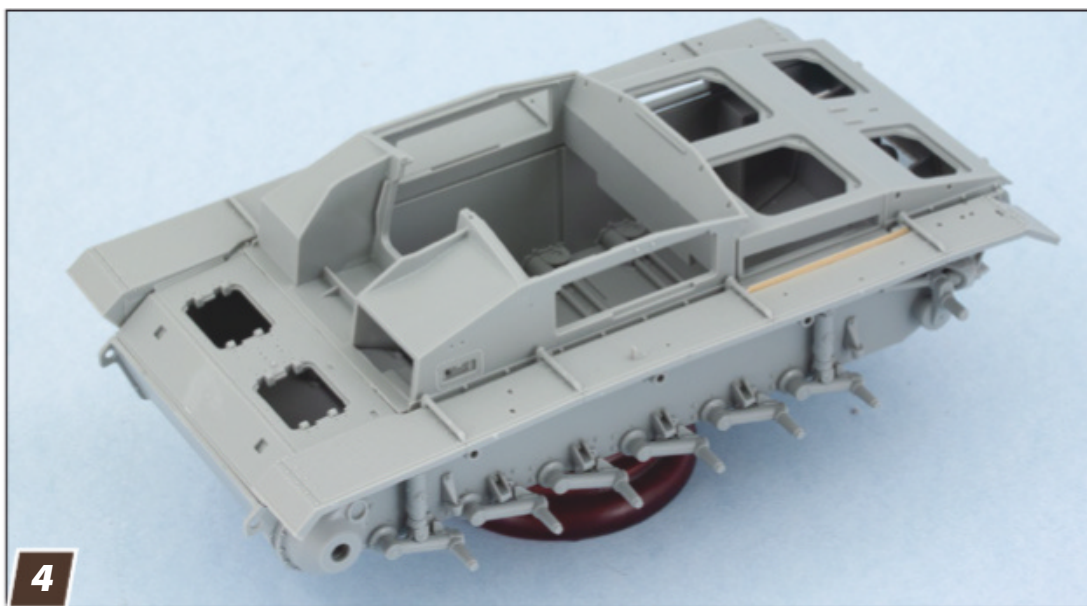
Before assembling the road wheels, sprockets, idlers, and return rollers, I sanded away mold seams. A run of 16 Modelkasten links ensured the fit and spacing of the wheels was correct.



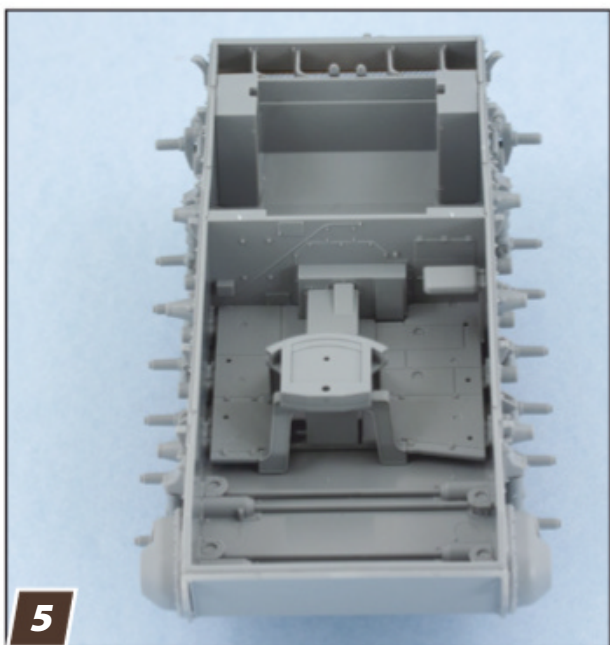
Next, I added the suspension elements including the final-drive housings and idler mounts to the hull. The suspension includes torsion bars that allow the middle four arms on either side to be workable by removing mounting pins for the swing arms. I clipped them off to ensure the wheels sit level and provide flexibility for weathering.



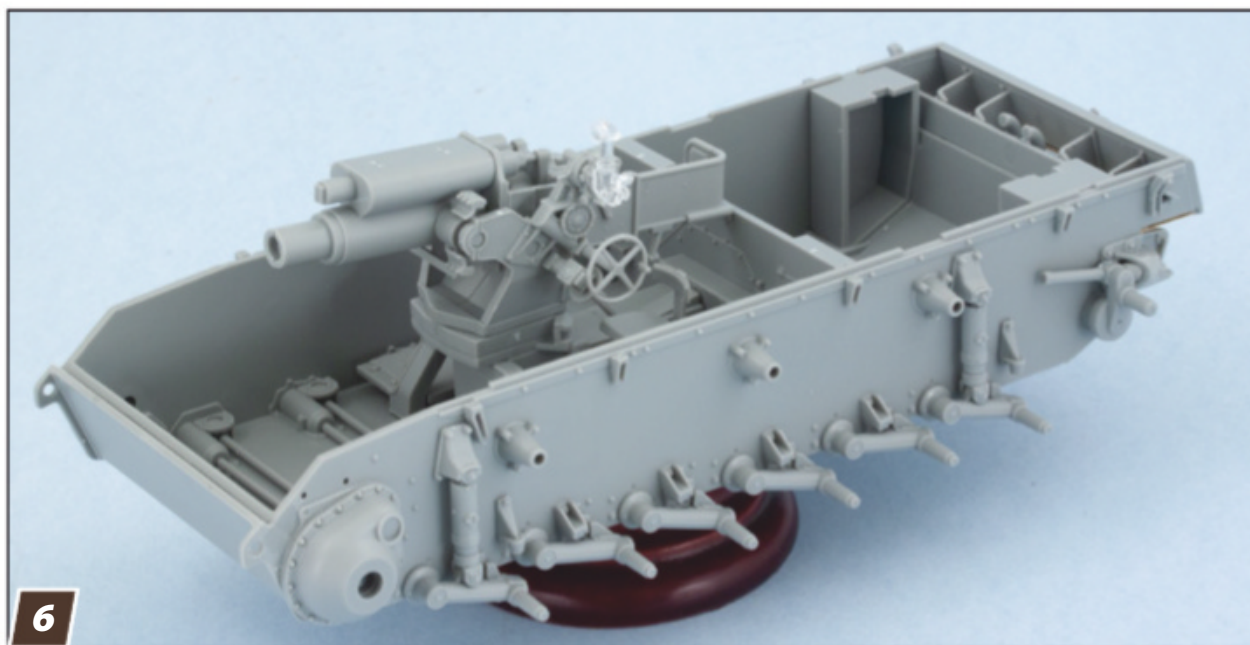
3 The rear plate, engine exhausts, air deflectors, and kit-supplied photo-etched metal (PE) screens completed the lower hull.



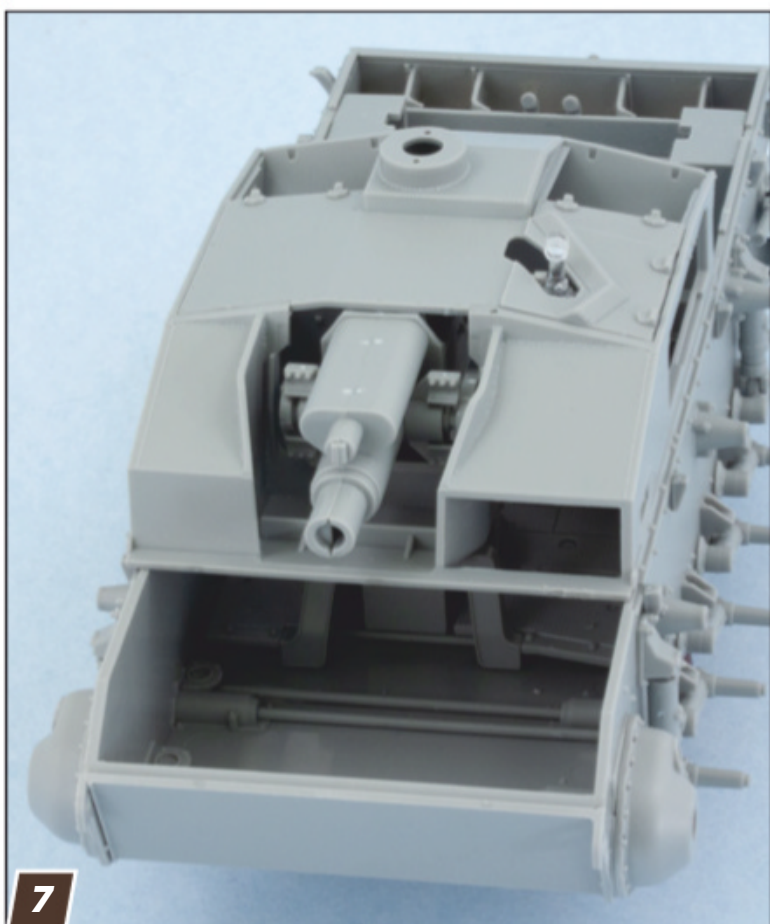
4 Assembling the upper hull proved tricky because of how the parts are engineered. I cleaned up the fenders and added only basic support details, then dry-fit them with the casemate, engine deck, and glacis to see how everything went together.



5 I also test-fitted the interior floor, firewall, and gun-mount base as they interact with the upper hull, leaving little room for error.



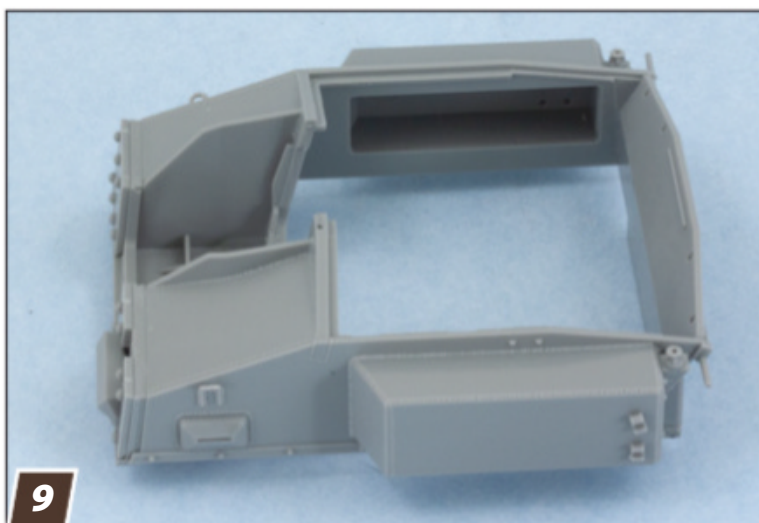
6 Next, I assembled the rear portion of the gun that will be hidden except for the sight that sticks up through an opening in the roof.



7 A quick test-fit of the casemate aligned the sight and ensured everything would play nice at final installation.



8 The gun barrel and mantlet go on after the gun mount is permanently in place; a test ensured the barrel was aligned and ruled out fit issues.

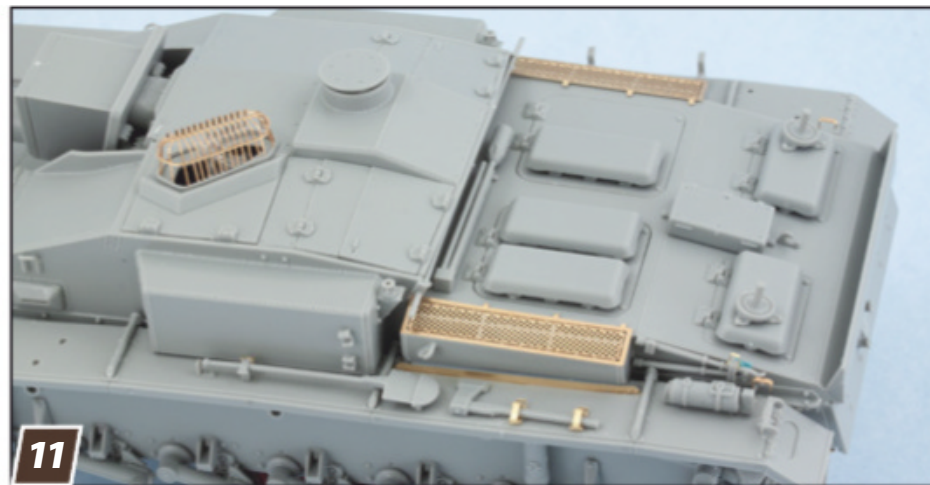


Last but not least, the casemate was assembled but I left off the roof plate to allow for the gun's installation.



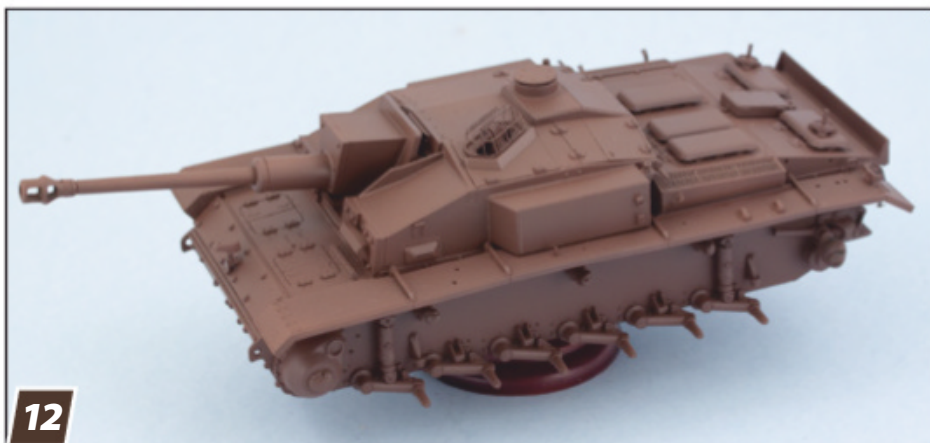
10

Working quickly, all of the jigsaw pieces that makeup the upper hull were installed and allowed to set before I added remaining details, including crew hatches and elements of the engine deck.



11

I checked the placement of tools using poster putty. I replaced the molded-on clamps for the ax with PE and used Griffon PE handles in place of molded handles where appropriate.



12

In preparation for camouflage, I primed the StuG and still separate suspension elements with Testors Model Master Italian dark brown (No. 2111). Model Master enamels were used unless otherwise stated.



13

Using flat black (No. 1749), I pre-shaded weld seams, hatch outlines, and other details to add shadows and depth to the finish.



14

Then, I applied Afrika braun (No. 2102) in thin, airbrushed layers to build up the camouflage gradually and not overwhelm the pre-shading.



15

After airbrushing the road wheel tires with gunmetal (No. 1795), I used a circle template to mask and paint the hubs with Afrika braun.



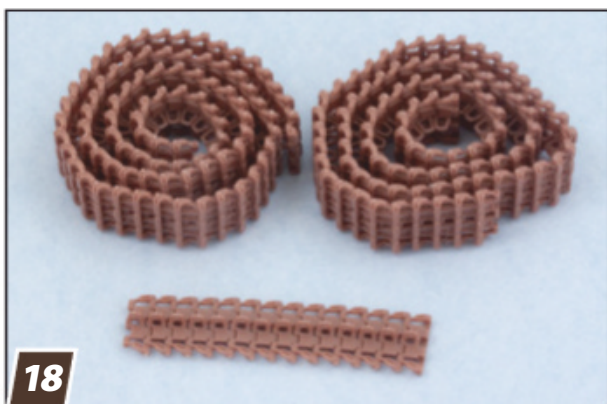
16

For the late North African disruptive camouflage, I airbrushed freehand splotches of Afrika dunkelgrau (No. 2103) to cover about a third of the surface.



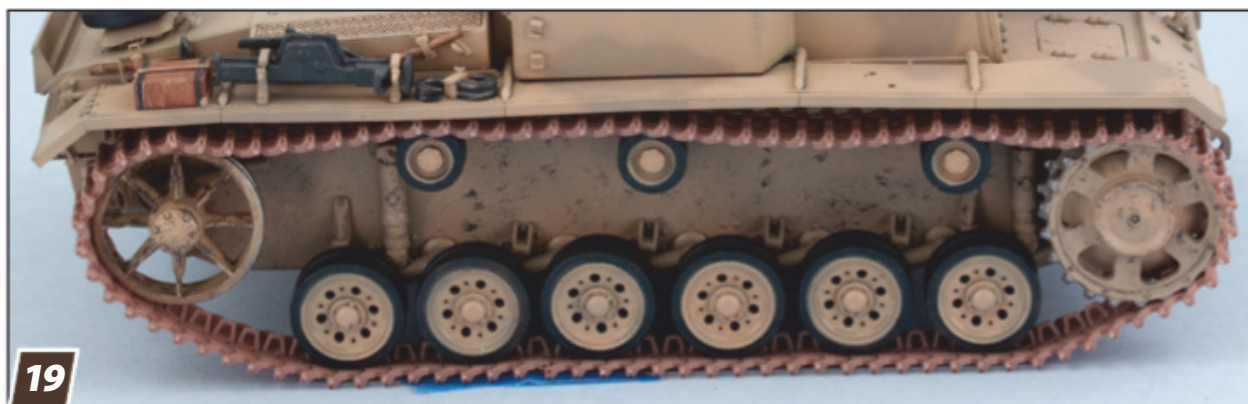
17

I painted metal tools with Metalizer non-buffing gunmetal (No. 1423) and lightly dry-brushed with steel (No. 1780). A mix of equal parts light gray (No. 1732) and Panzer dunkelgelb (No. 2095) finished wood parts.



18

I used the jig provided with the Modelkastern tracks to construct two runs of 93 links each and a short spare track run of 14 links.



19

I added chipping and scuffing to the sprockets, idlers, and lower hull by stippling on Panzer schwarzgrau (No. 2094). The contact surfaces of the sprockets and idlers were painted with Metalizer non-buffing steel (No. 1420) and dry-brushed with burnt umber (No. 2005).



20

Between airbrushed layers of Pledge Floor Gloss (PFG), I applied the few decals required — crosses on the sides and rear as well as an "A" for the individual vehicle in the battery.



21

Weathering desert camo requires a slightly different approach. I started with an overall wash of thin Panzer schwarzgrau applied to the entire vehicle.



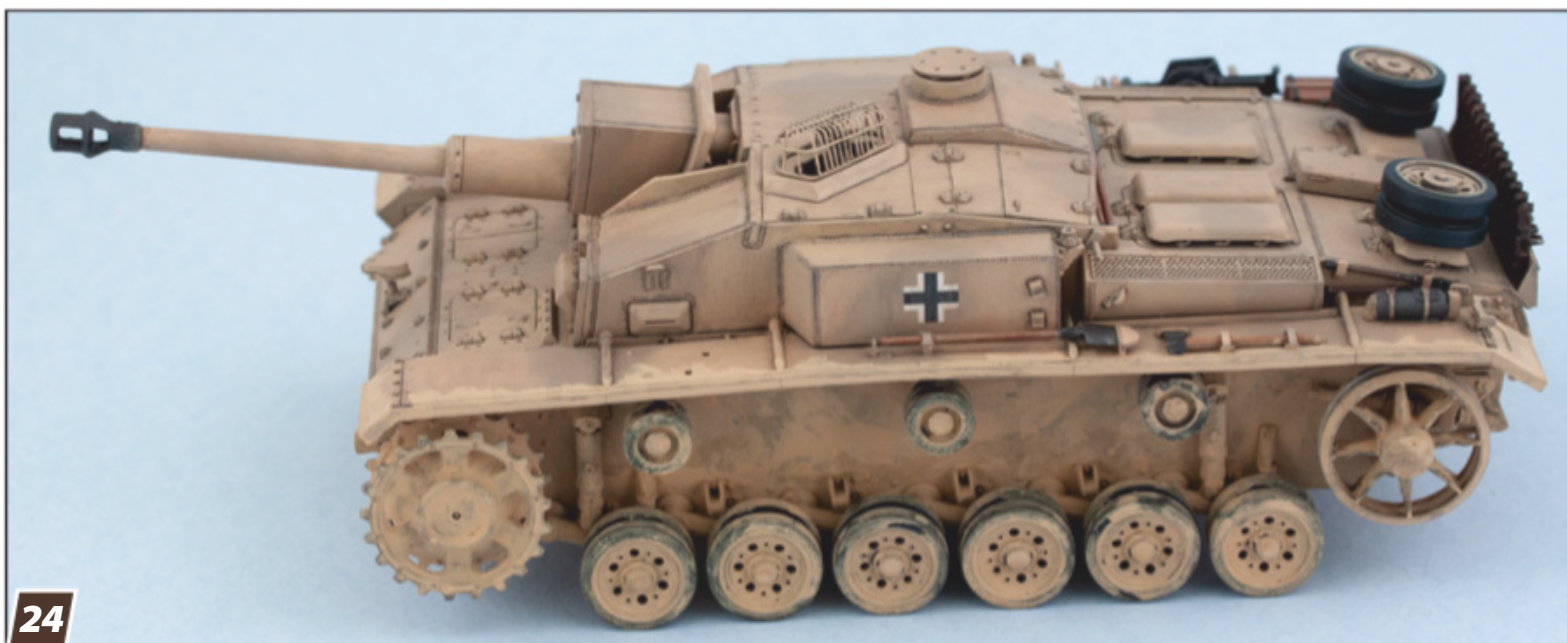
22

Dot-filters of raw sienna (No. 2008) and flat white (No. 1768) were applied to the upper hull and fenders only. Enamel dots dry quickly so I worked one small section at a time, using a square-tip brush slightly damp with thinner to blend the dots together for fading and streaking.



23

To pop details, I flowed a burnt umber pinwash into surface detail including weld seams and fasteners with a 10/0 brush. Excess was carefully removed or refined using the same brush and clean thinner. The next day, I sprayed lusterless clear lacquer (No. 1960).



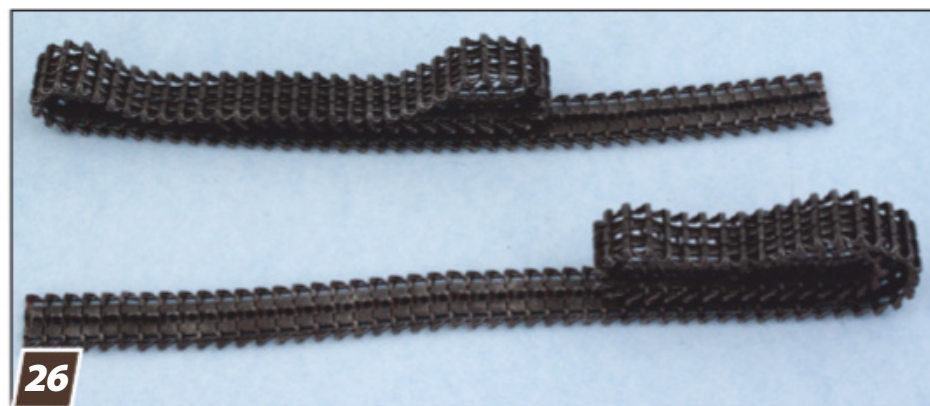
24

I added Abteilung 502 Gulf War sand pigment (ABTP037) to tap water and a drop of dish soap, then liberally applied the wet mix over the lower hull and suspension as well as the front and rear plates and a little here and there on the fenders.



25

After the pigment had air-dried, I removed excess with stiff-bristled brushes until the desired look was achieved.



26

I base-coated the tracks with burnt umber, then dry-brushed the runs with steel.



27

The same wet pigment mixture used in the hull was applied to the tracks but in a much lighter fashion to avoid getting pigment between the links and preventing them from moving freely.

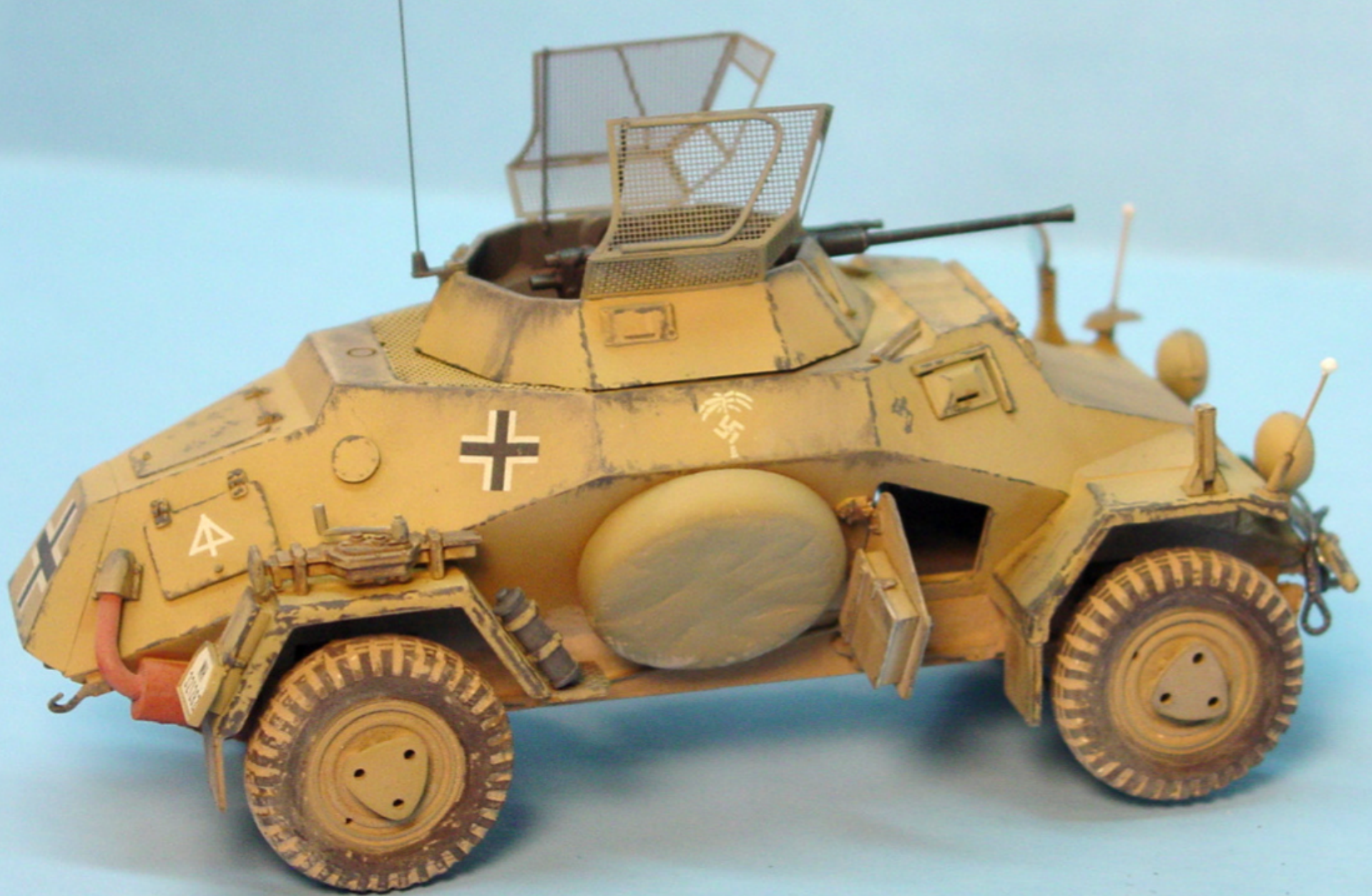


28

As a final detail, I replaced the kit's stiff braided-steel tow cables with Size 20 fil d'ecosse crochet thread. I dipped the thread in PFG to stiffen it, prevent fuzzing, and accept paint, then hung it to dry.

I cut two pieces of thread 110mm long and attached the kit's cable ends before painting them with Metalizer gunmetal. After gluing the ends to the fenders, I carefully draped and adjusted the rest of each cable through the guides and around other fender gear. A light dusting with leftover hull pigment mix blended the cables with the rest of the model. With that, Gun A of StuG Battery 90 was ready to take up position. **FSM**





Except for the grenade screens on the turret, all of the details Ernest added to his model came from his spares box or were scratchbuilt.

Improve Tamiya's **SdKfz 222**

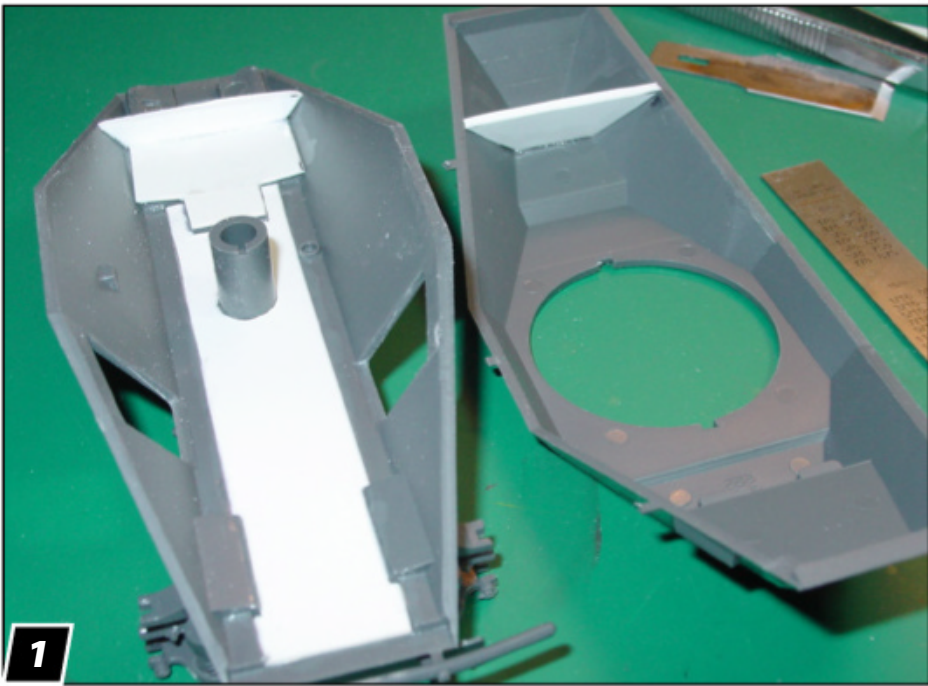
Simple, inexpensive fixes finish a vintage armored-car model for North Africa

BY ERNEST URTIAGA

Tamiya's 1/35 scale SdKfz 222 (No. 35051) has been around since 1975 and, although it's been surpassed by kits from HobbyBoss and Tristar that offer more interior detail, it still builds into a respectable replica. I hauled mine out of my stash, where it had resided since the late 1980s, with the aim of building it without relying on aftermarket parts. There are several photo-etched metal (PE) sets available for the kit, but they can quickly double or triple the cost of the project.

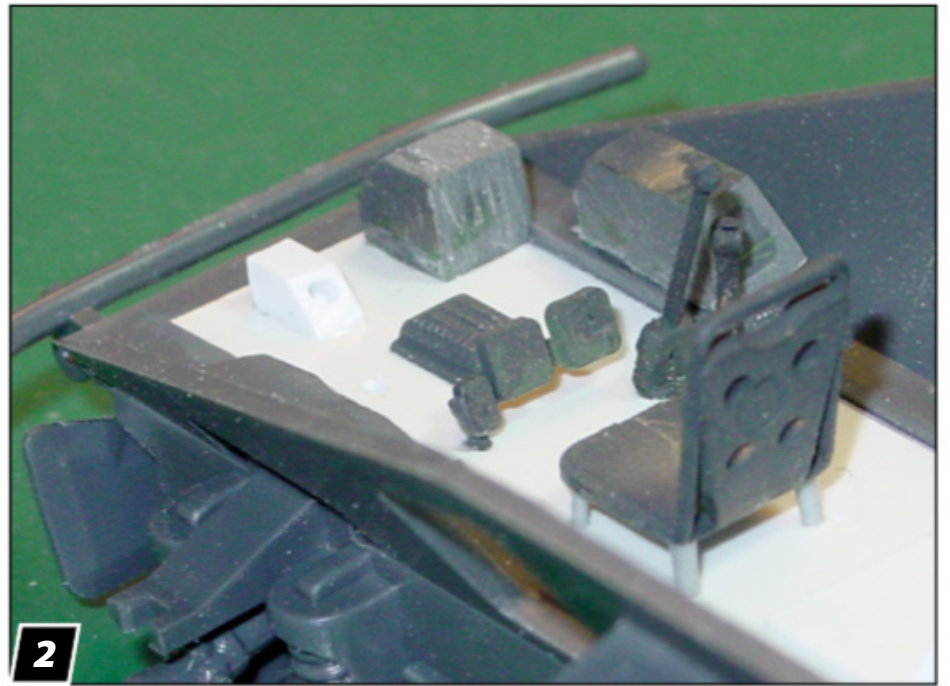
So, I opted to scratchbuild the interior and add a few details outside; a little fiddling with stretched sprue, copper wire, and styrene goes a long way.

With references in hand, I began.



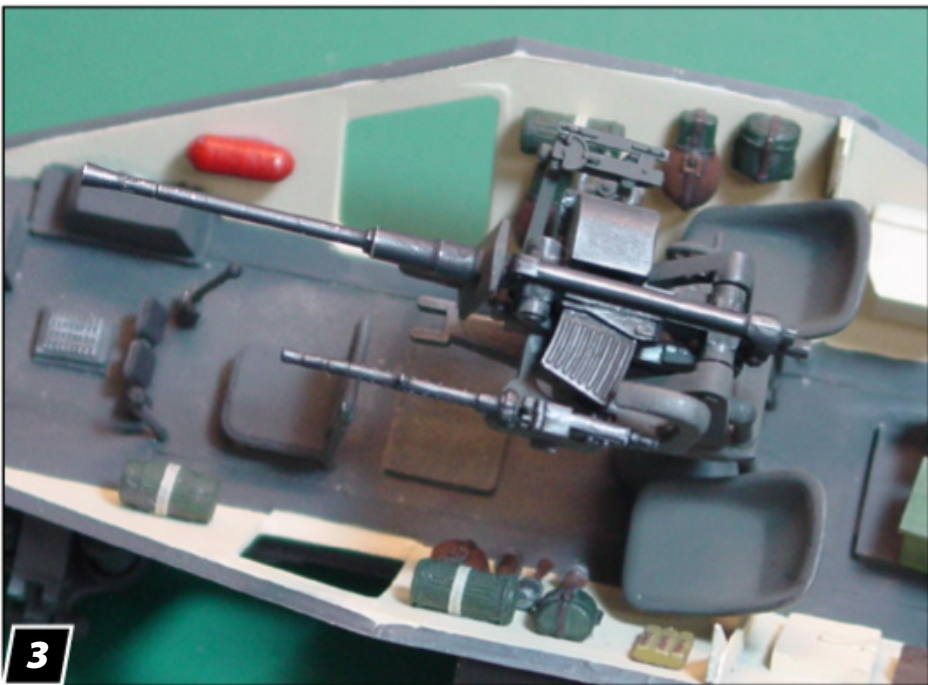
1

I measured and fit Evergreen sheet styrene for the floor; a hole was drilled to fit around the main gun mount. While I was at it, I added the rear wall, also made from sheet styrene.



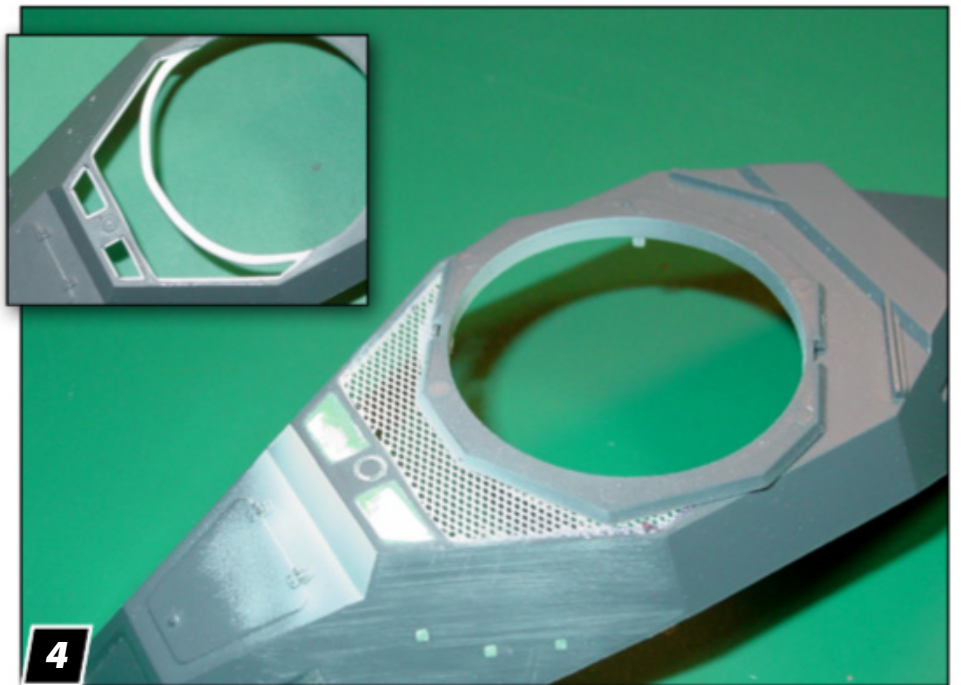
2

The seat and pedals came from my spares box. The seat legs are pieces of stretched sprue glued in place and trimmed to the correct height. Stretched sprue provided shift levers, the battery is a styrene block.



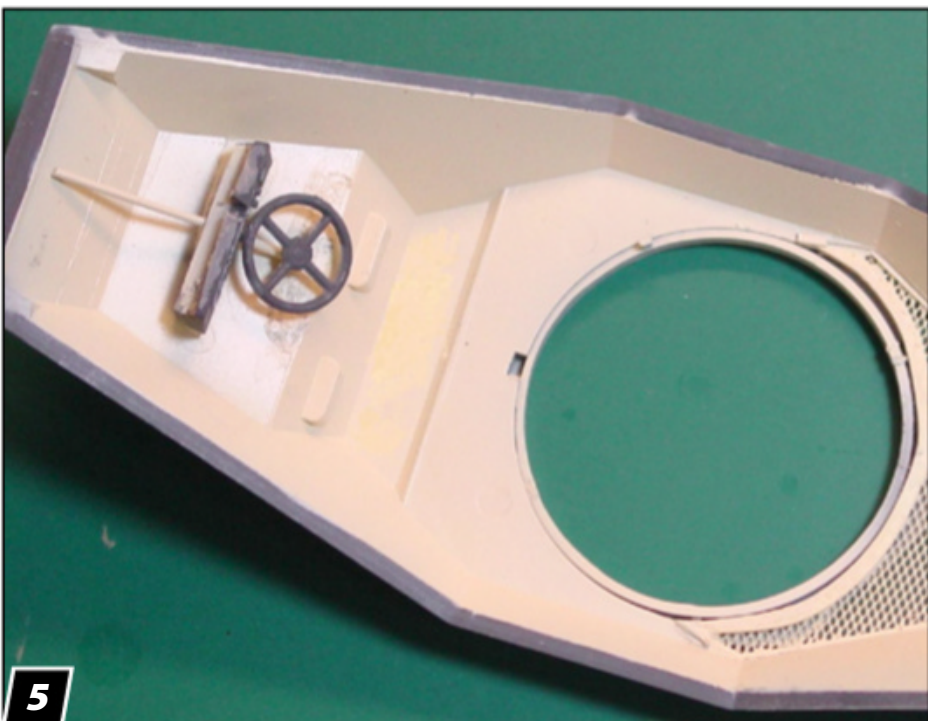
3

I painted the walls Testors Model Master panzer buff (No. 4805), the floor, seat, levers, battery, and pedals panzer gray (No. 4795). The main gun was replaced with turned metal, one my few concessions to aftermarket parts. But it was given to me by a friend, so no extra cost!



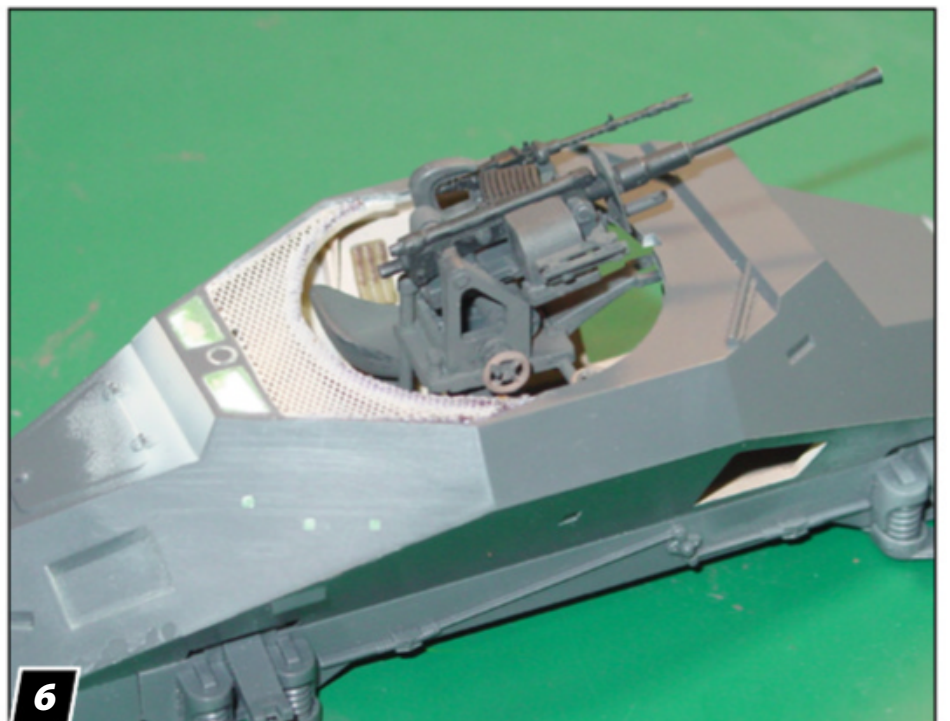
4

I opened the large vent aft of the turret, then added a strip-styrene frame to support metal screen from my spares box. The kit errs in having two small vents just aft of the main screen behind the turret. I didn't catch it at first and cut them open; filler fixed the mistake.



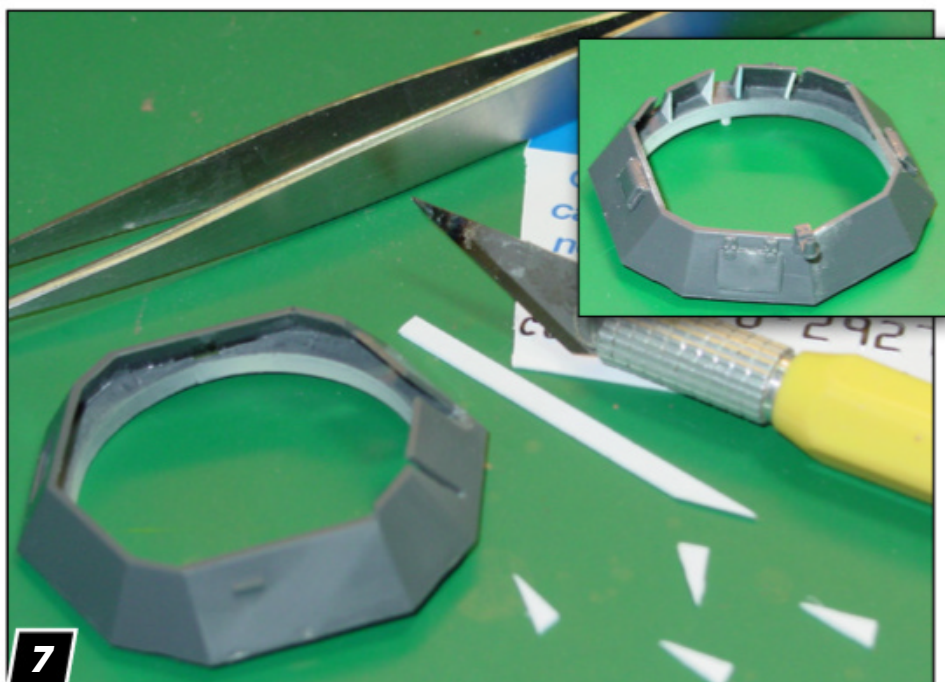
5

I sprayed the inside of the upper hull with interior buff, then installed the steering wheel and instrument panel, both sourced from my spares.

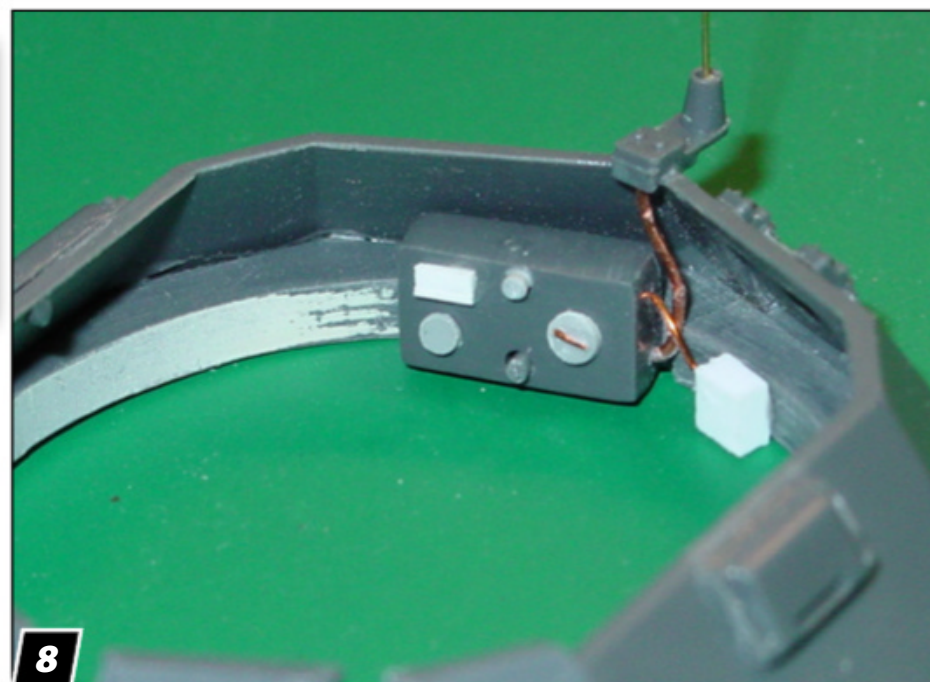


6

Happy with the interior, I joined the hull halves with Ambroid Pro Weld cement for a strong bond.



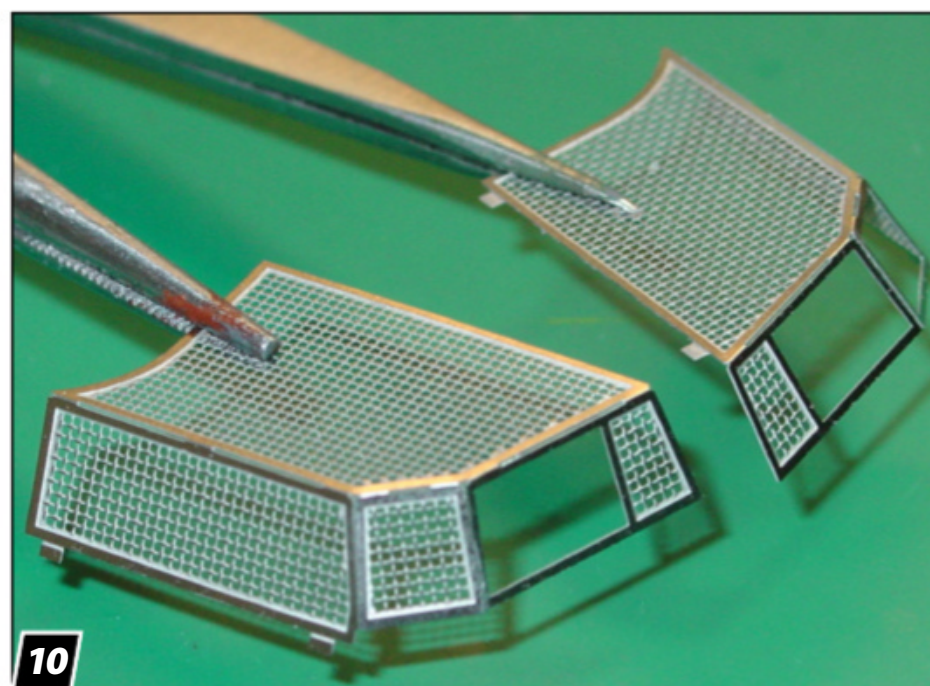
7 After assembling the basic turret, I added braces inside the armor plates using styrene cut from advertising cards. I have a ton of these cards and they make a great addition to my scratchbuilding supplies.



8 For more detail, I made a radio from a block of styrene. The dials are a combination of stretched sprue and discs punched from thin sheet styrene; thin copper wire connects it to a power converter and antenna.



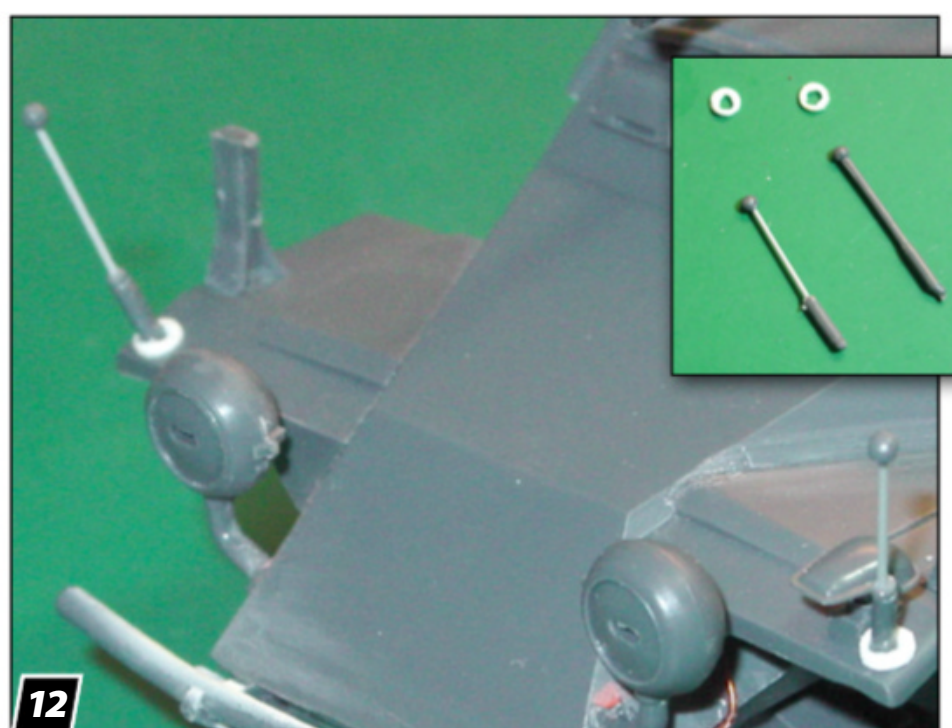
9 Often overlooked, valve stems holes are a simple detail to add to wheels. I used a mini bit in a pin vise to drill these in the rims of all four wheels.



10 A while back, I picked up a PE anti-grenade screen from a model swap meet, so I formed it and superglued it to the turret.



11 Copper wire salvaged from a computer connected the Notek light and horn on the front fender.

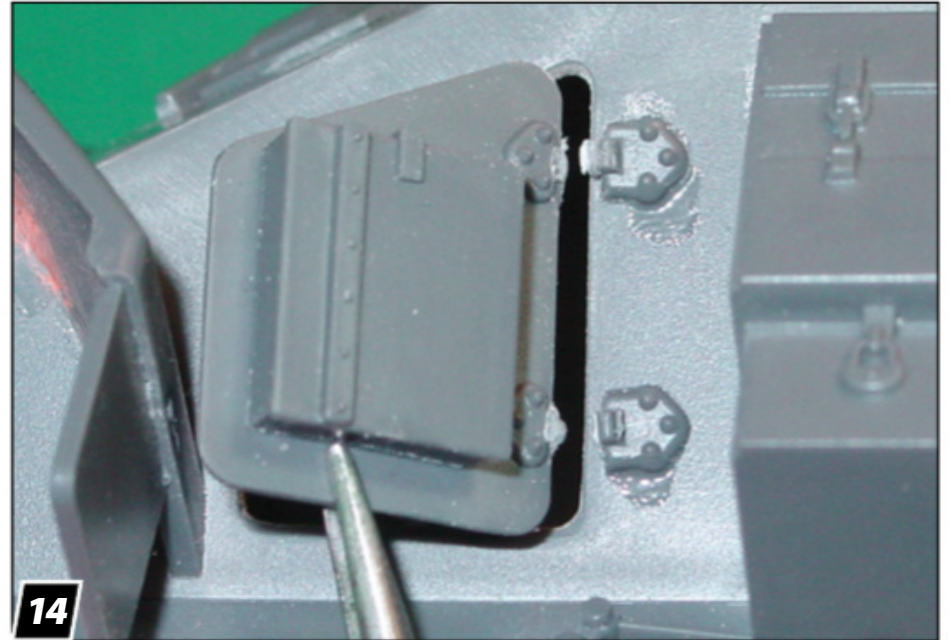


12 To enhance the kit's width indicators, I replaced the upper section with thin stretched sprue (left). Two small discs punched from sheet styrene and glued to the fenders replicated the bases of the indicators.



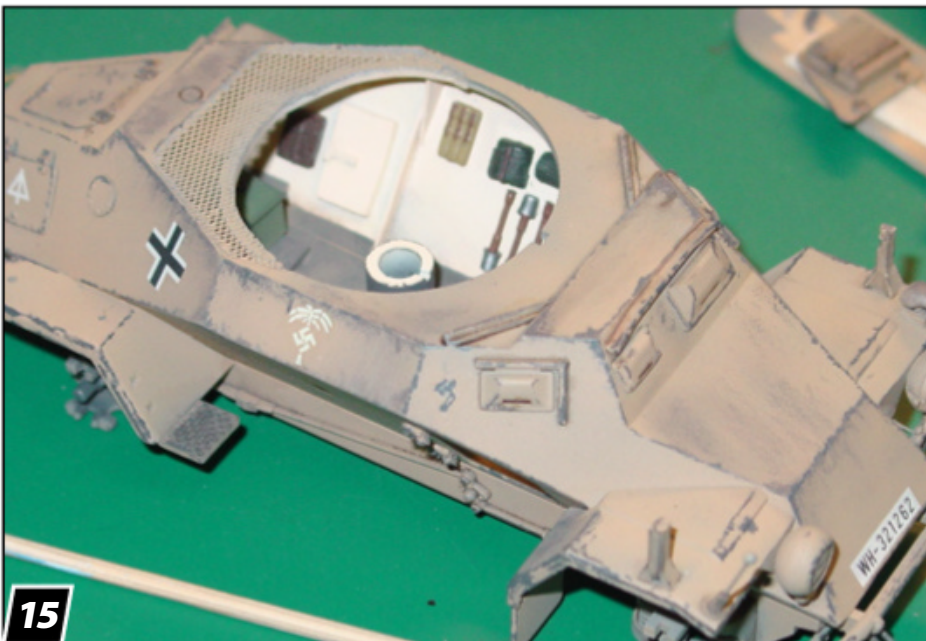
13

After assembling the mufflers, I filled gaps with Bondo glazing putty and sanded them flush. The ends of both pipes were drilled out and the edges thinned for realism.



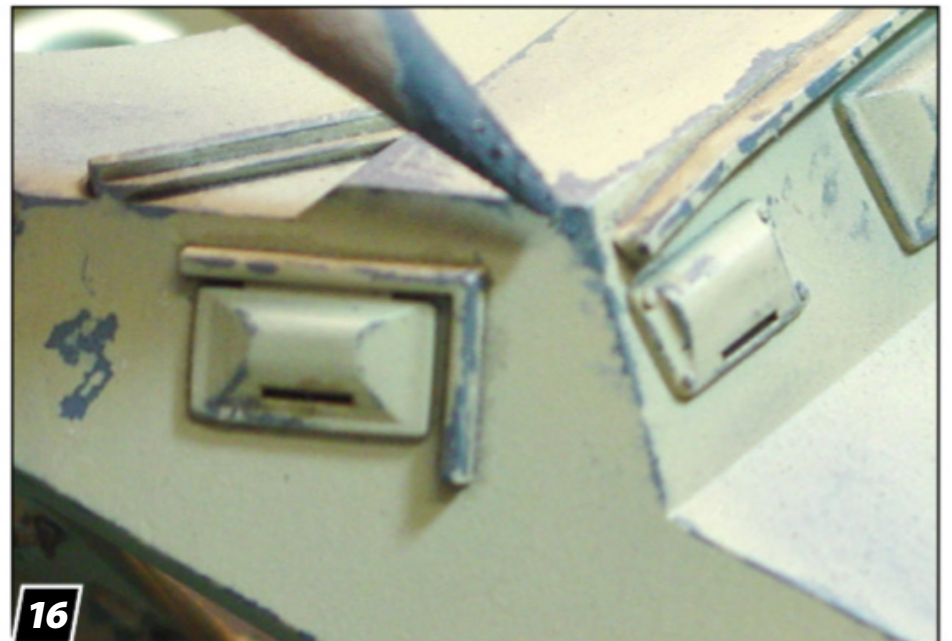
14

I wanted to show off the interior, but the separate crew doors are not possible. I carefully scored the hinges with a No. 11 blade until they came off, then I glued the mounts on the hull.



15

I airbrushed the armored car with Model Master enamel schwarzgrau (No. 2094) and left it to dry thoroughly before finishing with a thin layer of Model Master Afrika braun (No. 2102), leaving traces of the dark gray.



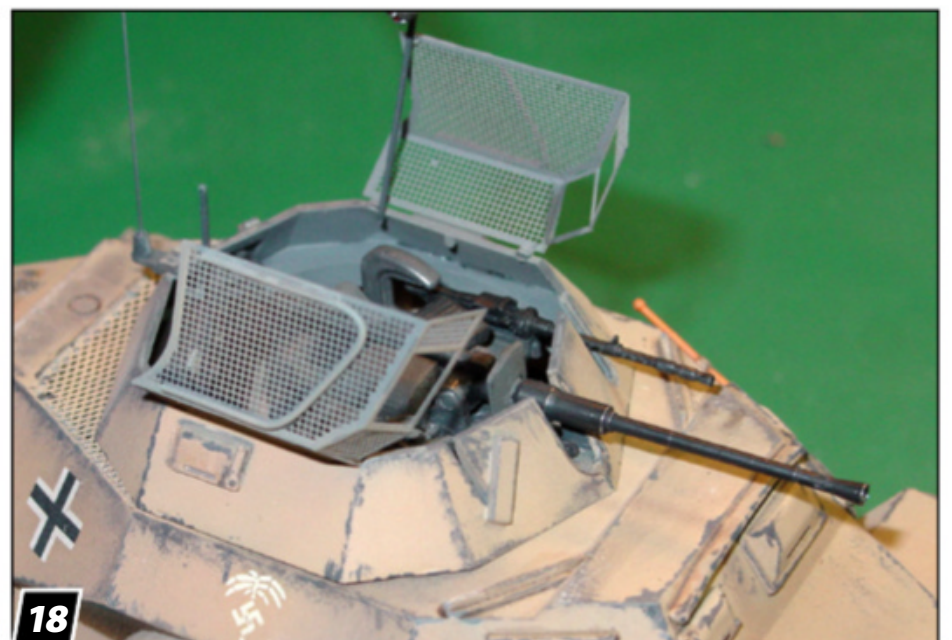
16

A gray Apple Kohl eye pencil liberated from my wife's makeup stash matched panzer gray perfectly. All areas subject to foot traffic and wear were lightly dabbed with the pencil to show chipped and worn paint.



17

This thin mix of rubbing alcohol and MMP earth dirt (WP007) and worn armor yellow (WP020) weathering powders. was brushed over the underside of the car, covering the suspension, inside the fenders, and the tires. Once dry, a brush refined the effect.



18

Finally, I added the grenade-screen retainer, thin metal strips that prevented the screens from opening too far. These were made from thin strip styrene painted schwarzgrau and attached with superglue gel, then trimmed to length. **FSM**

Correcting a *Carro Armato*

Aftermarket parts and ingenuity improve Tamiya's M13/40 medium tank

BY BILL MORIN



Bill's old Tamiya kit of the World War II Italian M13/40 medium tank went unbuilt for years. But an improved Tamiya reissue inspired him to give it a try. He found it still had a few of the old kit's quirks — but not enough to keep him from turning it into an enjoyable project that went on for years.

Many of Tamiya's older kits were known to have only approximate dimensions and details. The 1974 kit of the Italian Carro Armato M13/40 medium tank was one, with an out-of-the-box build yielding an unlikely combination of features from both the M13/40 and the later M14/41.

In 2008, Tamiya issued an updated kit (No. 35296) with all the original parts except for the rubber-band tracks. Included were new link-and-length tracks, figures, and detail parts in styrene, along with an aluminum main gun barrel, new decals, and a small photo-etched metal (PE) fret. While these new "add-ons" replaced inferior original parts and provided additional

details, major components like the hull retained the original inaccuracies. Thus, the box yielded a better model, but one which was still not quite accurate.

Plastic, resin, metal, and glue

I used Royal Model's resin and PE "Italian Carro Armato M13/40 (Final Production) Conversion Set for Tamiya" (No. 609) to correct several of the Tamiya kit's shortcomings.

Preferring articulated, individual-link tracks, I replaced the kit's link-and-length tracks with Friulmodel's white-metal "M11/39 M13/40 Semovente M40 75/18 M40 M13 M14/41 M15/42 M42" tracks (No. ATL-18).

Black Dog's resin "Carro Armato

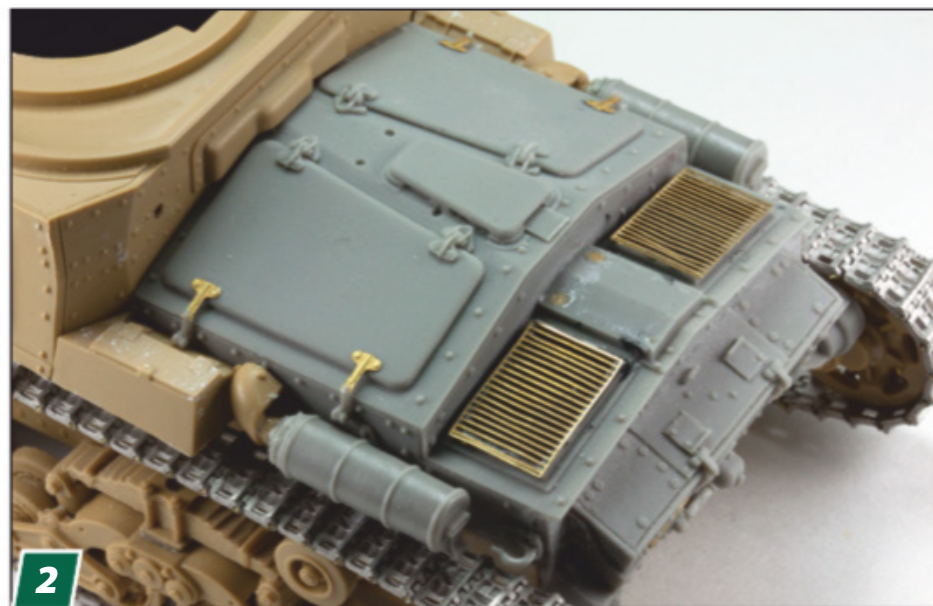
Accessories Set" (No. T35005) gave me a good start on stowed equipment for the exterior.

Figures in the Tamiya update are a great improvement on the 1974 kit, but I opted for the different uniform variations of MiniArt's Italian tank crew (No. 35093).

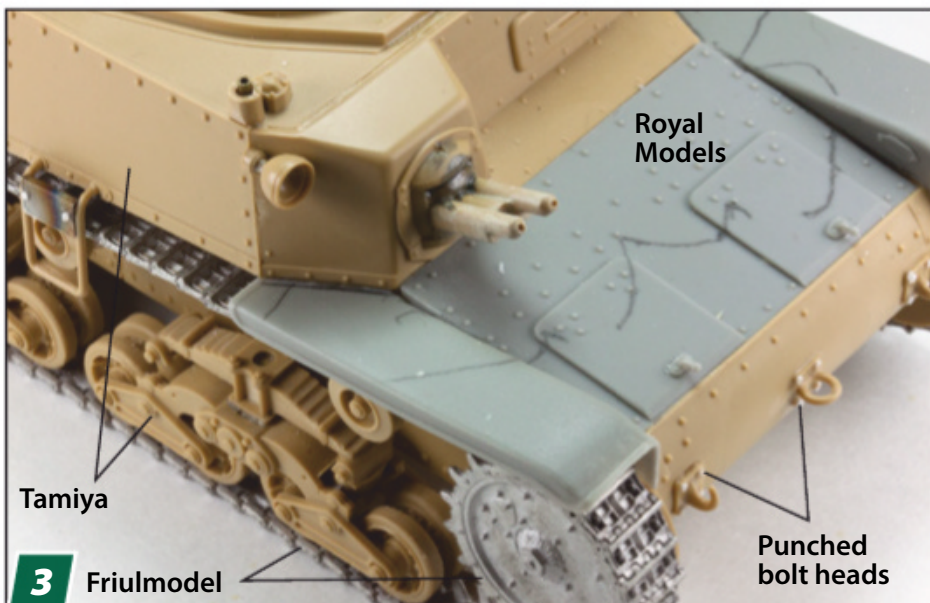
I used Testors or Tenax-7R liquid styrene cement for plastic bonds. To join other materials — white metal or PE — I used both thick and thin superglue when alignment was not an issue; for more fiddly parts, I turned to Devcon 5-minute liquid epoxy. Its working time is just right for aligning and adjusting parts without risking damage or destruction that can occur when superglue sets too quickly and must be redone.



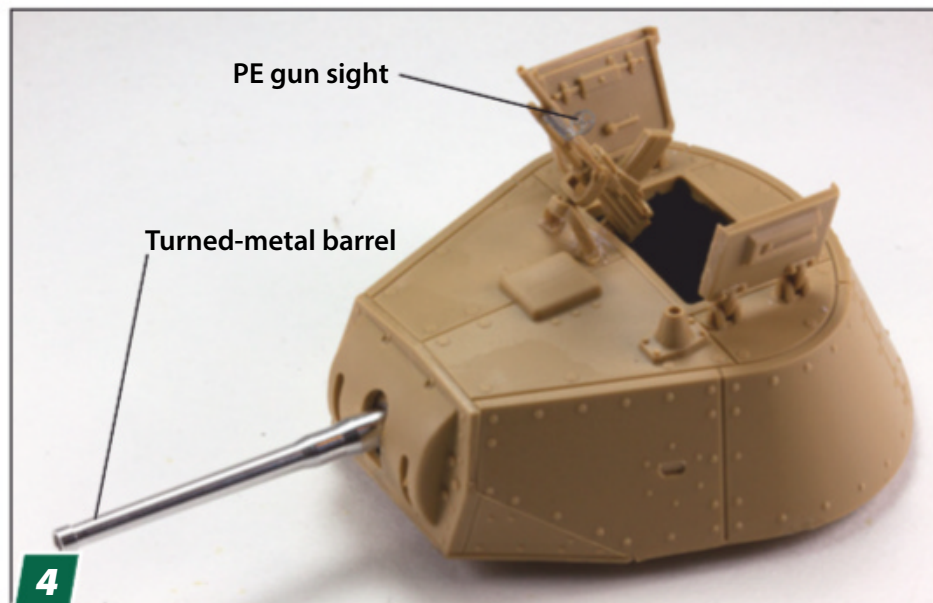
1 Along with the tan kit parts, we see Royal Models' gray resin conversion parts and Friulmodel's white-metal track and drive sprocket.



2 With conversion and detail parts of various manufacture, test-fitting is essential — as Bill found when he had to remove the kit's radiator cover from between the PE grilles.



3 Kit and aftermarket parts converge with styrene, resin, and white metal. Pencil marks indicate future location of sandbags. A punch and die produced bolts for the tow-hook mounts.



4 More metal adds firepower to the Tamiya turret.

Running gear — there's boring, and then there's boring

Tamiya used small dimples to represent the road wheels' lightening holes; I opened them up with a pin vise. It wasn't difficult. But though the wheels are small, each has 16 holes to open, and there are 32 wheels — plus spares!

While the pin vise was out, I bored out and adjusted the hinges on the Friulmodel individual-link white-metal tracks — *all 440 of them* (two per link). After that, just enough of my sanity remained to cut the track pins. I replaced the provided wire with snippets of .020-inch brass rod.

After adding the first of the Royal Model resin conversion parts for the upper hull, I began installing the suspension components. Friulmodel's metal drive sprockets replaced the kit's. Then I assembled and installed the tracks, **1**.

Before assembling the upper-hull superstructure, I brushed a heavy coat of craft-store flat black acrylic on the upper hull's inner surfaces to make sure no bare plastic would be visible through any openings.

I jumped right into adding other details without properly considering whether my desired resin stowage items would fit as they should. Sure enough, I had to install the radiator cover twice, **2**. I made sure I didn't repeat that mistake as I continued, adding kit parts, resin, and PE, along with some styrene punch-and-die bolts and a bit of brass tubing, **3**.

As with the hull, I painted the turret interior with flat black acrylic. The metal gun barrel and PE machine-gun sight were welcome details topside, **4**.

Stowing the stowage

Black Dog's resin stowage is nicely done, but not perfect. While the outward-facing surfaces of the jerry can/tarp array for the hull's right side look great, **5**, the casting is designed to rest on the full fenders of Tamiya's kit. A later tank like mine (on which all but the forward fender sections were deleted) requires a bracket or shelf for the cans. Consequently, they sit higher than intended, exposing blank areas on the back of the resin part.

Still, there was no way I *wasn't* going to use that beautiful casting. After fabricating a .015-inch sheet-styrene shelf for the cans, I used epoxy putty to fashion an extra tarp to conceal the resin part's blank spot, throwing a length of chain on top for good measure, **6**.

There were other issues with the resin castings for engine-deck stowage. Portions of the ropes depicted in the large, central bundle were too fragile to withstand handling and were easily broken, **7**.

Another single-piece array of four jerry cans goes on the rear hull plate. As with the previous bunch, the bottoms of the cans are designed to rest on a portion of the tank (in this case, the step behind the radiators). Because the ends of the resin part's bracket had broken off, they were too short to attach to anything. Also, the filler necks/caps on all four cans were damaged beyond use, and all the handles were broken.

However, Tamiya's updated kit provides new cans which also feature separate filler necks, caps, and handles. Since the resin casting was a "must use" item, I shaved off



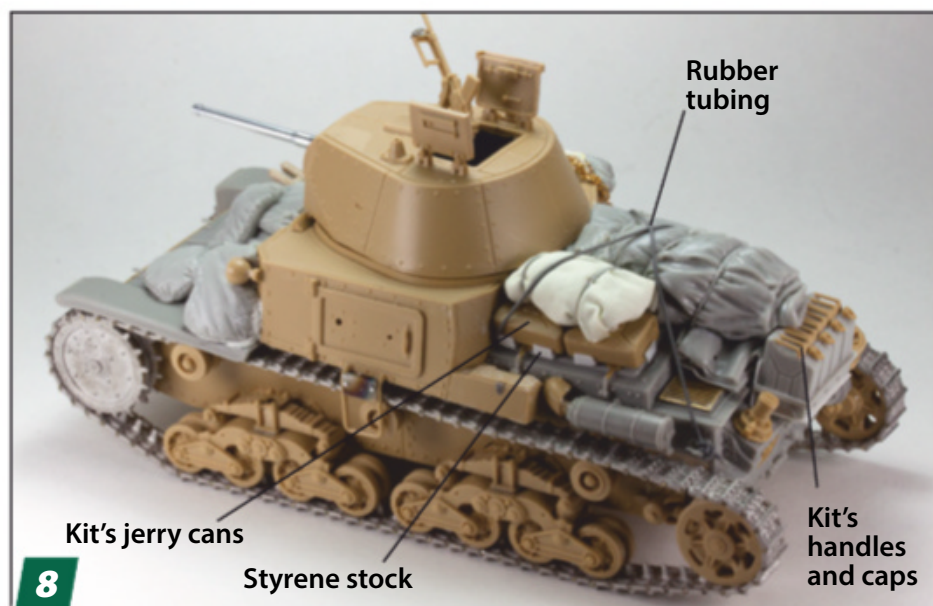
5 Bill liked the detail of the resin-cast jerry-can rack on the outward-facing surfaces. However, its position exposed blank areas on the back side.



6 He hid the blank back of the resin-cast jerry cans and tarp with an epoxy-putty tarp of his own, topped with chain.



7 More details were needed to cover damaged parts of another resin casting of engine-deck stowage.



8 Piled-up stowage on the engine deck, with several adjustments and additions Bill made using kit parts (tan), aftermarket resin (gray) and racks made from styrene stock (white).

the damaged resin and used Tamiya's plastic parts, **8**. An L bracket made from .015-inch sheet styrene provided both a base for the cans and a rear panel for attaching the cast bracket.

The fact that Tamiya's plastic jerry cans were now incomplete didn't mean they had to go to waste, especially since the port side of the engine deck was relatively bare. I used styrene angle stock to make simple, rough brackets to hold two more cans lying on their sides with the pour ends facing inward. I fabricated a bundle of "stuff" from epoxy putty wrapped in a piece of latex surgical glove and positioned it so the cans can be seen while their missing parts are strategically covered.

I rediscovered some flexible Verlinden rubber tubing I obtained in Germany in the early 1990s and figured that stretching it slightly over the stowage before tying it off would replicate tie-downs. After pressing an indentation into the putty/glove bundle and carefully filing others into appropriate locations on resin items, I used two pieces of the smallest tubing to help tie down the heavy load.

Painting and finishing

When I read or hear debates about the "correct" color for military hardware, I recall my time as a mechanized infantryman. I sometimes marveled at how different our vehicles could look despite standardized painting. And this was the 1980s and '90s, when processes were *far* more evolved than in the 1940s.

My color choices are "in the ballpark." I seldom concern myself with paint ratios or exact color shades. I'll name what I used here, but not in ratios.

I started by priming the entire model with spray-can Testors Model Master flat black enamel, **9**. Next, I hit the top of the turret with Tamiya White Fine Surface Primer lacquer from a spray can. When that dried I applied a circular mask to form a typical Italian air recognition symbol, then airbrushed a custom-mixed tan brown that looked about right for Italian armor, **10**.

A heavy dry-brushing with medium dark green craft acrylic paint depicted the vehicle's original European finish showing through worn areas of paint applied for

North African action, **11**. Compare the dry-brushed portions with the engine deck stowage and you see the color difference.

After selectively hand-brushing Pledge Floor Gloss (PFG) where I would put decals, I chose markings from the Tamiya kit. The decals settled down with applications of Microscale Micro Set and Micro Sol. I followed with a top coat of PFG **12**.

A "dot filter" — dots of artist oils placed on the model, then whisked away with a brush damp with odorless mineral spirits — left warm traces of colors to lend depth to the surfaces, **13**.

I hand-brushed most of the details with craft acrylics, with a few exceptions: Testors Model Master chrome silver enamel was applied to the insides of the headlights; rusty items received repeated washes of Testors flat brown enamel and odorless mineral spirits to build the color intensity; and I picked out the contact surfaces of the tracks, drive sprockets, and idler wheels with Tamiya metallic gray acrylic (XF-56), **14**.

Using as many colors as possible makes the model look lively, but there is a point



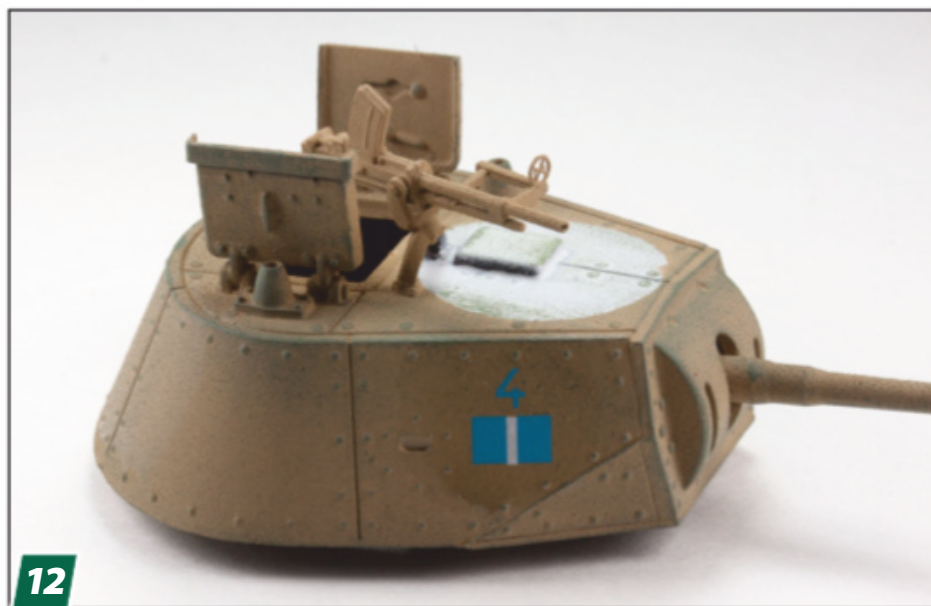
9 Flat black primer is the ultimate in pre-shading, providing shadow and depth to overpainted items.



10 Bill primed the turret top in white and applied a circular mask for an air-recognition mark. Then he overpainted with tan brown, à la Italian armor.



11 Most dry-brushing aims for highlights, but Bill used it to portray green paint beneath an overcoat of desert color.



12 Bill hand-brushed PFG to form a gloss bed for better decal adhesion. When that dried, he applied Microscale Micro Set, the decal, then Micro Sol to soften it to the surface. After that dried, more PFG sealed it.



13 "Dot filters" of artist oils lent warmth and depth to the base paint.



14 Painting stowage and details *in situ*, Bill hand-brushed craft acrylics, Testors enamels, and Tamiya acrylic paints.

where it can become garish. The first time I think I might be going too far, I know it's time to stop. You can always add more later.

Stowage and lights

I dry-brushed the stowage items (including the sandbags) with lightened shades of the same acrylics I used to paint them, then applied multiple washes of Testors Model

Master raw umber enamel and odorless mineral spirits, **15**.

After a spray-can overcoat of Testors Dullcote flat clear, I set about "turning on" the headlights. The kit supplied old-fashioned moldings with no clear lenses. So, I filled each receptacle with 5-minute epoxy and, holding the model nose-up while the epoxy set, ran the side of a No. 2 pencil

around the edge of the lens and the headlight mount. The gleaming lens contrasts with the flat finish, **16**.

Figments of pigments

Dry-brushing can create illusions of light, shadow, and dimension. But I thought I'd try for similar effects using various Vallejo pigments applied with a wide, soft brush.



Dark washes deepen details. “No formula here,” Bill says. “I simply apply and repeat the washes until it looks right.”



A right-sized drop of 5-minute epoxy forms a clear headlight lens, a detail the kit doesn't provide.



Bill's tank was more or less finished, and all he had to do was write the article. Instead, a three-year pause ensued.



Yikes! With a shelf life considerably shorter than three years, the rubber tubing Bill had used for tie-downs went to pieces ...

The pigments build up in corners and cran- nies, just as mud and dust do, and they can tone down and unify washes. Pigments adhere to vertical surfaces for a ground-in, dusty effect or can be built up to accent raised details with a translucence more sub- tle than paint.

All these effects can be achieved with a light touch, definitely an advantage at this stage of the model with delicate construc- tions already in place.

Once I had dusted to my satisfaction, I added a radio antenna made of .020-inch brass rod to finish the tank, **17** — or so I thought.

Rescue from the shelf

This section could be titled, “Why you shouldn't wait three years before finishing and taking photos of a model for *FSM*.” Life interfered with my hobby while my model languished in a storage cabinet. But I was determined to finish the model and this article. I figured I could wrap things up in short order. What could possibly go wrong with a model that was safely stored

and untouched the entire time? Well, remember that flexible rubber tubing I used for tie-downs? Forget it. I won't be using *that* again, because the tubing disintegrated, **18**. Also, the clear epoxy headlights were badly yellowed, **19**.

No matter: I saw this as an opportunity to make my model better than it had been. During my modeling hiatus my wife had “put away” many of my supplies, including my stock of nylon string. However, my mother-in-law came through with some beige embroidery thread I used for new tie-downs, **20**. Raw umber enamel washes and pigments blended the new additions into their surroundings.

A new narrative repaired the headlights: In the North African desert, it was com- mon to cover the headlights to prevent glinting reflections that could disclose the tank's location, not to mention inadvertent activation of the lights at night. While there were factory-made covers, they were quickly damaged, destroyed, or lost in the field, where they would instead be covered with sandbags, helmets, or whatever mate-

rial was available. I made replacement cov- ers using tissue soaked in white glue and water, **21**, and painted them with colors I hadn't already used, the randomness enhancing the “rolling junk pile” effect I wanted.

Again, washes and pigments blended these into their surroundings, **22**.

Now I could finally say the build was done. But that didn't mean I was finished.

Mustering a crew

Nothing better expresses what a small tank this was than a scale figure or two. Dry- fitting revealed that no more than two of the MiniArt figures I was using would fit comfortably on the tank.

Scale figures usually depict Italian tank crews in their standard long, leather tanker coat over blue or tan coveralls.

MiniArt's set provides figures in both types of coveralls without coats, and I used one of each, also mixing and matching sep- arate heads by selecting the ones requiring the least amount of cleanup and having the most facial hair, saving myself some prep



19

... and the epoxy headlight lens looked yellow and dull.



20

Bill replaced the rubber-tube tie-down with embroidery thread he tinted with raw umber washes and pigments.



21

The best repair for the headlights was concealment. Tissue soaked with white glue replicated fabric covers.



22

Washes and pigments blended the additions with their older surroundings.



23

Although the M13/40 was classified as a medium tank, Bill notes, "It's astounding that this represents only half the crew that had to fit inside one of those things!" He mixed and swapped parts of MiniArt Italian tankers.

time and avoiding extensive face-painting as well — not my forte.

Since I'm not exactly a world-class figure painter, I am a huge fan of the simplified face painting technique described by Jim Wechsler in his October 2009 *FSM* article, "5 Steps to Paint Fantastic Faces."

However, I replace the Model Master enamels he uses with a couple of Testors "square bottle" enamels, GI wood (No. 1141) highlighted with light tan (No. 1170). I also use eyeball decals from Archer Fine Transfers (No. AR99001). The remaining painting is done with craft-store

acrylics followed by raw umber washes and finished with Dullcote, **23**.

Finally — after decades of avoiding the earlier version of this kit, then a three-year delay in completing this one — I finished the project. Talk about taking a long time to build a model! **FSM**

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Gary cleared out his spares box to create this 1/35 scale M3 Grant, lost somewhere in the dunes of the North African desert. As often as he could, he built with recycled parts and even used up old paint to make this one-of-a-kind sandy diorama.

Forgotten Casualty

Build an abandoned tank diorama out of pieces from your spares box

BY GARY MAJCHRZAK

In today's world, I'm all about "going green" and recycling — and that's exactly what happened with this diorama. The scene is a mishmash of old parts, pieces, and bits of whatever I had laying around the bench or in the spares box.

Building a "green" subject is a challenge, but it's more economical than paying for a brand-new kit. Several other bonuses include, clearing out the spares box, avoiding tossing useful items, and protect the environment.

I started with a parts for a 1/35 scale

M3 Lee/Grant kit which I purchased piecemeal from a vendor table several years ago, **1**. The chassis and hull with the main guns had already been assembled but the previous owner gave up on the kit after that, **2**.

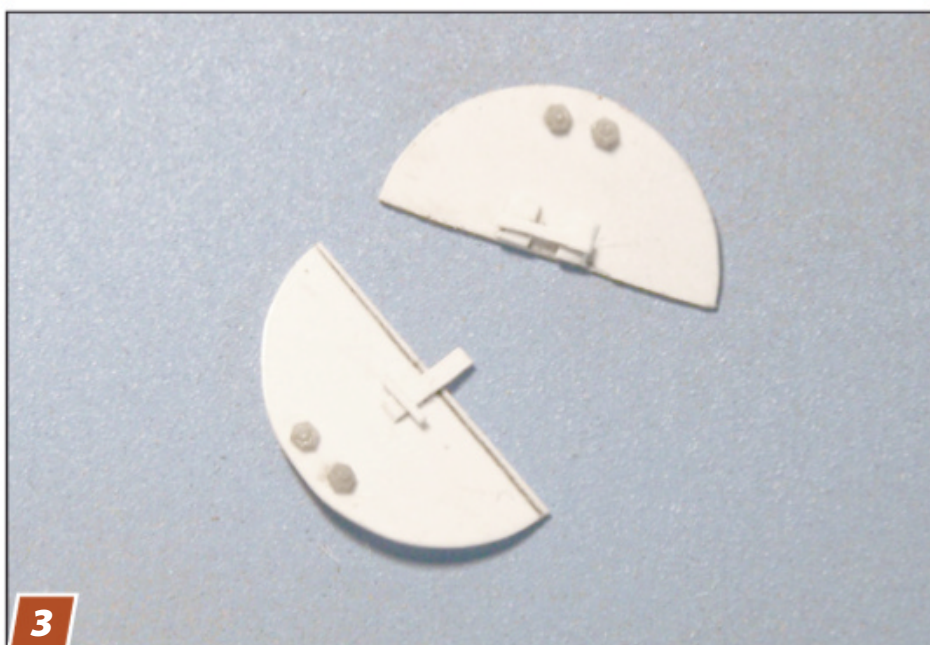
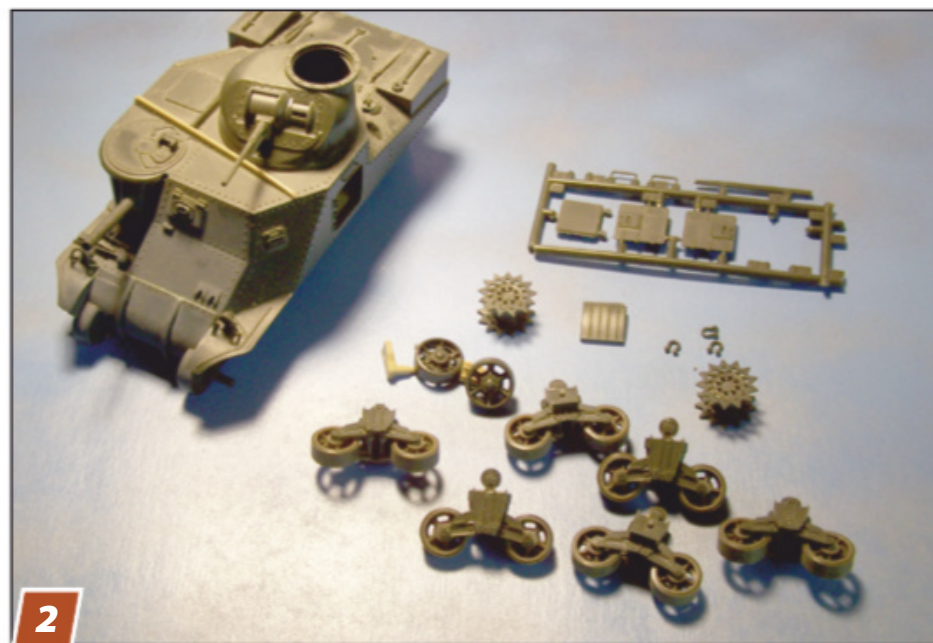
Now it was my turn to make something new out of the remaining parts. I would cover the entire left side with Saharan sand to show an abandoned tank being consumed by the elements. In my mind, it is set somewhere in the Western Desert after June 1942.

My research led me to build the M3

Grant (the British version). It was essentially the same tank as the Lee but with the high commander's cupola removed. This was done to lower the profile of the tank and cut down its silhouette in the desert.

My parts did not include the commander's hatch covers so I fabricated them from scrap styrene. I added bolts from Grandt Line to trick them out, **3**.

The tank hull came with molded-on tools and attached headlamps and guards. I airbrushed the hull with Pactra flat medium green (No. A33) acrylic, **4**. I had this paint forever and thought I could use it up. I



painted the entire kit except for the left-side — no need to spend any more time on something about to be completely covered.

While the hull was drying, I brush-painted the bogies. I could also have air-brushed them because they will be covered in sand and so weathered that viewers won't be able to tell hand-painted from air-brushed parts. The bogies were attached only to the right side soon after. The tools and gear came next.

Among my spare decals, I found markings for the British 22nd Armoured Brigade. I also fished out a number which

would be adequate to display the tank's unit serial number.

A couple of yellow circles supplied vehicle bridging weight numbers. None seemed to come close to the actual weight of my tank, but I plopped one on anyway and would later cover the bulk of the numeral with sand. *Problem solved!* I gave my Grant a coat of Testors Glosscote to seal the decals, **5**.

After the gloss was dry, I treated every crack, crevice, line, and bolt with an ample acrylic black shadowing wash.

Once I was satisfied with the depth

achieved, I set it all aside to dry.

The vinyl tracks were painted (right side only) and applied on top and under the bogies with superglue. Because I elected to show my Grant with a broken rear idler roller and detached treads, I carefully positioned my tracks to show a mechanically disabled vehicle.

Once that was complete, I gave the entire tank a coat of Testors Dullcote to seal the work.

When the dull finish was dry, I edged every visible line with a highlight of Pactra steel enamel (No. 1P101). I also dry-



7



8



9



10



11



12



brushed portions of the hull and turret to show the toll taken by wind-driven sands on the camouflage.

Next, I built the foundation for the soon-to-be-constructed dune. To do this, I recycled left-over pieces of sculpting foam, **6**. I measured, trimmed, and placed the chunks around the Grant, supergluing them in position, **7**.

The scene was placed upon a pine base which I earlier stained with one of my favorite shades.

After I let the project sit for a day, I mixed up a batch of Celluclay. In the mix I included lighter shades of acrylic paint and a healthy dose of Elmer's wood glue to be certain the groundwork would stick to the base, **8**. The paint changed the base of the mixture to a more appropriate sand color.

I spread the ground mixture over the base first, **9**. Most of it adhered well, except

the thin edges, which I filled in from beneath.

The tank and the foam were covered next, **10**. After shaping it, I gave it a good 36 hours to dry, **11**.

The time came to add a sand-like texture to the diorama. I used an old bag of Woodland Scenics fine buff ballast, **12**. To get it to stick, I used a mix of equal parts white glue and water. I painted it on and within a minute sprinkled the ballast over the tacky surface. It adhered almost immediately, and I covered a lot of ground quickly with this technique, **13**.

Even the harshest winds, would not blow the sand out of every nook and cranny so I left small accumulations of sand in some corners on the tank, **14**.

Wanting the tank to look filled with sand, I topped off the commander's hatch and also the side hatch which the crew

would have used. More sand was added to the teeth of the tracks as well as the wheels and frames of the bogies, **15**.

A couple of small details added to the tank's sad state, **16**. I broke off the head-lamp and added a small piece of wire to reconnect the lamp to the base.

A British helmet was dropped in the sand along with a canteen abandoned on the rear hull to help give the diorama that "forgotten flavor."

I used pastels to weather the tank even more. I also used them to shade the dune to give it depth. The chalky texture worked perfectly.

When you build a "green" diorama you can be sure of two things: You'll clean out your spares box and unclutter your workbench.

You'll also end up with a creation that no one has put together before! **FSM**

Re-creating an **ACE'S A-4H**

Turning a A-4E/F Skyhawk into a
MiG-killing Israeli A-4H

BY YOAV EFRATI



A real A-4H Skyhawk similar
to the one Efrati modeled

During more than 50 years of operation, the A-4 Skyhawk was rarely required to prove its air-to-air prowess. The Douglas-built A-4 was primarily an attack aircraft.

Its first air-to-air kill came on May 1, 1967, over Kep airfield in North Vietnam. Lt. Cmdr. T.R. Swartz, flying an A-4C with VA-76 squadron from the USS *Bon Homme Richard*, downed a MiG-17 with a Zuni unguided rocket.

Three years later, on May 12, 1970, Col. Ezra Dotan, commanding officer of the Israeli air force's Squadron 109 (the "Valley Squadron") scored two kills over southern Lebanon. Dotan was flying an A-4H when he shot down two Syrian MiG-17s. He already had three kills in a Mirage IIIC, so his A-4H kills made him an ace.

Here's how the encounter went down: On a search-and-destroy mission against Syrian armor, Dotan and his wingman were

intercepted by two Syrian MiG-17s. In the ensuing dogfight, Dotan downed the first MiG using the same technique as Swartz but with 38 Zuni rockets fired from two rocket pods. He then gave chase to the second MiG and got the kill with a burst of 30mm high-explosive rounds from the A-4's DEFA cannon.

Building the model

To re-create Dotan's MiG killer, I chose Hasegawa's 1/48 scale A-4E/F (No. 7224), which has all the parts needed to build an A-4H, known in Israel as *Abit* (Eagle).

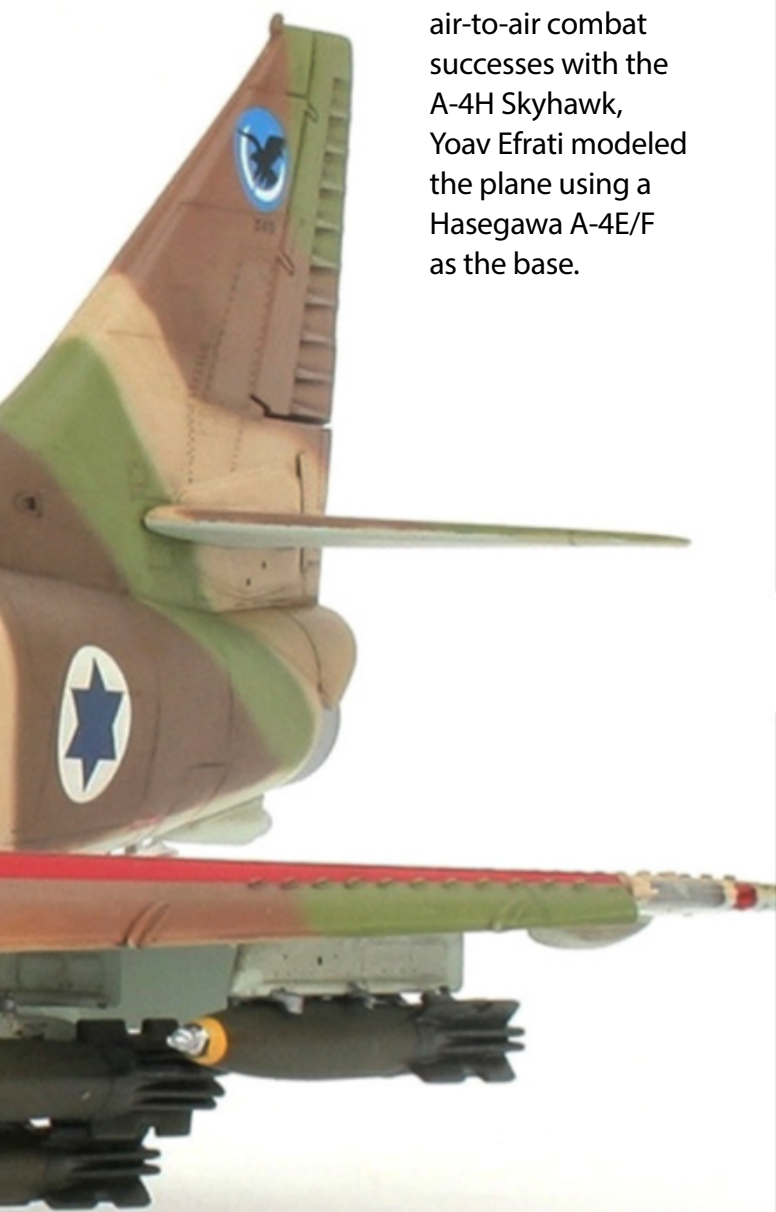
For an impressive display, I choose a maximum Mk.82 Snakeye bomb load left over from a Kinetic Kfir kit. I began assembly from the bottom up, mounting the Kinetic Snakeyes on Hasegawa's multiple ejector racks, triple ejector racks, and out-board pylons.

Brass wire pins inserted in holes I made

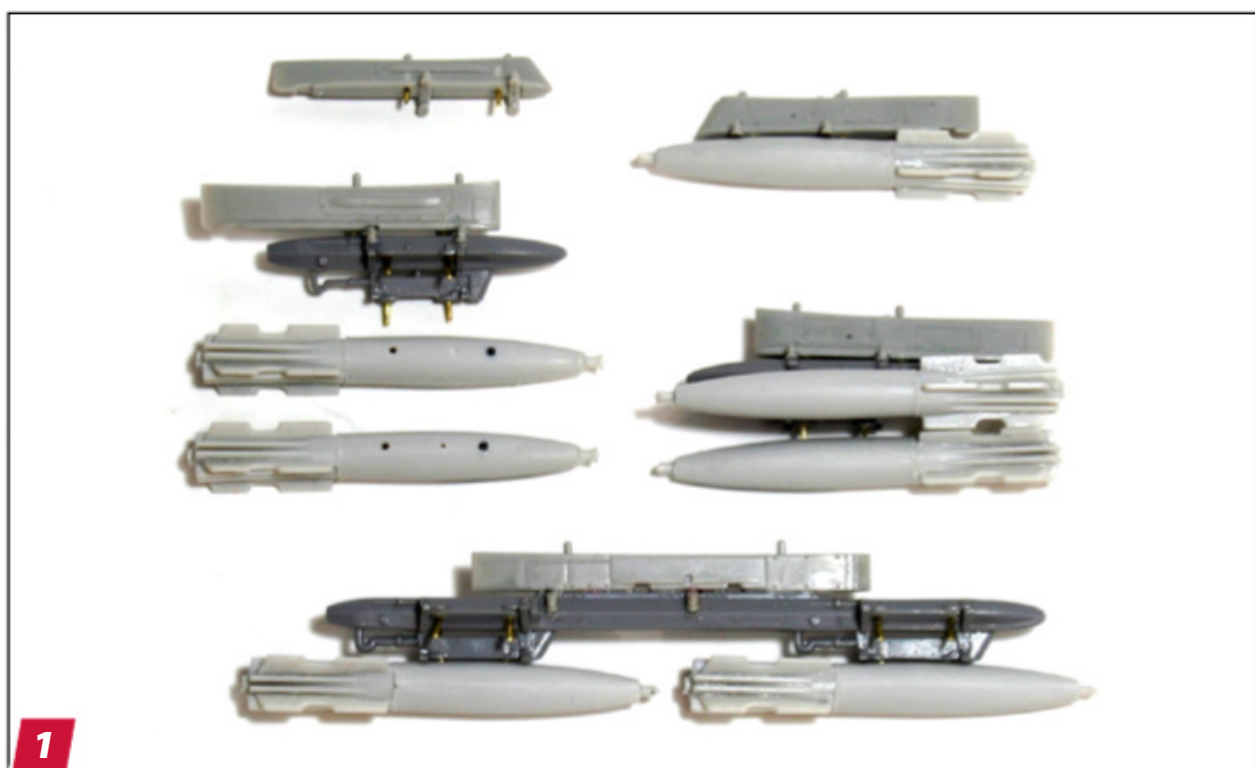
in the pylons aligned with corresponding holes made in each bomb. This aided in bomb attachment using minimal glue after the parts were painted, **1**.

The upper wings have a step to allow cementing the leading-edge slats in an up-and-closed position (as seen on Blue Angels Skyhawks). This step does not exist on the actual aircraft, so I filled it with putty. For a more-durable leading-edge slat, I replaced the kit's plastic slat rails with flattened brass wire of the same length, **2**.

The kit's straight refueling probe was used as a dimensional reference for a replacement. Plastruct 1/16-inch plastic-coated wire (No. 90102) was the same diameter as the kit's refueling probe. I stripped plastic from the end, drilled through the kit probe's forward nozzle, and mounted it on the bared wire. I also removed coating from the rod's aft end and inserted it in a hole that I had already



Inspired by Israeli ace Ezra Dotan's air-to-air combat successes with the A-4H Skyhawk, Yoav Efrati modeled the plane using a Hasegawa A-4E/F as the base.



1

I embedded brass-wire locating pins in holes drilled in the bomb racks to aid in bomb alignment. These require just a little cement to attach.



2

Filler putty eliminated the step between the leading-edge slat and upper wing surfaces. Flattened brass wire replaced the kit's fragile plastic leading-edge slat rails.



3

A fishing weight in the nose kept the tail up. I replaced the kit's plastic refueling probe with a segment of Platstruct 1/16-inch plastic-coated wire.

drilled through the fuselage's right side, **3** and **4**.

Engine intakes were then assembled and added to the fuselage. I mounted the intake's outer contours (parts J5 and J6) flush with the fuselage, which left gaps at the boundary layer roots. However, these voids were easily filled with gap-filling superglue.

The kit provides external trapeze-shaped reinforcement plates that did not exist on early A-4Hs; I sanded them off. The mid-fuselage triangular NACA duct molded on the fuselage's left side does not exist on Israeli Skyhawks, either, so I filled it with superglue and sanded it smooth, **5**.

Prior to cementing the fuselage halves, I added a 10-gram fishing weight to the nose. I sprayed the cockpit FS36231 gray, the intakes and engine face (Part D12) Tamiya gloss white. The exhaust pipe and turbine blades were brush-painted with Xtracolor



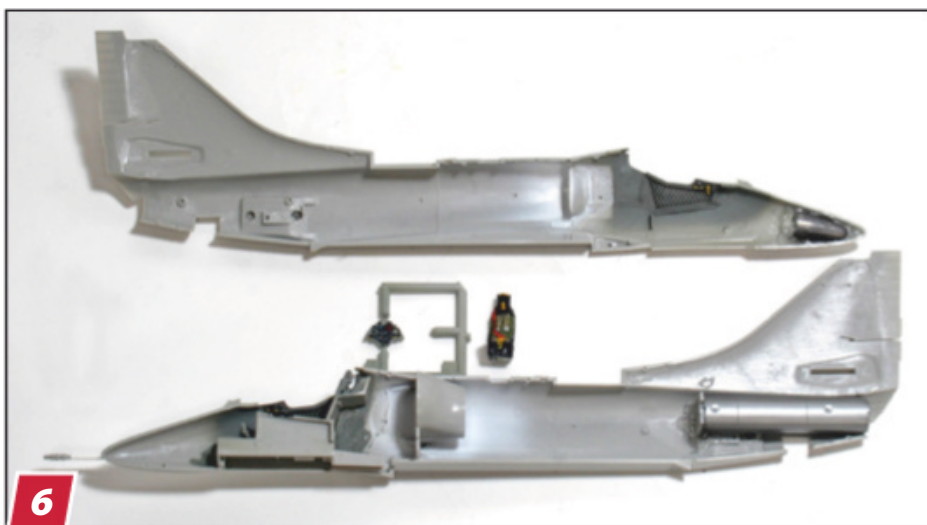
4

I stripped the coating from either end and inserted it in holes I drilled in the kit's refueling-probe nozzle and the right side of the fuselage.



5

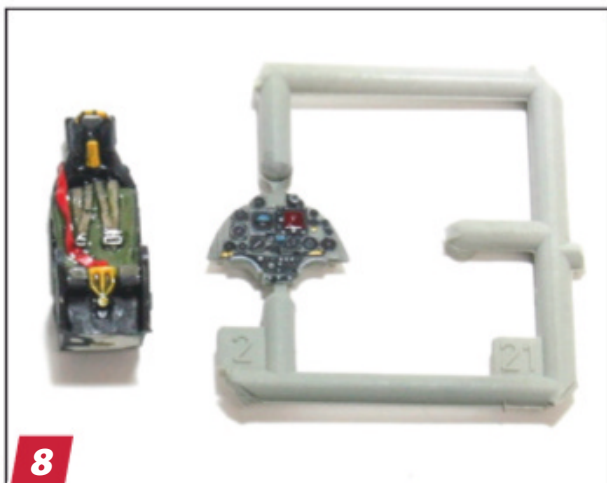
Sand off the kit's molded intake reinforcement plates located on both sides of the fuselage. The recessed triangular NACA inlet on the left side of the fuselage is not found on the Israeli A-4H; I filled it with superglue gel.



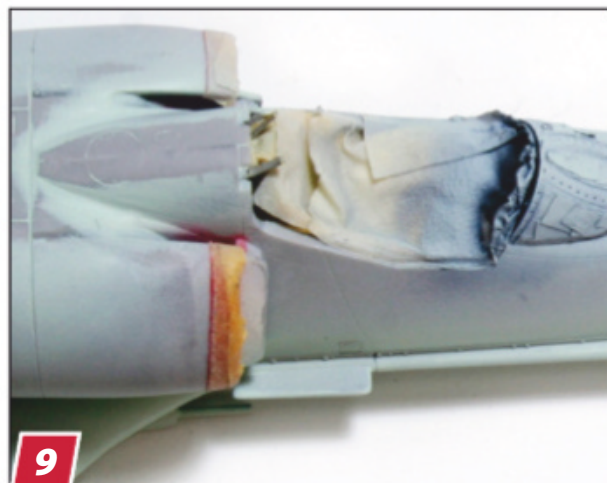
The kit's fuselage halves prior to closure: Note the FS36231 dark gull gray cockpit interior, white-painted intake, and burnt iron exhaust pipe.



The detailed cockpit has taken shape, as has the intake assembly. Soon it will be time to close up the fuselage halves and work on the exterior.



The painted True Details ESCAPAC ejection seat and the kit's instrument panel enliven the cockpit, as does red, yellow, and blue paint applied with a toothpick.



Flattened brass rods are cemented just aft of the canopy to provide better support for the canopy during final assembly.



To replicate the A-4H, you'll need to sand off the bulged reinforcement plate located just ahead of the windshield-bleed air nozzle. This version didn't have that feature.



At the wing roots are 30mm DEFA cannons salvaged from my spares box. I've added metal tubing to replace the fragile barrels.

burnt iron (X508), **6** and **7**.

After painting the inside of the intake ramp white, I applied Xtradecal 5mm-wide red decal stripes (No. XPS4) and sealed the decals with a brushed-on layer of Pledge Floor Gloss (PFG). I opted to close the aft fuselage speed brakes on my model, and it was prudent to do so at this stage.

To fit the speed brakes into the fuselage recesses requires careful trimming to prevent a big gap, especially at the forward hinges. To keep glue and plastic from filling the required gap between the speed brakes and fuselage, I drilled a couple of holes through the fuselage brake cavities and



Black was sprayed from the outside to depict the interior color of the windshield and canopy. Using flat white as a primer enabled the red to stand out without excessive paint buildup. By applying trim colors first, the chance of overspraying the camo is averted.

cemented the brakes to the fuselage with a bit of superglue gel.

The kit's sharp, raised cockpit detail facilitates dry-brushing. Touches of red, yellow, and blue applied with a toothpick made for an accurate rendition, **8**. Flattened brass rods glued inside the canopy aft fairing provide support for attaching the canopy during final assembly, **9**.

I joined the fuselage halves with liquid styrene cement, letting the softened plastic form a bead outside the seam. I let the



This shows the underside with the trim colors applied prior to applying the camouflage colors that will complete the model.

fuselage dry for a couple of days to allow the melted plastic bead to harden.

The A-4H's distinctive squared-off vertical fin tip (Part 14) was cemented atop the tail and required filler at the joint. Dry-fitting the wings with the fuselage revealed a gap at the roots, too.

I raised the upper-wing roots with sheet-styrene strips inserted between the lower wing (C5) and upper wing surfaces (B10 and B11). Filler was needed during attachment of the aerodynamic forward wing-root fairings (D6 and D7).

While letting the cement harden at the fuselage and wing joints, I began painting

the subassemblies. I airbrushed Testors Model Master FS35662 duck egg blue on the landing gear doors, flaps, and wing pylons. The blue was masked and the inner surfaces of these items painted gloss white.

White also was applied to the bomb racks, landing gear, wheel hubs, and bomb tips. The white served as a primer for Humbrol insignia yellow bomb tips. I used 1/16-inch-wide strips of Tamiya tape to mask the bomb tips and sprayed the midsections FS34087 olive drab, followed by FS34086 dark drab fins and Humbrol silver fuses.

Now it was time to return to the fuselage. Sanding off the hardened plastic bead left a join that required no filler. Lost detail was easily restored due to the kit's recessed panel lines.

The raised rectangular reinforcement plate molded to the fuselage halves, just ahead of the windshield-bleed air wing shield fairing, is not necessary on the A-4H. So I sanded it off, **10**.

Next, I located 30mm DEFA cannons in my spares box and attached them to the lower wing, using metal tubing to replace the fragile plastic gun barrels. Using photos as a guide, I drilled out the aft end of the gun fairings, **11**.

Painting the Ahit

Painting the fuselage began with spraying flat white inside the wheel wells, upper-wing flap recesses, intake lips, leading edges, and the lower fairing just aft of the radome. I then sprayed Humbrol red over the white wing edges, upper wing flap recesses, flap inner surfaces, and intake lips.

Then I sprayed Humbrol flat black on the outer surfaces of the windshield and canopy as well as the fuselage adjacent to the guns. Applying these trim colors first eliminates the possibility of accidentally overspraying the camouflage with these hard-to-remove colors, **12** and **13**.

Model Master enamels were used for the primary camouflage, with duck egg blue applied first, masked, and followed by FS33531 sand, FS30219 brown, and FS34258 green, in that order.

For the aft fuselage "local" overspray areas, I mixed FS30145 brown using 3 parts Humbrol matt natural wood (110) to 1 part Humbrol matt light earth (119). I applied this mixture to the left side of the empennage; Model Master FS34227 green was applied to the right side.

A layer of PFG diluted with 70% rubbing alcohol was sprayed over the enamel to serve as a bed for decals and a barrier to the oil-paint weathering and fading that followed.

I used IsraDecal sheet IAF-17 for all



Yoav celebrated Israeli ace Ezra Dotan's air-to-air combat victories by building an A-4H Skyhawk that looks the part.

markings, referencing photos of the actual aircraft. Undiluted PFG was used as a wetting agent to help the decals settle.

Weathering and final assembly

Small touches of Van Gogh artist oils — burnt umber, ivory black, titanium white, Amarillo oxide transparent and Payne's gray — were applied to a palette with mineral spirits used as thinner for the wash. I applied "dirty" mineral spirits to the panel lines with a 000 brush and let it dry for several minutes.

Wanting to represent a relatively new aircraft, I used the wash sparingly in accenting the panel lines and wiped off excess wash with a cotton swab.

To fade the wings' upper surfaces, upper fuselage, and upper surfaces of the horizontal stabilizers, I dabbed on undiluted titanium white artist oil and carefully wiped them off in the direction of the airflow.

Weathering done, I superglued various items prone to accidental breakage, including: probes, lower fuselage drain tube, landing gear, landing gear doors, flaps, pylons, loaded bomb racks, and True Details photo-etched metal antennas (No. 72705).

A mix of PFG, 70% rubbing alcohol, and Tamiya flat base (X-21) sprayed over the model produced a semigloss finish like that seen on the fullsize plane.

Lastly, I added the True Details ESCAPAC ejection seat, canopy, clear tear-drop position lights (painted red on the bottom), and burnt iron exhaust nozzle.

Chrome silver reflective lenses were used for the lower wingtip and right main landing gear door. I attached these with two-part clear epoxy, which does not attack or fog surfaces.

The result was a beautiful and accurate replica of an Israeli ace's A-4H. **FSM**

References

Israeli A-4 Skyhawk Units in Combat, Shlomo Aloni, Osprey, ISBN 978-1-84603-430-5

Walk Around No.41: A-4 Skyhawk, Lou Drendel, Squadron/Signal, ISBN 978-0-89747-499-3

Aircraft of the IAF No.3: A-4 Skyhawk, Ra'anan Weiss and Yoav Efrati, IsraDecal, ISBN 978-965-7220-00-9



Few planes have such longstanding pedigree as the Dassault Mirage, which started its long run through numerous variants in the late 1950s with the III. Wolfgang models the fighter version of the Mirage 2000.

Bring a *MIRAGE* to *LIFE*

Turn a 1/48 scale Italeri kit into a French air force knockout! • BY WOLFGANG BUGL

The Dassault Mirage 2000 may not seem too dissimilar from its parentage leading all the way back to the III of the late 1950s. But let there be no mistake: The 2000 is a very different aircraft. Set aside its powerful SNECMA M53 engine and improved maneuverability, this multirole fighter packed then-state-of-the-art electronics and technology that made it a match for fighters the world over.

The first Mirage 2000 entered service with the *Armée de l'Air* (French air force) in 1984 with the C variant; more than 120 were delivered. They've seen action in the Gulf War, as United Nations and NATO aircraft over Bosnia and Kosovo, and over Libya in 2011.

I chose to model a 2000C from *Escadron de Chasse* (Chase Squadron) 2/5 *Île-de-France* (literally, Isle of France) based in Orange-Caritat in southern France. It flew escort during Operation Daguet in Operation Desert Storm in 1991 but didn't

see combat. Italeri's 1/48 scale Mirage 2000C (No. 2614) re-release of Esci's old, but good, kit served as the base for my model.

Warming up

Overall, the Italeri kit is a good one, with only minor inaccuracies. Before starting construction, I corrected some of those problems. The panel lines on the nose of the aircraft are dead wrong: I filled them with putty, sanded them smooth, and

scribed new panels to match references, **1**.

Similarly, I scribed missing panel lines on the tail fin, **2**. A pounce wheel helped me make rivets along some panels on the wing and control surfaces.

Improving the cockpit and exhaust

I purchased Eduard's Mirage 2000C photo-etched metal (PE) detail set (No. 48386), which has upgrades for everything from the cockpit to the undercarriage and would ease my way forward.

The details are applied directly to the kit's tub and instrument panel and look convincing under paint, **3**.

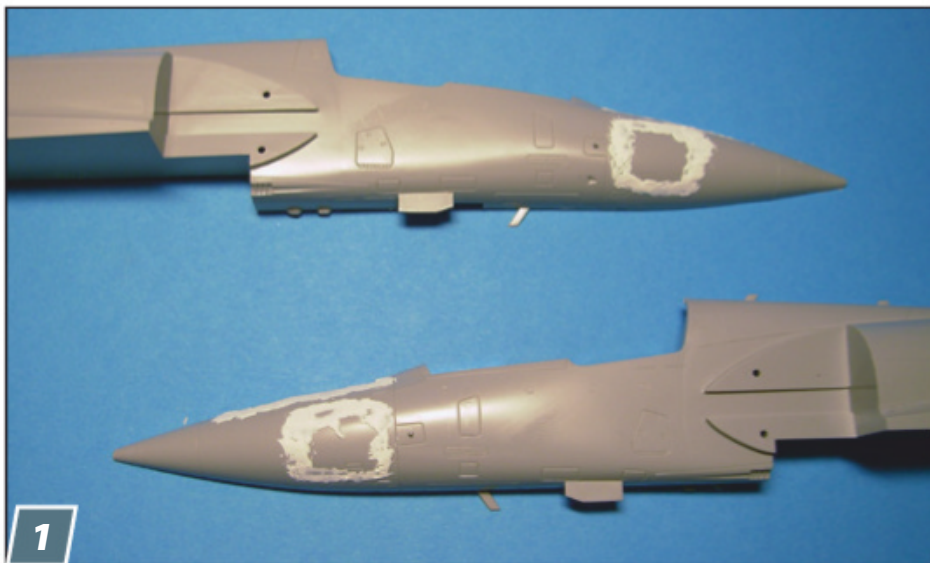
Dissatisfied with the kit seat, I found a resin Martin-Baker Mk.10 ejection seat from Hi Tech in my spares box. It didn't have molded-on seat belts, so I used the ones from the Eduard set, along with the canopus breakers, **4**. A test-fit showed the seat would work well with the kit cockpit.

After gluing PE details to the underside

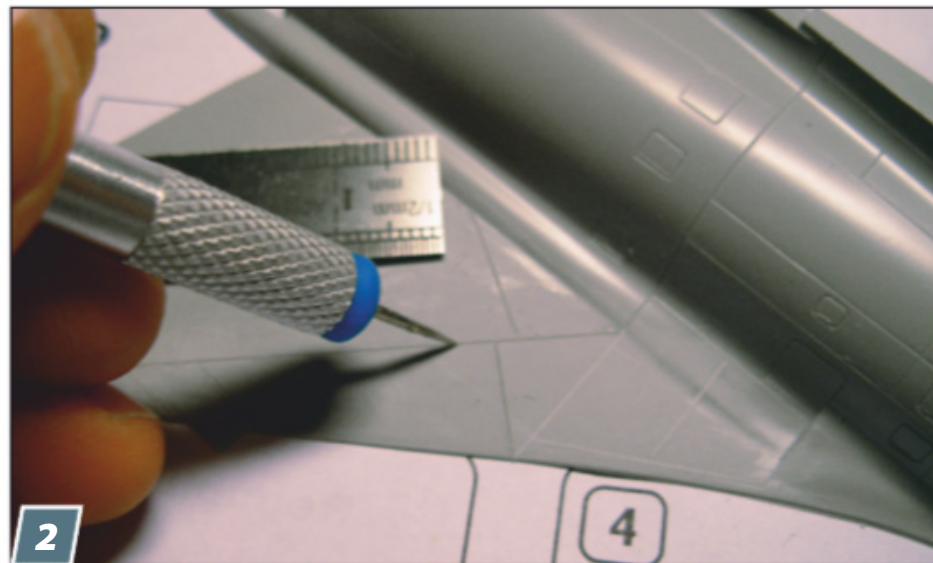
References

French Deltas: The Dassault Mirage 2000 over Europe Pt. 1 (Post WWII Combat Aircraft Series No. 11), by Friedrich List, Airdoc, ISBN 978-3-935-68711-9

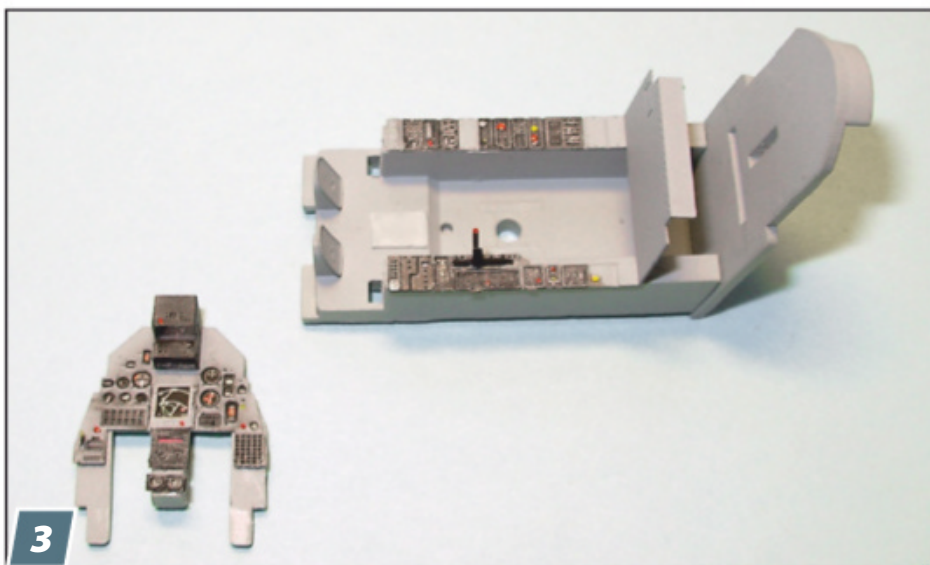
Combat Air Patrol, by Ian Black, The Crosswood Press, ISBN 978-1-840-37336-3



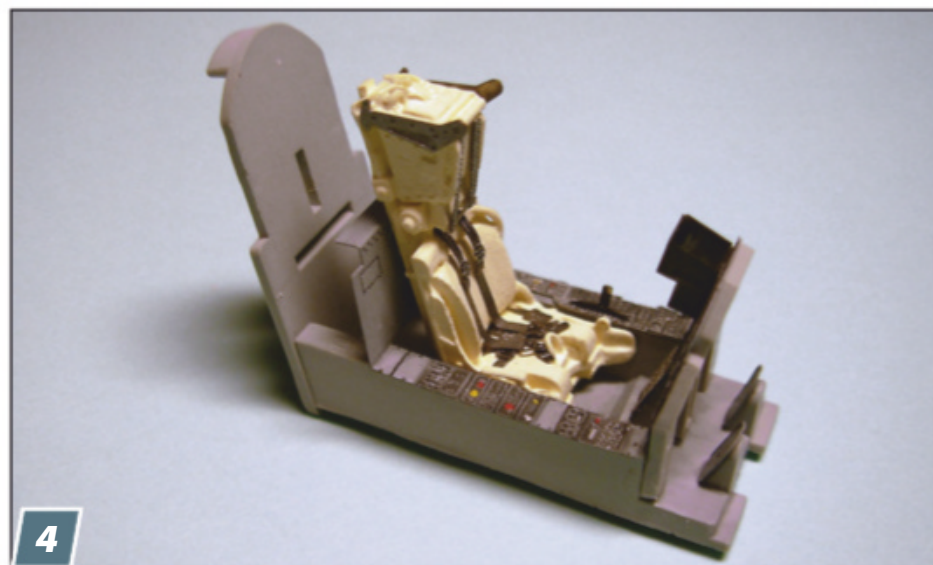
1 Before Wolfgang got into the cockpit, panel lines on the nose had to be filled and new ones scribed.



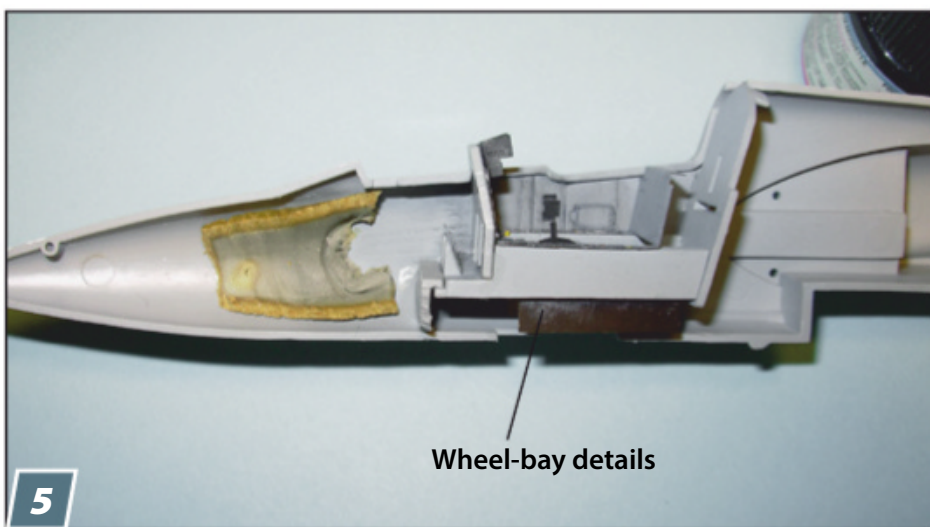
2 He added missing panel lines to the tail fin and used a pounce wheel to make rivets where needed.



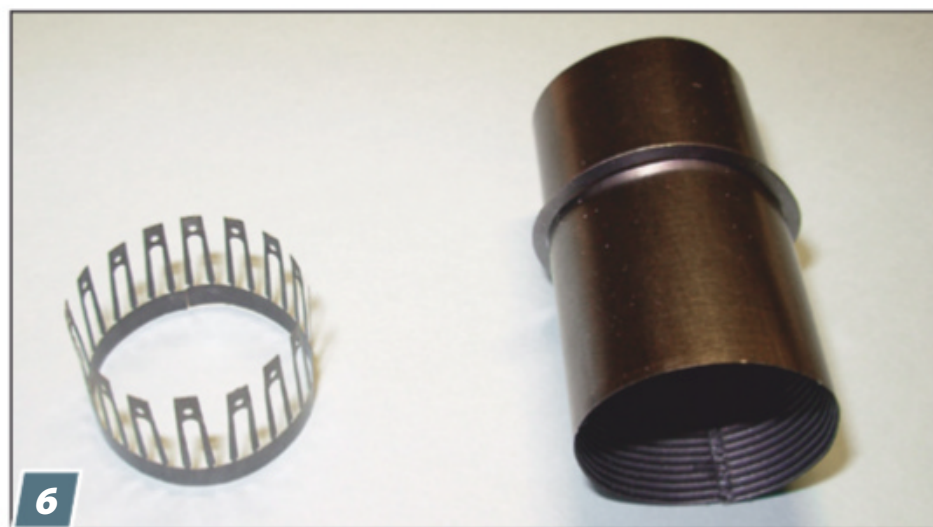
3 The Eduard PE details went directly on the kit tub and instrument panel.



4 The ejection seat came from Wolfgang's spares box. After test-fitting it, he left the seat out until the end of the build.



5 PE parts to detail the top of the nose-gear bay attach to the bottom of the cockpit tub.



6 The kit provided precious little detail for the exhaust pipe and afterburner nozzle. Eduard to the rescue!

of the cockpit tub, I attached the assembly to the fuselage's starboard half, **5**.

Italeri's exhaust and engine assembly lacks detail and isn't the correct depth. I replaced it with Eduard's tailpipe and added details to the afterburner exhaust nozzle, **6**.

I glued the tailpipe and exhaust, added a little weight up front just to be sure the plane would keep its nose down, and cemented the fuselage together. A little putty and sanding cleaned up a gap in the rear fuselage, **7**.

Wings and everything else

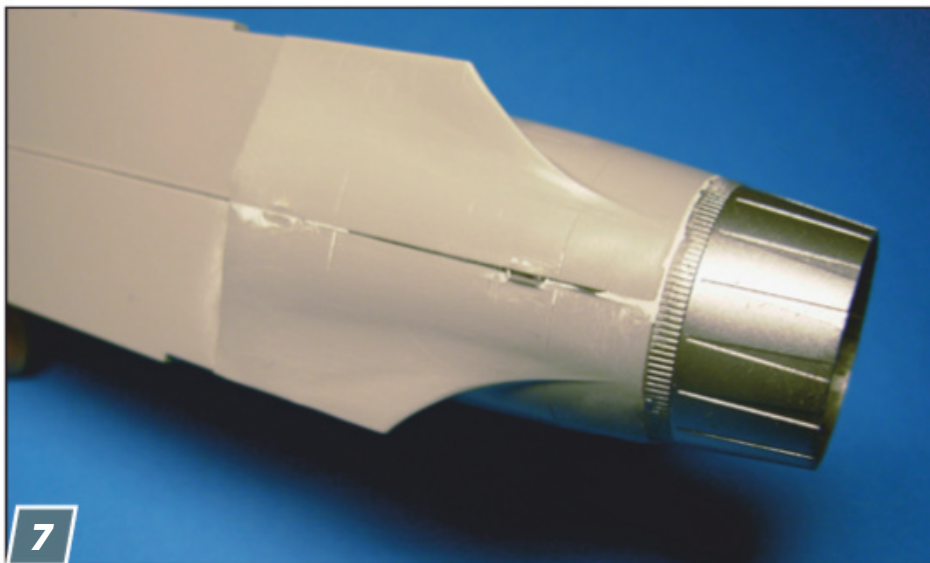
The Mirage's wings come in three pieces: one piece that makes up the belly of the plane and the bottom of both wings, and the two parts that form the tops. These and the intakes fit nicely but still required putty to fill seams, **8**.

Gaps on top of the wings needed filling, too. I masked along both sides of the wing seam to reduce the risk of filling panel lines I wanted to keep, then applied putty. Once it dried, I removed the tape and sanded the putty smooth, **9**.

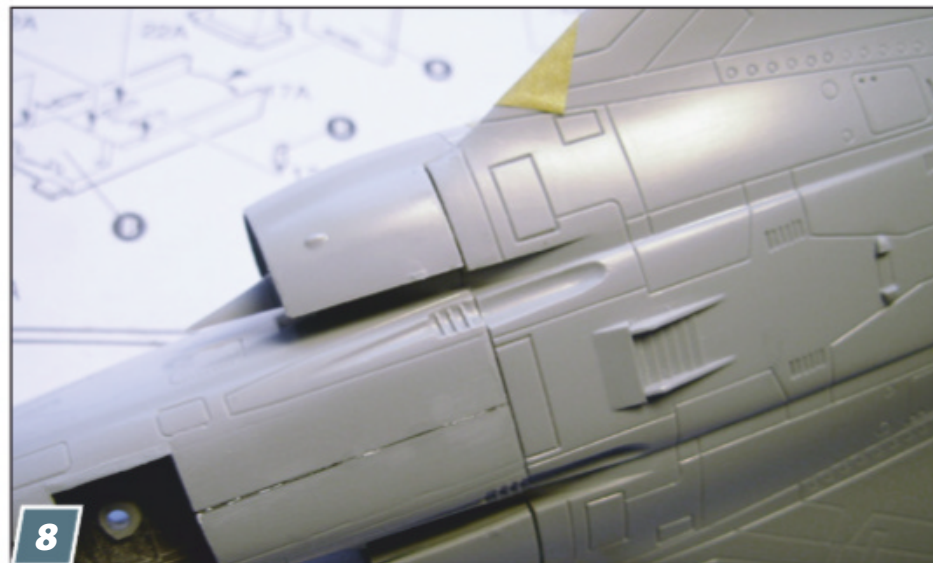
Short lengths of copper wire made fine hydraulic lines in the wheel wells, **10**.

The windshield didn't fit well and required a lot of careful sanding and test-fitting. In the end, I had to employ putty to blend it into the nose and get the part to look right. I temporarily attached the canopy to the fuselage with white glue and masked both it and the windshield, **11**.

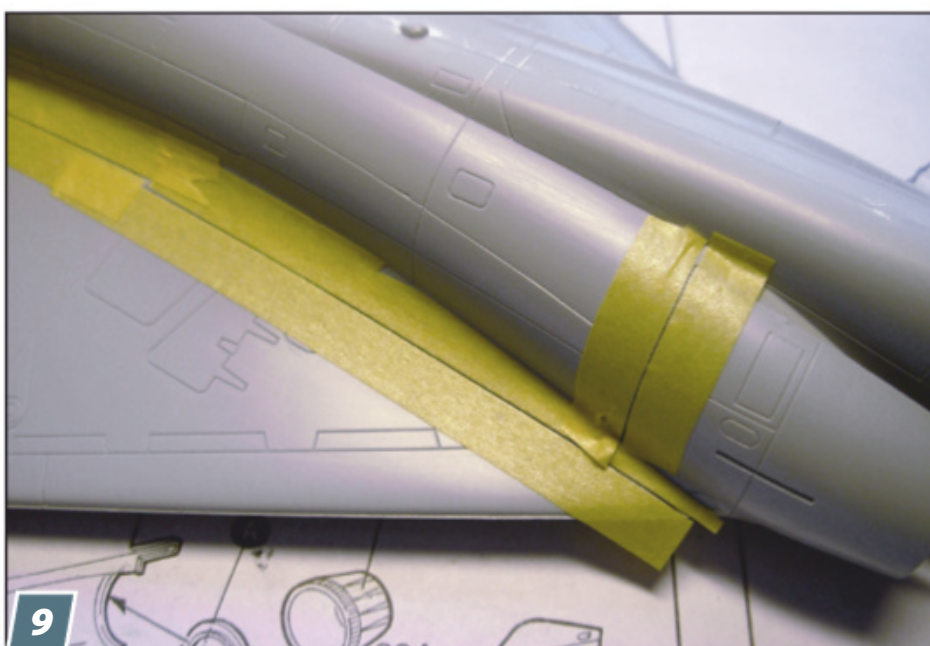
Lastly, I assembled the two Matra Super 530 missiles included in the Italeri kit. The pair of Matra Magic II missiles were replaced by the superior ones from Revell's



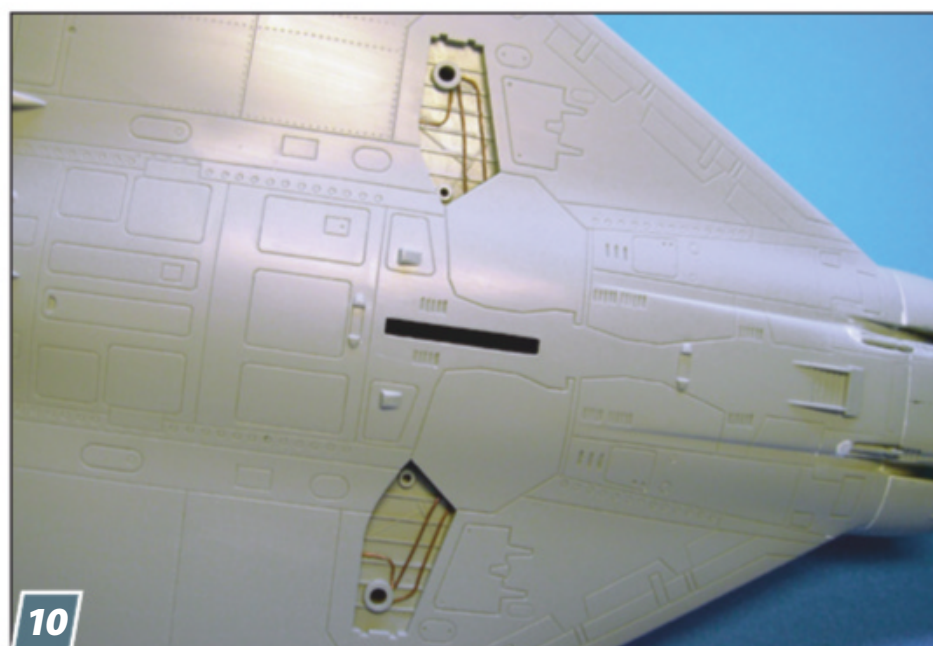
7 With the cockpit and engine in place, Wolfgang closed up the fuselage. The parts met almost perfectly, needing just a little putty along the seam.



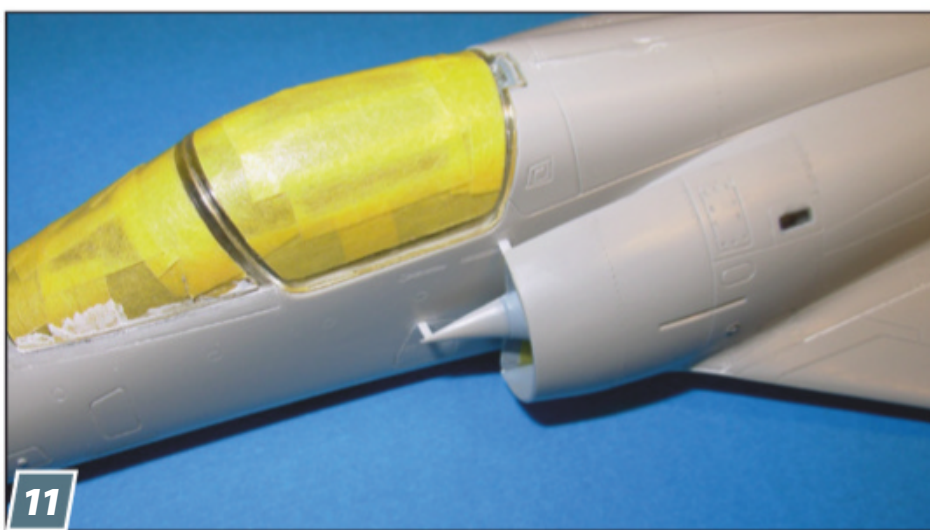
8 A slight gap at the wing roots and engine intakes required filling and sanding.



9 Tamiya tape along the seams let Wolfgang put the putty where he wanted it and minimized the risk of accidentally filling nearby details.



10 The main wheel wells were a bit plain, so little bits of wire went in to represent hydraulic lines.



11 Wolfgang uses white glue to temporarily attach the canopy to protect the cockpit during subsequent painting.



12 Black paint airbrushed along panel lines begins the pre-shading process. Blue and brown paint sprayed in the middle of randomly selected panels adds a little extra differentiation.

1/48 scale Rafale. The 3,000-gallon center-line fuel tank needed modification. First, I removed the winglets, then reduced its pylon height by 2mm.

Painting and finishing

I airbrushed a very thin mix of flat black along panel lines to start pre-shading. To add further variation to the finish, I sprayed patches of brown and blue all over the air-

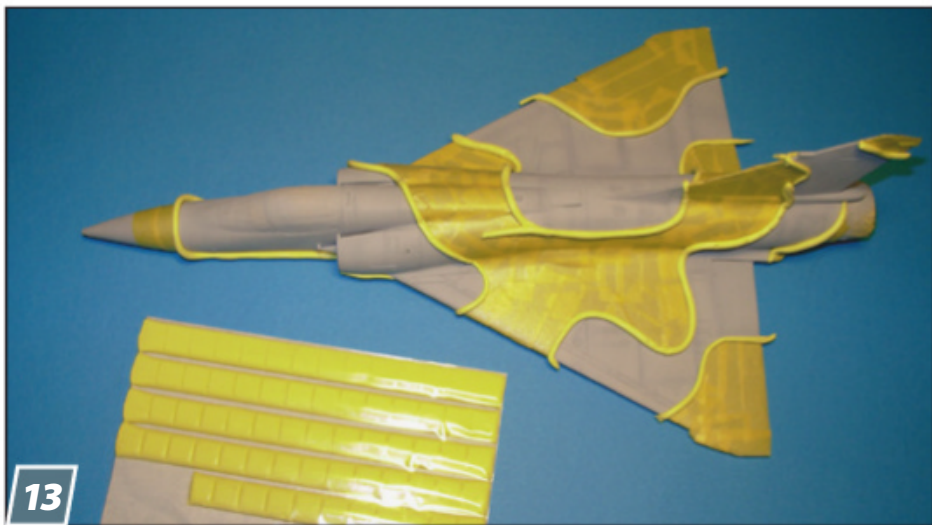
frame, especially on the underside, **12**.

A coat of LifeColor light compass ghost gray (No. UA026) went over the entire model. I was careful to allow the pre-shading to show through.

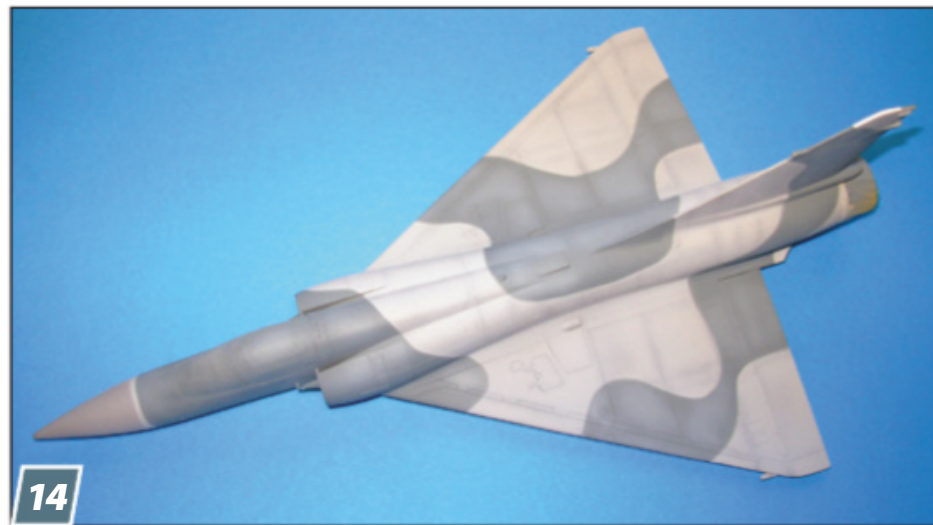
I used thin strips of Tamiya masking tape to rough out the outline of the hard-edged two-tone camo pattern. Once I was happy with the curves and placement, I finished masking the gray areas and placed

“worms” of poster putty along the edges to get the cleanest edge possible, **13**. It took a lot of time and patience, but it was worth the effort.

Next, I airbrushed LifeColor intermediate blue (UA045) on the upper surfaces. I lightened the color with a tiny bit of white, then sprayed panel centers to add a little extra dimension to the finish. Dark ghost gray (UA027) finished the radome, **14**.



13 Wolfgang masked off those areas he intended to keep gray. To make sure he achieved a nice, hard edge, he wound thin ropes of poster putty along the edges of the masks.



14 After spraying intermediate blue for the second camo color, Wolfgang lightened the paint with a bit of white and picked out the center of selected panels for contrast.



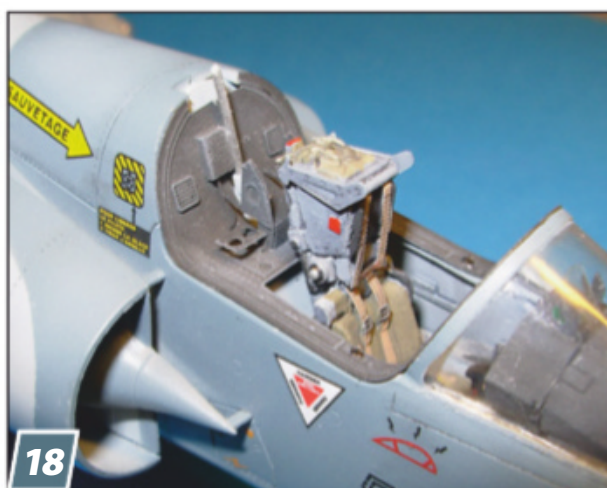
15 The Eduard set provided lines and oleo scissors to complete the undercarriage. Wolfgang painted the assemblies with Alclad II white aluminum.



16 The roundels and squadron insignia come from Carpena. The stencils, walkways, and other markings were taken from another kit in Wolfgang's stash.



17 Wolfgang sealed the decals under a gloss coat, let it dry, then applied a sludge wash of artist oils along panel lines. He used white spirit to wipe away the excess.



18 On final approach, Wolfgang finishes the resin Martin-Baker ejection seat and glues it inside the cockpit.



19 And last, but not least, the canopy receives the final details from the Eduard detail set and is glued on.

Alclad II white aluminum went over the wheel wells, undercarriage, and exhaust, **15**.

After the paint dried, I airbrushed a couple of coats of Tamiya gloss clear (X-22) to get a good surface for decals. The Carpena markings (No. 4828) I wanted to use were thick and wouldn't settle, even after generous applications of setting solution. I used only the squadron codes, roundels, and squadron patches for the tail fin. I

plundered stencils and walkways from an Eduard Mirage 2000D/N in my stash, **16**.

After sealing the decals beneath a gloss coat, I slathered a sludge wash of burnt sienna and dark gray artist oils along panel lines, around the exhaust, and in the wheel wells. Then I used a soft rag and white spirit to clean away the excess, **17**.

I installed the landing gear, antennas, and refueling probe, then sprayed a coat of

GSI Creos Mr. Hobby acrylic flat clear overall. With the end in sight, I finished painting the ejection seat and installed it in the cockpit, **18**.

Lastly, I affixed the canopy, **19**.

I love how elegant the Mirage 2000 looks in its French blue and gray camouflage. It's certainly an interesting and eye-catching subject worthy of any model aircraft collection. **FSM**

Give impact to a **STRIKE EAGLE**

Shades of gray whip Revell's F-15E into shape

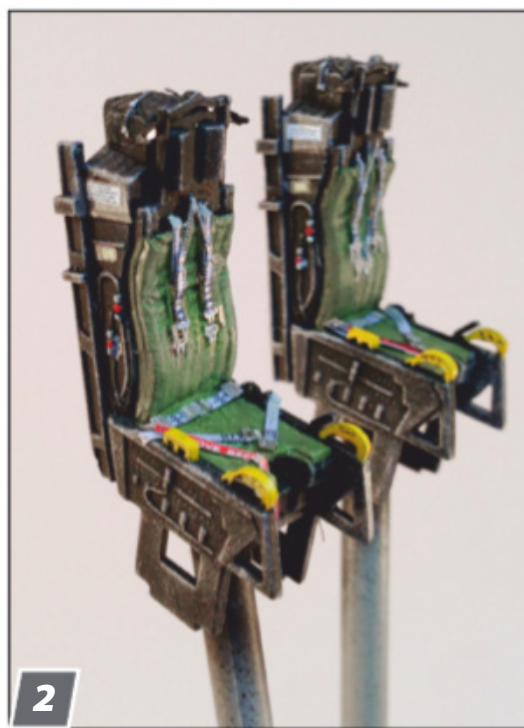
BY RAÚL CORRAL



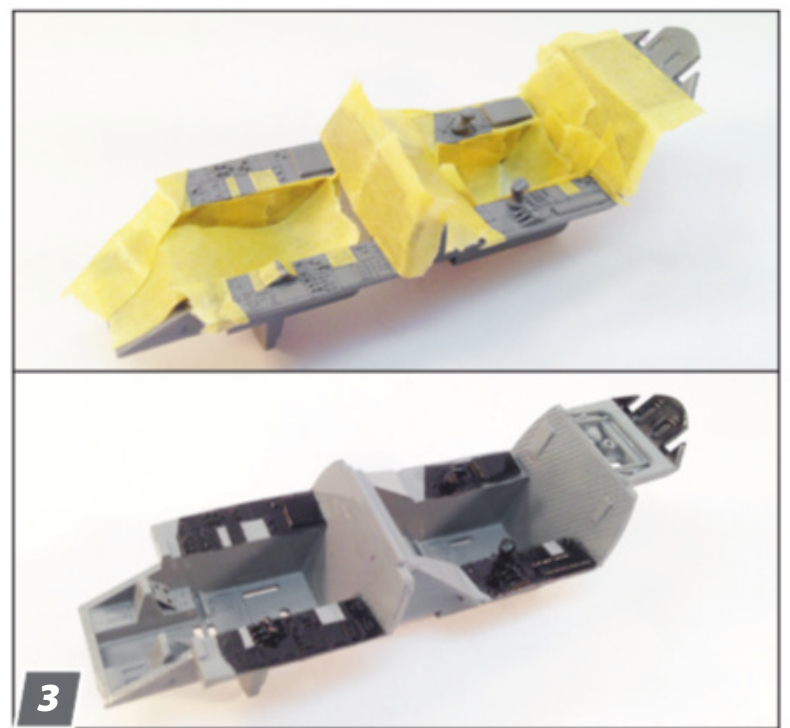
Loaded for bear, Raúl's F-15E shows what careful painting can do for a monochromatic finish.



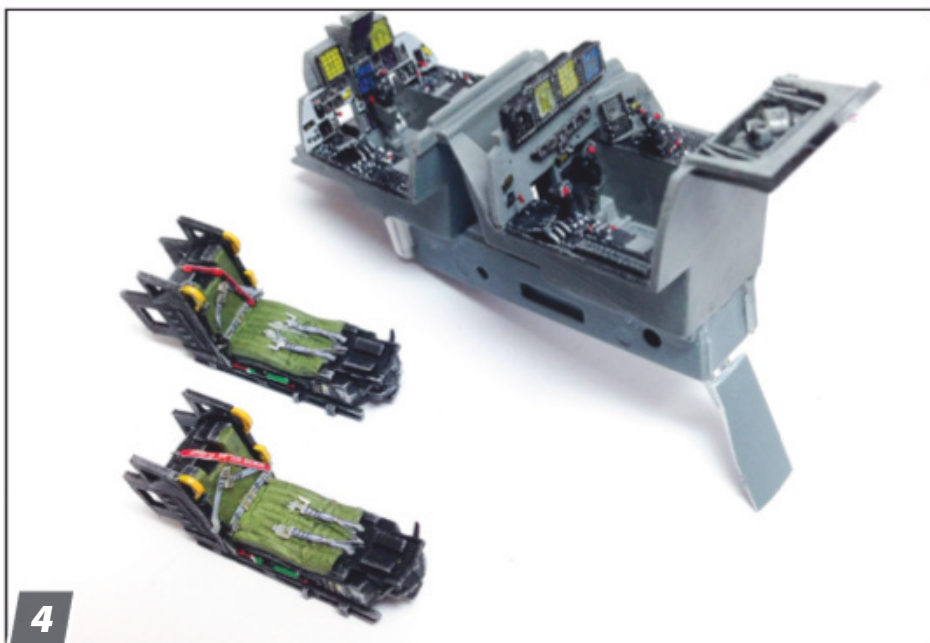
1 Light gray dry-brushing highlights the beautifully molded detail on the kit's ejection seats.



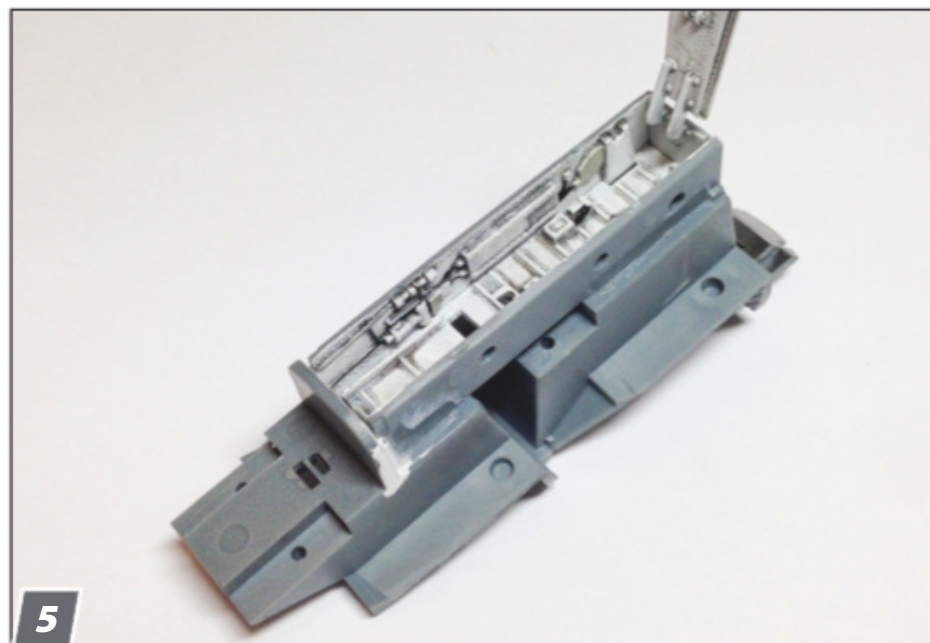
2 I painted ejection handles Mr. Hobby acrylic yellow, then picked out buttons and connectors with Humbrol enamel red and oxygen bottles with green.



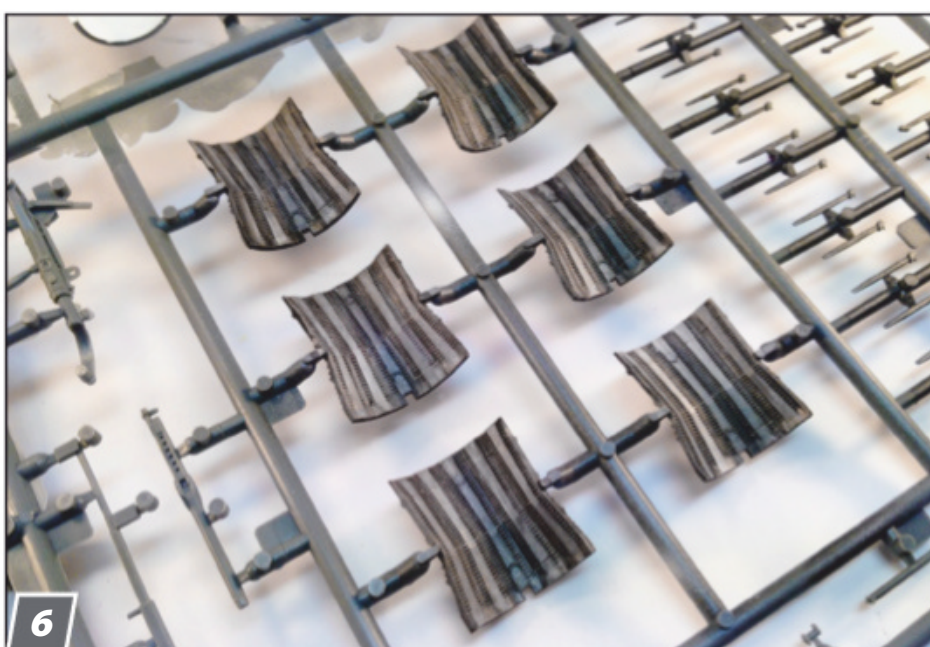
3 After carefully masking the cockpit (top), I airbrushed the consoles flat black. It's fiddly work, but the results are convincing.



4 A light coat of Humbrol matte varnish unified the cockpit components and evened out the sheen for a realistic finish.



5 Mixing Humbrol flat black enamel with Humbrol thinner produced a wash for the nose wheel well that gives it a grimy appearance.



6 I dry-brushed the interior surfaces of the engine nozzle parts with Humbrol flat white enamel to highlight detail lost to washes.



7 The exterior of the nozzles looks dark after metallic shades and black washes, but dry-brushing to come will brighten the surfaces.

Revell's 1/48 scale F-15E is one of the best kits I've built: amazing surface detail, exhaust nozzles and cockpit, convincing wheel wells and undercarriage, and good fits.

The only criticism I had was the lack of ordnance; the kit comes with two fuel tanks and four Sidewinders. (Revell has since reissued the kit with additional weapons.) I wanted to build my Strike Eagle fully loaded, so I grabbed four GBU-12s and pair each of AIM-120 AMRAAM and Sidewinder missiles from Kinetic's F-16I, and six Mk.82 bombs from HobbyBoss' F/A-18A. Two more GBU-12s from a Hasegawa weapons set completed the load-out for an Operation Enduring Freedom aircraft.

To give the detail more kick, I bought Eduard's photo-etched metal (PE) details (No. 49225) and Twobobs F-15E T-bolts Rule decals (No. 48169) for the 389th Fighter Squadron, which deployed to Bagram air base in Afghanistan in 2011.

The cockpit

I painted the ejection seats Tamiya flat black (XF-1), then dry-brushed them with Humbrol flat light gray (No. 147), **1**. I hand-painted the seat cushions with Mr. Hobby acrylic field green (H340) using a fine brush and very light, almost dry-brush, touch to allow some of the engraved detail to show. Detail painting and Eduard PE belts finished the seats, **2**.

Revell's tub is so well detailed that Eduard doesn't even try to replace the side consoles with PE. I airbrushed the components Mr. Hobby acrylic dark ghost gray (H307), then masked to spray the consoles flat black, **3**.

Dry-brushed Humbrol light gray highlighted raised detail before I hand-painted small buttons and handles with Humbrol red enamel (No. 60).

Eduard's color PE added a lot of detail to the instrument panels, including instruments, handles, buttons, and multifunction displays. The last would more likely be

black on an aircraft sitting on the flight line, as I was modeling, **4**.

Before attaching the nose wheel well under the cockpit, I painted its parts Tamiya flat white (XF-2), **5**.

The engines

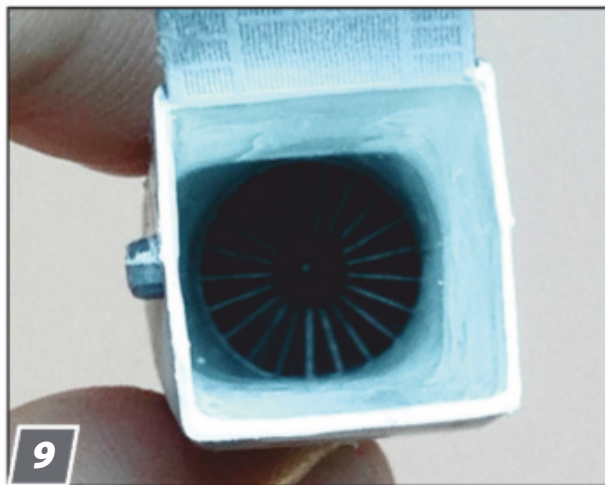
A highlight of Revell's F-15E is the exhaust nozzles. The kit features exposed actuators and intricate detail more akin to resin than plastic. I airbrushed the interior surfaces Tamiya flat white, followed by a wash of Humbrol black enamel, **6**.

I airbrushed the exterior surfaces of the exhausts with a mix of 1 part Tamiya chrome silver (X-11) and 4 parts flat black. A wash of Humbrol enamel gloss black (No. 21) emphasized recesses, **7**. Later in the build, I dry-brushed the nozzle exteriors with Humbrol Metalcote polished aluminum (No. 27002) to highlight molded detail.

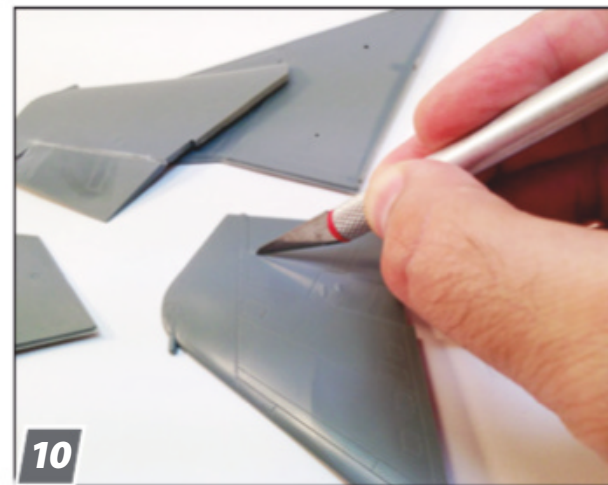
I painted the interior of the jet pipes with the same mix of chrome silver and flat



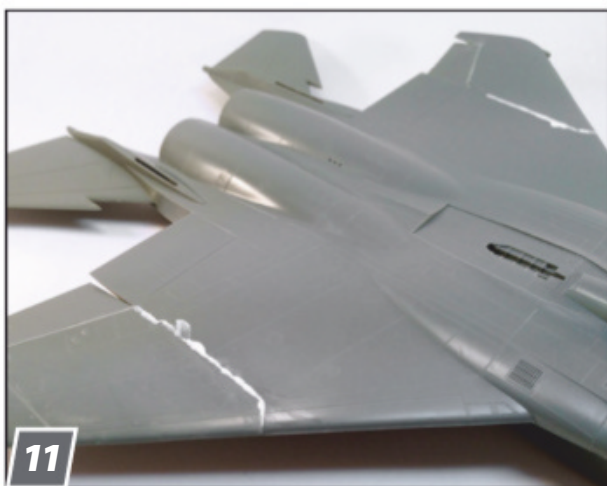
8 I installed Eduard PE on the afterburner parts inside the jet pipes for greater realism. Dry-brushed Humbrol Metalcote polished steel highlighted the detail.



9 Don't forget to mask the painted and dry-brushed engine faces or you'll ruin them when airbrushing the inside of the intakes.



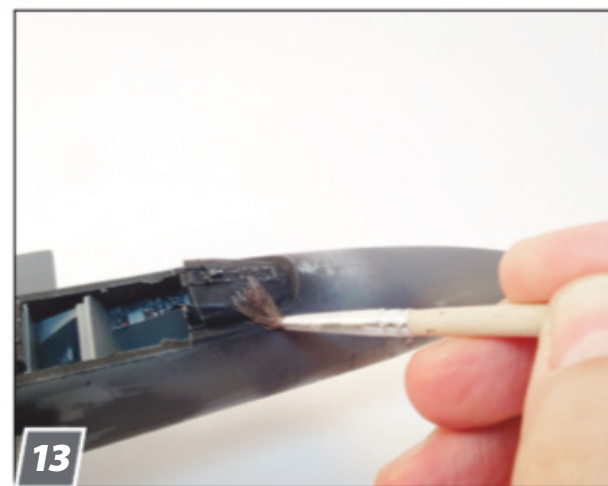
10 I cut around ailerons by repeatedly passing a sharp blade along the engraved outlines. After bending them into position, I glued the wing halves together.



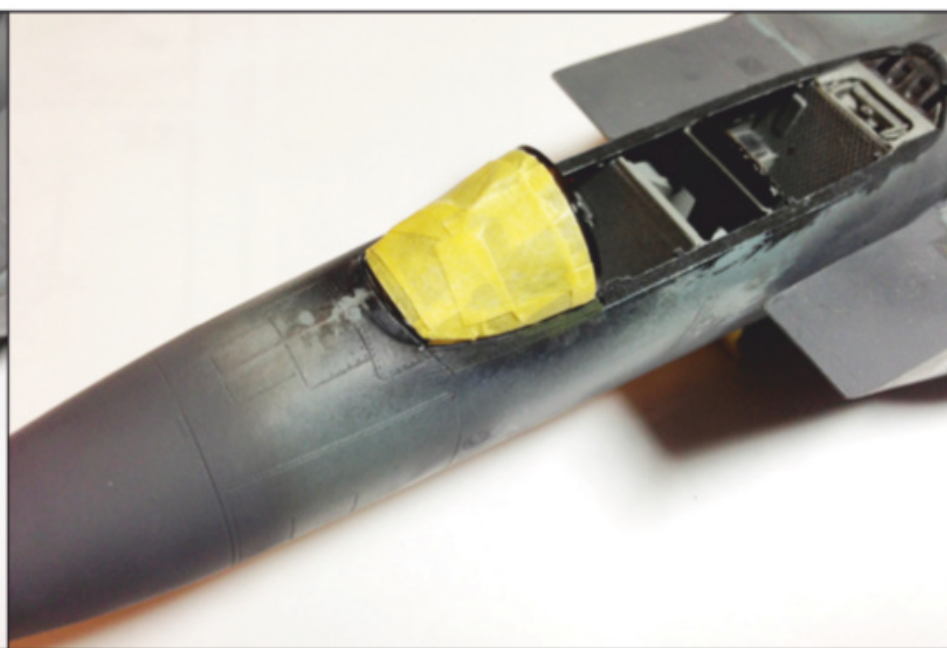
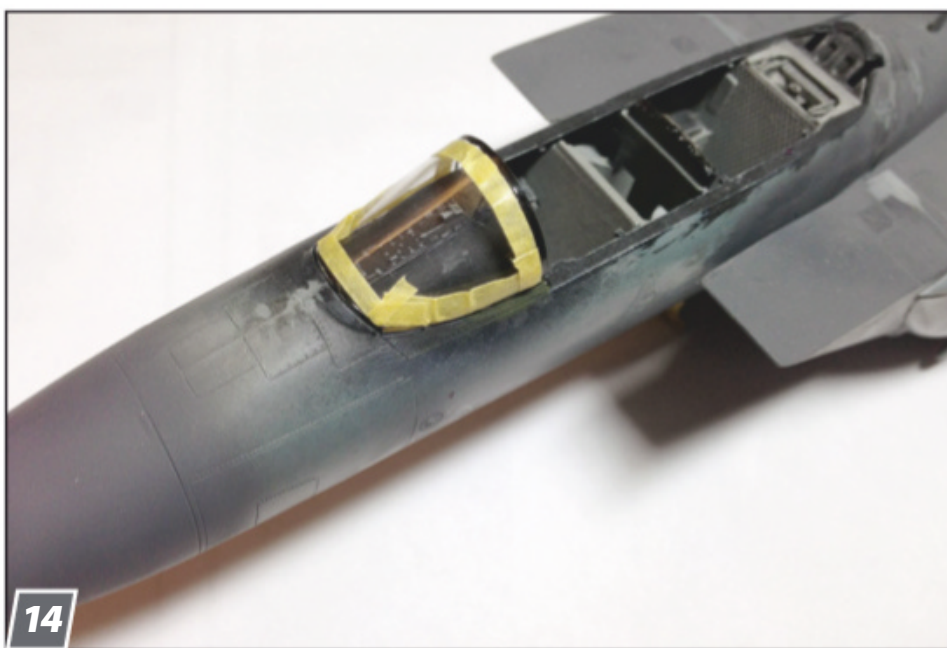
11 To fill small gaps, I used enamel paint. The thick paint dries hard, can be sanded easily, and application is as simple as painting a line.



12 Much of the airframe behind the intakes is hard to paint after assembly, so I airbrushed the area with the base dark gray before installing the intakes.



13 With the HUD fitted, I lightly dry-brushed Humbrol light gray to highlight the detail on the flat black coaming.



14 To begin masking the windshield, I placed thin strips of tape along the frames (left), then filled the pane with larger pieces (right).

black; the outer edges were painted with Humbrol Metalcote polished steel (No. 27003), **8**.

The intakes went together easily and needed just a little sanding to blend the joins. I hand-painted the interior surfaces Tamiya flat white and the fan with my mix of chrome silver and flat black. Dry-brushing Humbrol Metalcote polished aluminum made the blades pop in the darkness, **9**.

Airframe assembly

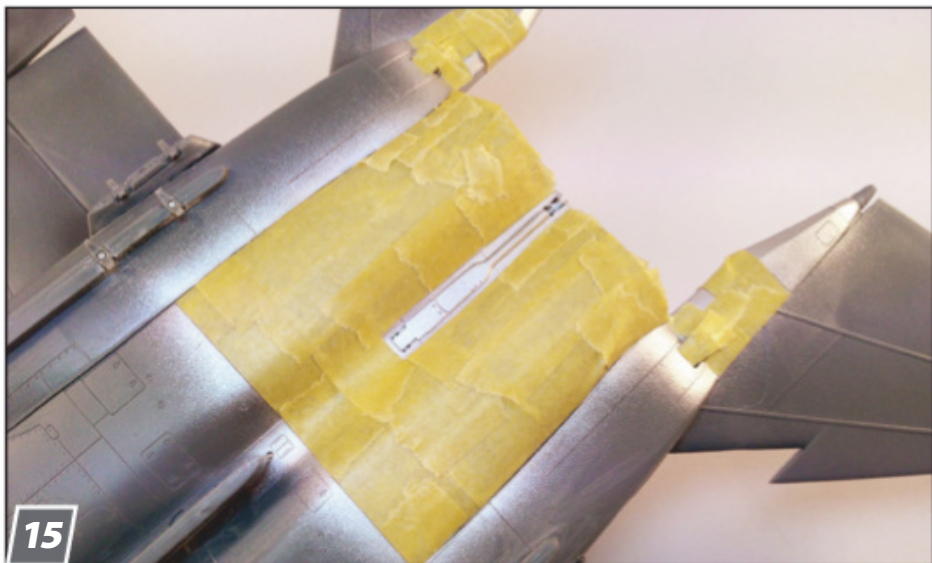
The major airframe components fit well and went together like a dream. The only change I made was modifying the ailerons to droop as seen on most F-15s on the ground. Before gluing the wings together, I scored around the edge of the ailerons, **10**, then removed and repositioned them.

The only fit requiring work was a minor gap between the wing sections. I filled it with Humbrol gloss white enamel, **11**.

The fit of the air intakes to the fuselage impressed me. Prior to installing them, I airbrushed the interiors with Tamiya gloss white (X-2) and the exteriors Tamiya dark gray (XF-24), a good match for the FS36118 used on Strike Eagles, **12**.

Before attaching the canopy, I installed Eduard's PE heads-up display on the instrument panel shroud, **13**.

After hand-painting the windshield frame Humbrol flat black with light gray



15 Careful masking protected the metal areas at the rear of the airframe.



16 Easy to cut and flexible enough to push into tight spots and stay, foam rubber makes a great mask for wheel wells and intakes.



17 Because all of the variation in the camouflage would come from post-shading, I sprayed a solid, even base coat of Tamiya dark gray over the entire airframe.



18 Using a light touch, I airbrushed a slightly lighter shade of gray into panel centers.



19 The key to making post-shading look right is to keep the brush moving and vary the density of the color.



20 Hand-painted color adds variety to the F-15's finish. I confined this work to small inspection panels.

rivets, I glued it on the model and masked it for painting, **14**. Careful sanding and polishing removed a mold seam down the center of the canopy, which I masked but left off the model for painting.

Shades of gray

Before airbrushing the camouflage, I painted the natural-metal areas around the exhausts with Tamiya chrome silver, **15**. To protect the previously painted wheel wells, I cut bits of foam left over from a box of my wife's perfumes, **16**.

The main challenge when building a Strike Eagle is the color: Overall gunship gray is just not that exciting. I wanted to break up the monochromatic finish by post-shading with contrasting tones.

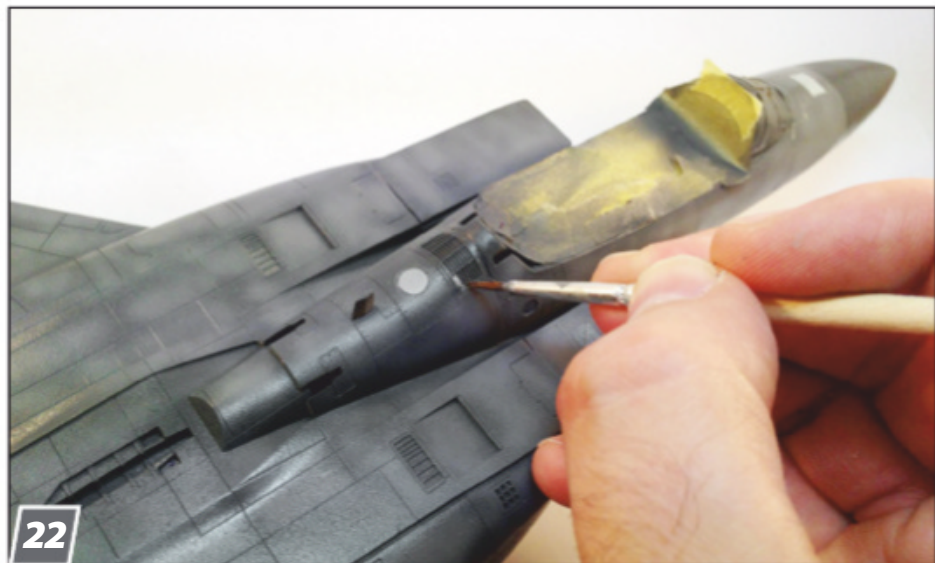
I sprayed a solid base coat of Tamiya dark gray, **17**. Two hours later came the second and decisive step: Mr. Hobby dark gray (H305), a slightly lighter shade, sprayed into panel centers, **18**. I repeated this process, keeping the layers of lighter gray thin and uneven to build up a random, weathered surface, **19**. Only the nose cone

remained unaltered. For more contrast, I hand-painted some inspection panels with Mr. Hobby dark gray, **20**. Brush-painting produces a slightly different shade than the same color applied by airbrush.

In front of the cockpit is an ADF antenna that I masked and painted Mr. Hobby light ghost gray (H308), **21**. Aft of the cockpit, I hand-painted the small air-conditioning louvers behind the cockpit with Tamiya chrome silver and the UHF antenna Mr. Hobby light ghost gray, **22**. The weapon-attachment points on the



21 A few strips of tape masked an antenna panel in front of the cockpit.



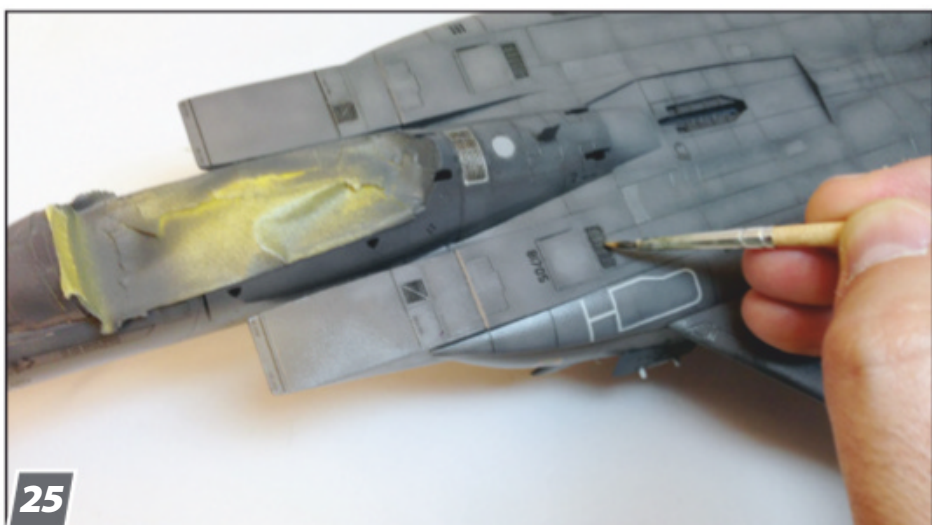
22 But some panels are more easily hand-painted, including a vent and antenna behind the canopy.



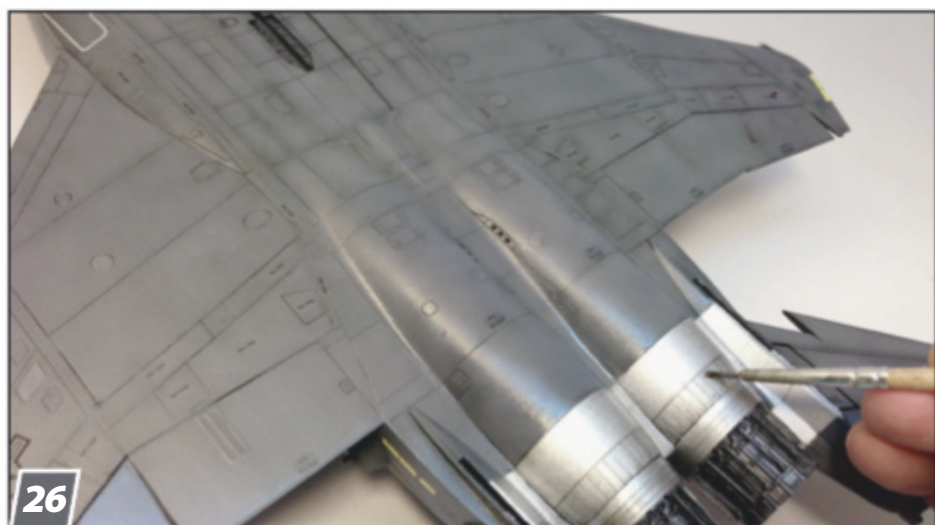
23 Applying a panel-line wash is one time when you don't need to color inside the lines. Rather it's important to ensure all of the recessed details receive the color.



24 Constantly changing cotton swabs when removing excess wash results in a relatively clean aircraft. Using the same swab for extended periods moves the wash around, simulating additional dirt and grime.



25 Vents and grilles need a darker wash — in this case, black — to look like openings in the surface.



26 To deepen panel lines on the exhaust section, I applied a dark metallic wash.

pylons received a hand-brushed coat of Humbrol Metalcote polished steel.

Twobobs' decals went down perfectly over several light coats of Tamiya clear (X-22); let this dry for 48-72 hours before applying the decals to avoid marring the surface with fingerprints. I sealed the markings with more Tamiya clear.

Weathering

For a wash, I combined equal parts Humbrol red brown (No. 100) and flat black enamels and diluted it with Humbrol

thinner. Using a fine brush, I painted this mix along panel lines, allowing it to flow into engraved details, **23**. Once the model was completely covered, I removed excess with cotton swabs, always dragging them in the direction of airflow, **24**. To give vents and louvers the look of being open, I applied a gloss black wash, **25**.

I weathered the metallic areas at the exhausts with a wash of equal parts Humbrol silver (No.11) and flat black, **26**. A sharp pencil added depth to panel lines around the nozzles, **27**, as well as control

surfaces, **28**. Fluid leaks under the plane were replicated with Humbrol dark brown enamel and a little thinner streaked with a fine brush, **29**.

Ordnance

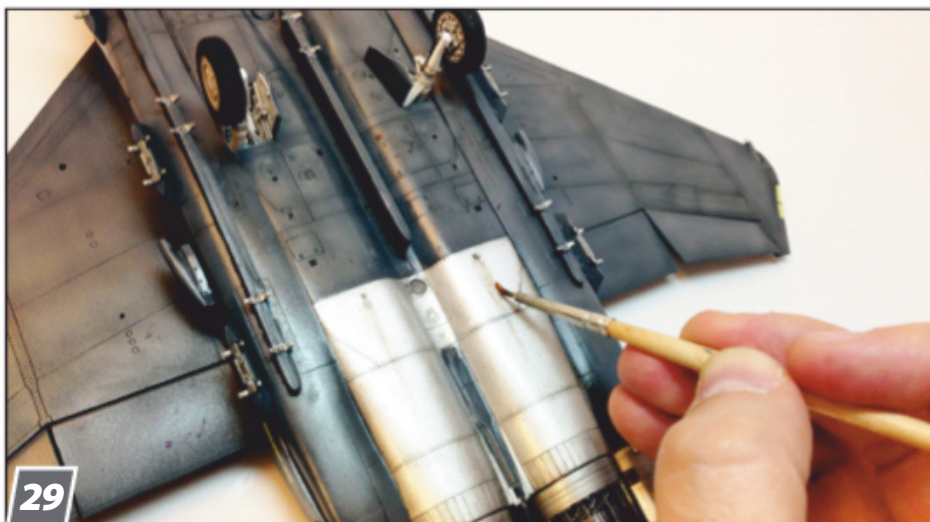
I modified the kit's missile pylons by grafting on AIM-120 rails from the Kinetic F-16I, **30**, then painted them, the targeting pods, and fuel tanks the same way as the airframe: Tamiya dark gray post-shaded with Mr. Hobby dark gray. Decals and weathering tied them into the aircraft.



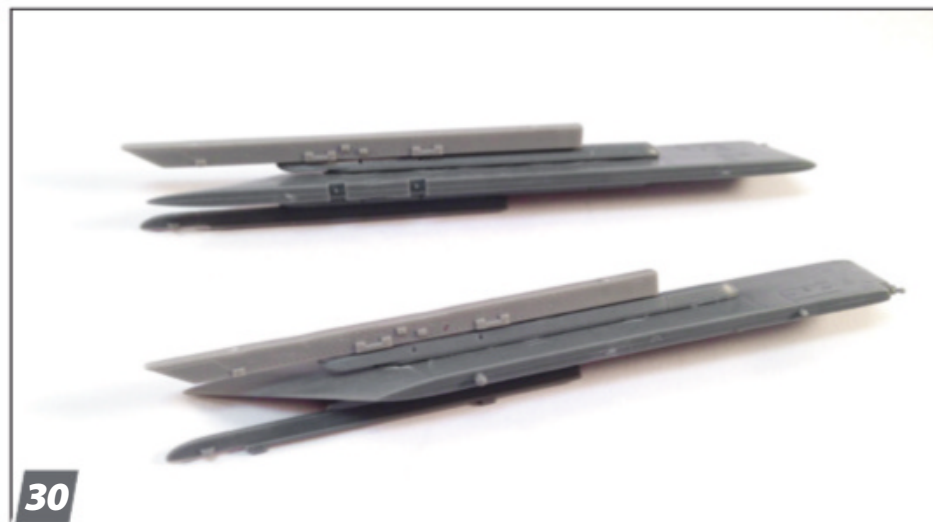
A sharp pencil refines panel lines on natural metal.



The same technique outlines control surfaces like the rudders.



I painted fluid streaks from drains underneath the engines with dark brown artist oils on a fine-tip brush.



The kit's missile pylons were designed to carry two Sidewinders, so I added rails from a Kinetic F-16 to mount AIM-120s in place of one Sidewinder rail on each pylon.



For painting, I mounted all of the weapons on makeshift handles.



Careful painting, weathering, and decals add realism to the bombs and missiles. Arming the Strike Eagle was one of the last steps in the project.

I prepared the bombs and missiles for painting, **31**, starting by spraying the AIM-120 heads with Tamiya flat white.

After masking, I airbrushed all of the missiles Mr. Hobby light ghost gray over all of the missiles. The fins of the AMRAAMs and the heads of the Sidewinders were hand-painted Mr. Hobby dark gray mixed with a couple of drops of Tamiya chrome silver.

I airbrushed the bombs with Tamiya olive drab (XF-62), then hand-painted the center section of the GBU-12s with

Tamiya JGSDF olive drab (XF-74), providing a nice contrast with the rest of the bombs. I detailed the GBU front sections with Humbrol red brown; the noses of the Mk.82s are Mr. Hobby light ghost gray.

Decals and dry-brushing brought the missiles to life.

The final step in weapon prep was painting the guidance units: a mix of Tamiya chrome silver and Mr. Hobby yellow (H413) for the GBU-12 seekers, and straight Tamiya chrome silver on the Sidewinders, **32**.

Mission ready

Before final assembly, I sprayed all of the components with a few thin coats of Humbrol matte varnish (No. 49) and set the model aside for 48 hours. Don't be tempted to rush ahead here, as it's easy to mess up the model with fingerprints before the varnish cures — and that wouldn't be good this close to finishing.

I added the last parts to complete my F-15E. I'm proud of the Strike Eagle, and it is one of the most enjoyable builds I've done to date. **FSM**

UP-ARMORING *Tamiya's* HUMVEE

Scratchbuilding armor
and other details for a
2004 Baghdad patroller

BY AARON SKINNER

As the Huey helicopter was in Vietnam, the Humvee is ubiquitous in the Iraq War. Early in the conflict, many Humvees went into action with little or no armor.

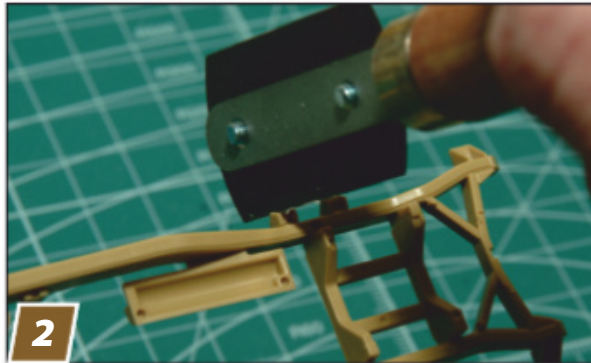
In late 2003 and early 2004, insurgent attacks had the military looking for ways to boost protection for soldiers. While production of the M1114 Up-Armored Humvee ramped up, kits for armoring the older, unprotected vehicles began arriving in the Middle East.

Scratchbuilt armor,
detailed weapons, and
extra stowage mark
Aaron's model as a
Humvee which served with
the Arkansas National
Guard in Iraq in 2004.

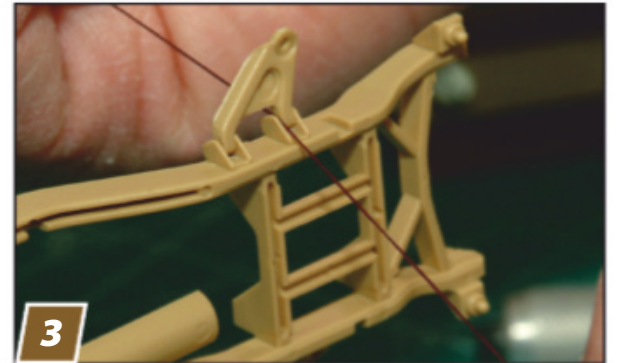




The inspiration: A Humvee of Delta Company, 3rd Battalion, Arkansas' 39th Infantry Brigade, seen here at a base in Baghdad in June 2004.



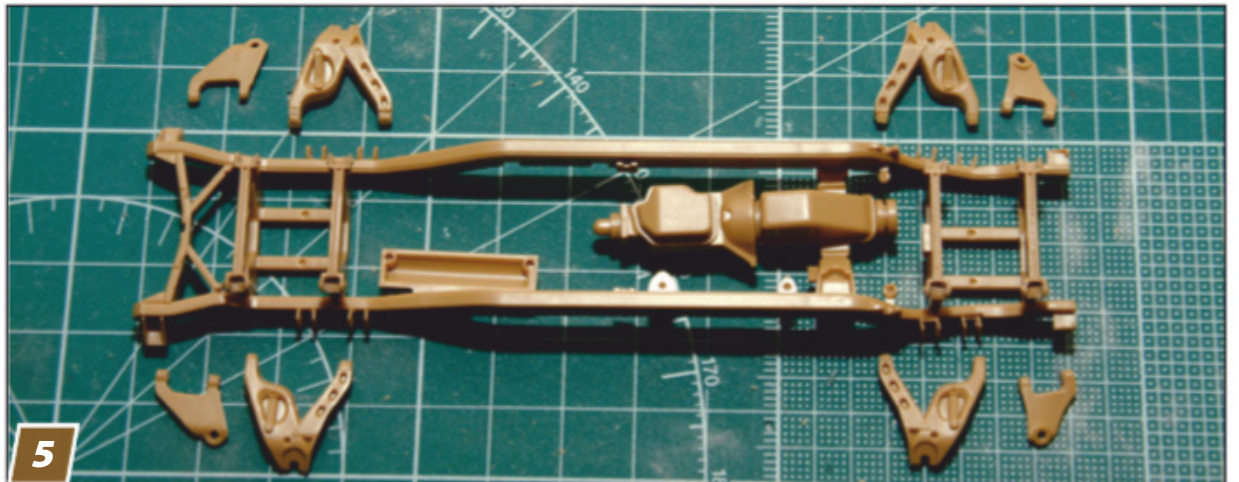
To lower the suspension, I separated the suspension arms from their brackets with a razor saw.



Sewing thread completes the cut to remove the arm from the chassis. The thread is easy to control and reaches areas a saw can't.



Using side clippers, I removed the lower wishbones from the frame. Doing this necessitated opening a second kit.



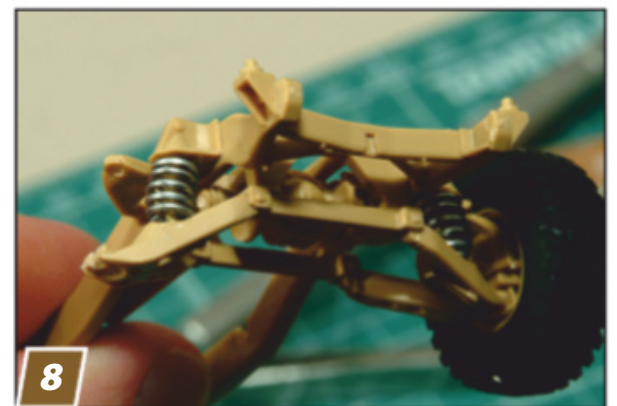
The suspension components laid out after the modifying cuts were made: The suspension parts looked similar and were easy to confuse, so I labeled each part to ensure it ended up in the right location when he reassembled the Humvee's chassis.



A 7mm section of $\frac{1}{16}$ -inch brass rod telescoped inside a 5mm section of $\frac{3}{32}$ -inch brass round made the shock absorbers.



Paper clips, straightened then wound around a mandrel, produced scale springs that were easily compressed to fit their space.



Springs and shock absorbers in position: The bowed, unevenly compressed springs match photos of Iraq War vehicles.

One of these was the ASK (Armor Survivability Kit) developed by the Army's Research Development and Engineering Command.

I wanted to model a Humvee of Arkansas' 39th Infantry Brigade during 2004, including ASK, extra stowage, and correct armament, **1**. Scratchbuilding seemed the best approach because the vehicle I was modeling — a four-door hardtop of Delta Company, 3rd Battalion, with *Sally* emblazoned above the windshield — had several unique features not included in aftermarket detail sets.

Setting aside my trepidation about a project this large, I commenced building, starting with Tamiya's 1/35 scale M1025 Humvee Armament Carrier kit

(No. MM-263) and Eduard's photo-etched metal (PE) detail set.

Low rider

The ASK's steel armor added 1,300 pounds to the vehicle, causing these Humvees to sit noticeably lower.

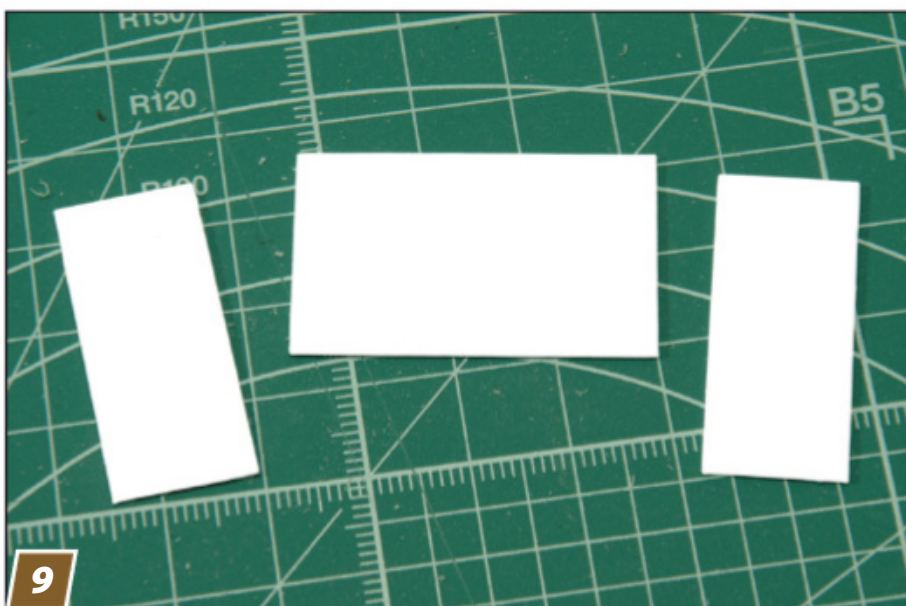
Tamiya's suspension components are molded into place on the frames. Starting with a saw, I cut between the upper wishbone arms and their brackets, **2**. After opening up holes with a small bit, I used a piece of thread to complete the cut, **3**, then cleaned up the brackets.

The join between the lower arms and their frames is more complicated, so I decided to sacrifice a second kit. I clipped the arms off below the bracket, **4**. This

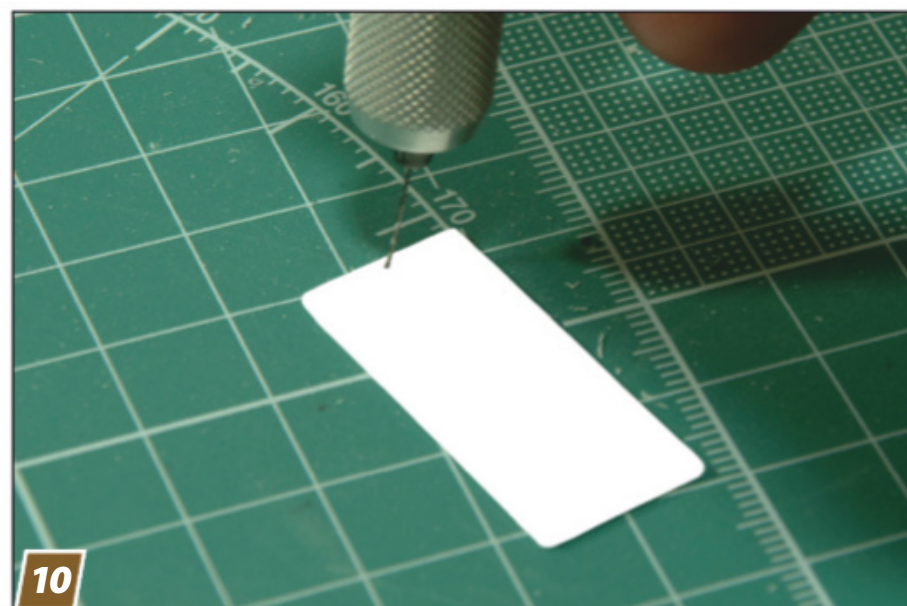
leaves two beams for front and back that are easily cleaned up before being glued onto the chassis. Lower arms were cut from the suspension of the second Humvee kit, **5**.

Tamiya molded the springs as single pieces with mounts and shock absorbers. I cut the spring from the mount, then drilled a locating hole for the shock absorber in the mount. Telescoping sections of brass round make up the shock absorbers, **6**. For springs, I wound paper clips around a .10-inch section of Mission Models' small Multi-Tool, **7**. I cut the axles from the differentials.

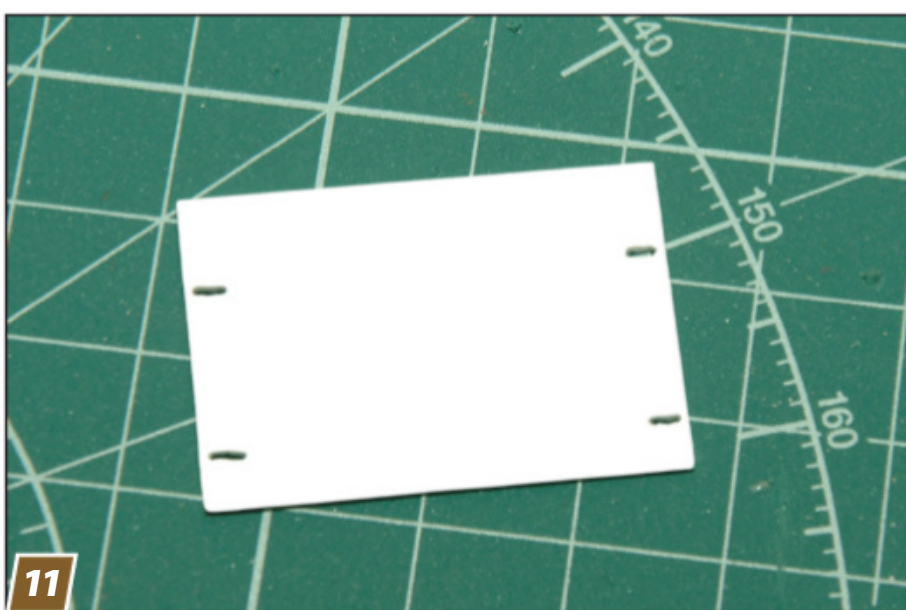
I installed the new shocks, then reassembled the other suspension components around them, **8**.



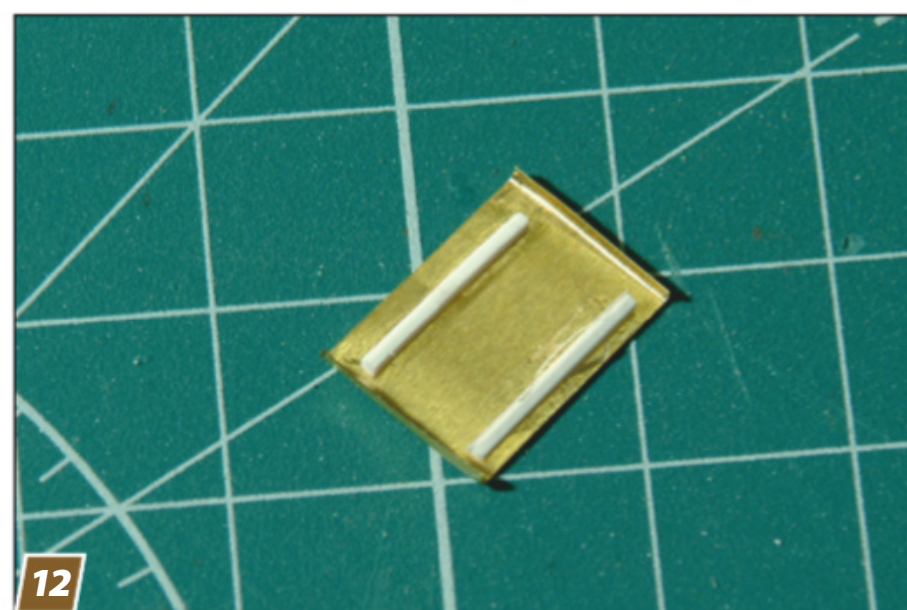
The Humvee's armored back wall consists of two 14mm x 33mm seat backs and a 36mm x 22mm center panel cut from .030-inch styrene.



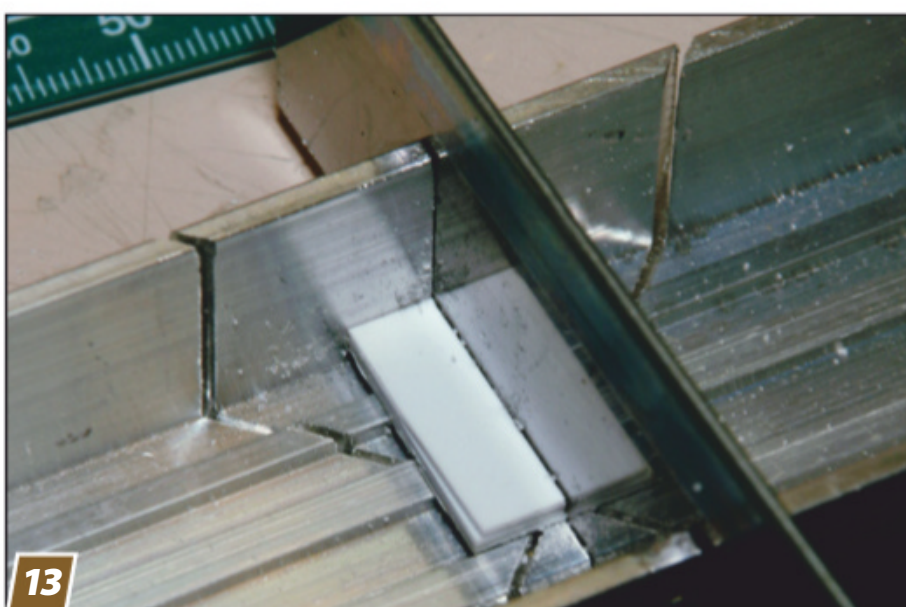
Referring to photos, I used a No. 78 bit in a pin vise to open three holes in the top of each seat back.



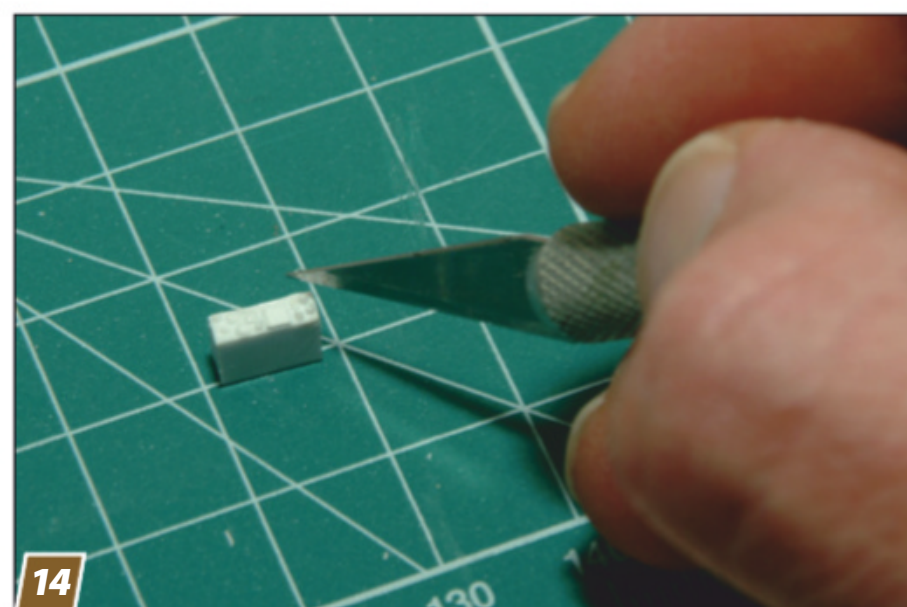
The center panel features mounting holes on each side made with a drill bit and opened with a knife.



The SINCGARS radio started with a brass sheet and strip-styrene base. The ends were shaped around brass rod.



Three pieces of .030-inch sheet styrene, laminated then trimmed to shape in a miter, created the body of the radio.



Salami-sliced styrene rod of differing diameters provided dials and sockets for the front of the radio unit.

Interior

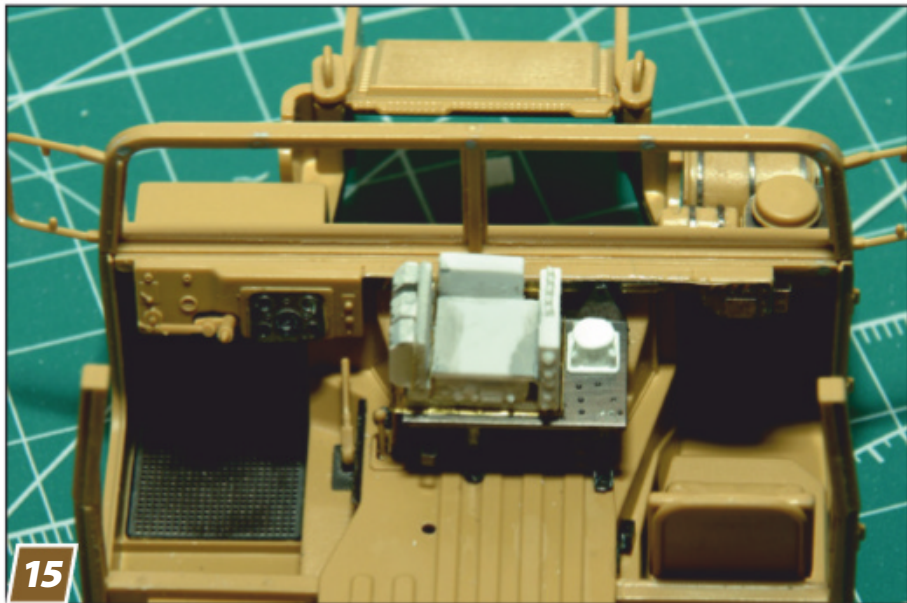
After adding Eduard details, I constructed the three-piece armored back wall, **9**. I detailed the seat backs, **10**, and center panel, **11**.

The kit radio is not the SINCGARS system currently in use, so I scratchbuilt a

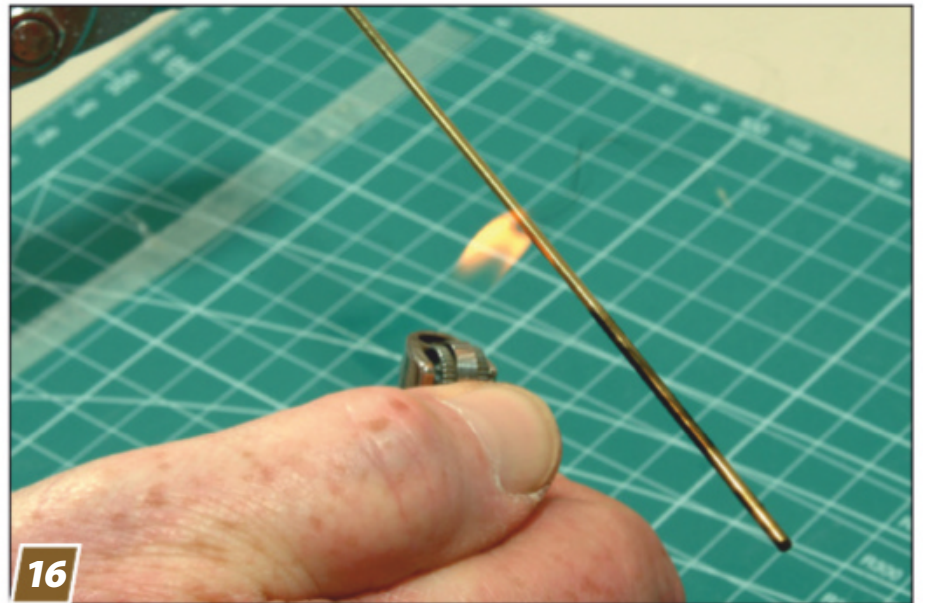
replacement, starting with a 10mm x 13mm sheet of brass to which I super-glued two strips of .020-inch styrene, **12**. I laminated three pieces of .030-inch sheet styrene for the main body of the radio, **13**, and added strip- and rod-styrene detail, **14**. Laminating, cutting, and sanding pro-

duced other radio components, **15**. Later, I added a sheet-styrene hand piece and a coiled cord made from .009-inch solder wrapped around a No. 78 bit.

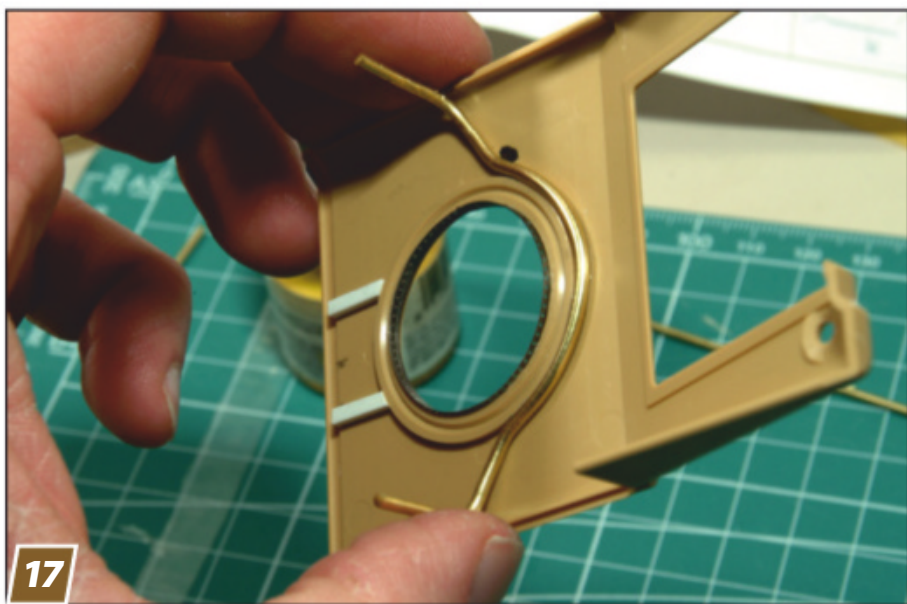
After gluing the turret ring (part No. F1) into the roof, I added square stock styrene braces from the ring to the wind-



15 I superglued the completed SINCGARS unit, including a power supply and a speaker, to Eduard's PE shelf, then installed it.



16 Brass rod for the turret support is annealed; heating the metal until its surface color changes makes it easier to bend.



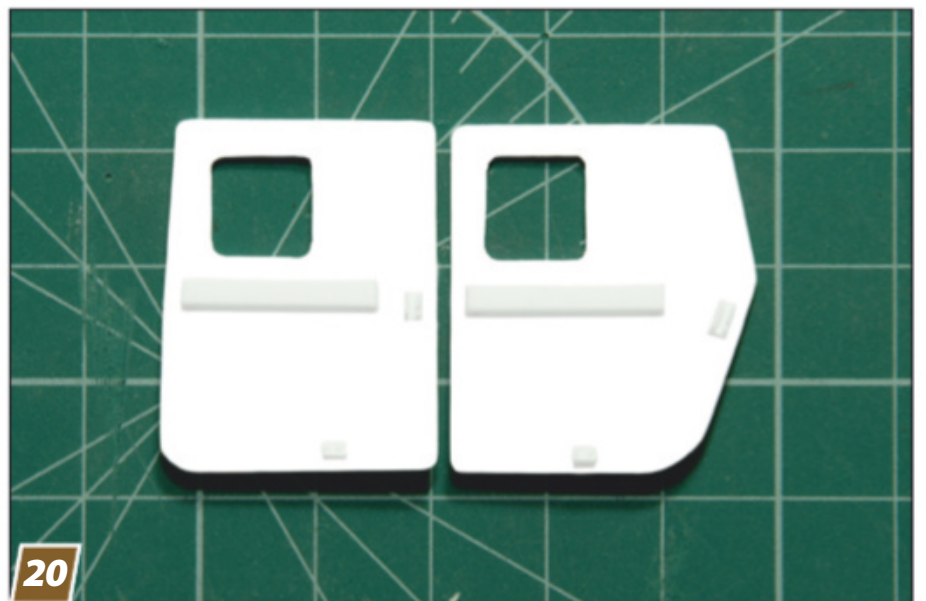
17 I shaped the rod with a wire-bending form and Mission Models' large Multi-Tool, then superglued it into position.



18 Using the kit doors as templates, I traced each door's outline onto .030-inch sheet styrene to form the armor doors.



19 With the window opened by a drill bit and hobby knife, final shaping was accomplished with a small file.



20 A strip of .020-inch styrene backed with small supports makes up the door latch cover. Smaller details were added with .010-inch strip.

shield. I formed a turret support with annealed brass rod, **16**, then superglued it into position, **17**.

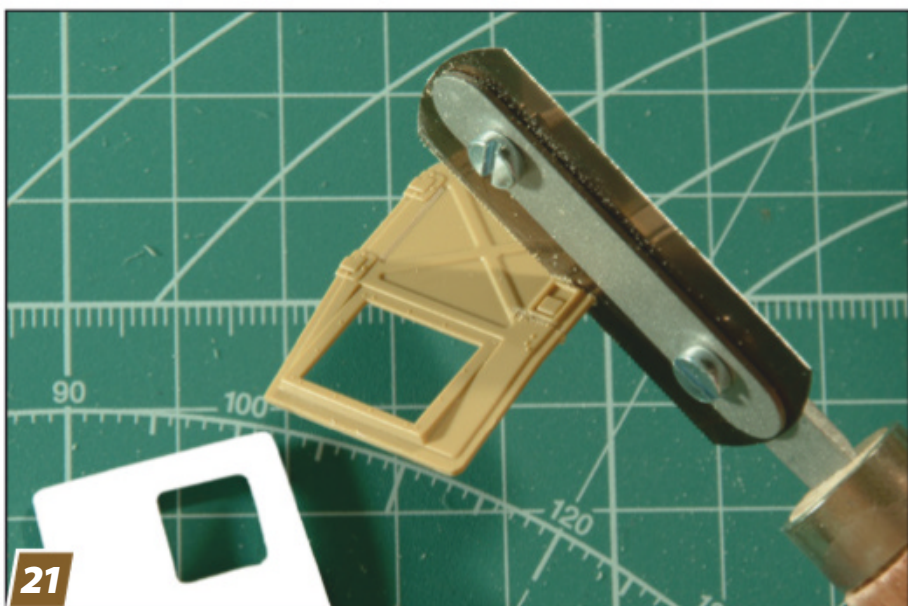
Just ASK

I traced the kit doors onto .030-inch styrene, then scored the plastic until I could

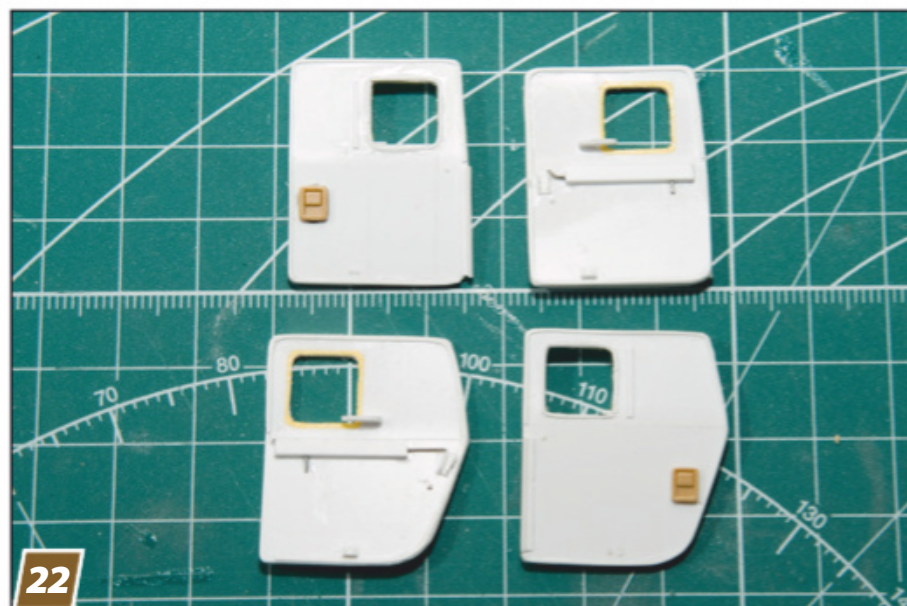
break it free, **18**. Holding the kit door over the styrene piece, I filed the styrene to shape. Each door features a small, square window; I marked their locations based on references. To begin opening each window, I drilled through the styrene at each corner with a pin vise. These openings were

followed by additional holes along the edges in between. Then, it was a simple matter to remove the center with a knife, **19**.

Strips of .020-inch styrene, 2mm x 17mm, form the metal bars that house the doors' latches, **20**. I built the latch as well



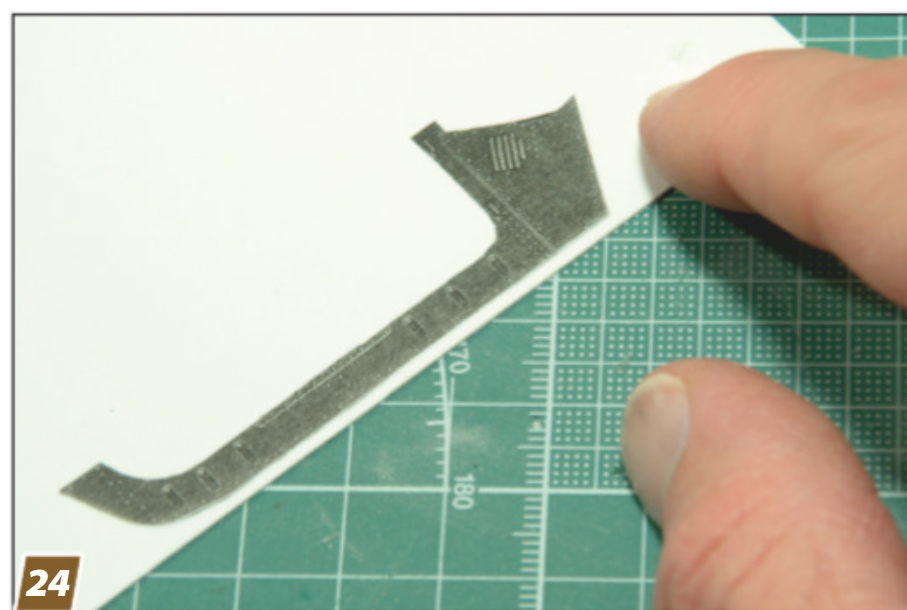
21 I sawed the handles from the kit doors to detail the scratchbuilt doors. The handles were thinned but should stand proud of the surface.



22 Final details on the doors include strip-styrene weather seals, wire handles, styrene-rod hinges, and hexagonal-rod bolts.



23 I superglued narrow strips of brass around the edge of the windows, forming the ballistic glass' frame.



24 A photocopy of the kit part provides a template for the rocker-panel armor to be cut from .020-inch sheet styrene.

as a small stop on the inside bottom of each door with .010-inch styrene. Twist-tie wire depicts the handle and mechanism.

The outside handles match the ones on the kit doors, so I cut each out, thinned it down, then glued it in place on the door, **21**. Each of the doors is fitted with a weather seal that I reproduced with a thin strip of .010-inch styrene glued around the outside edge of the door front and back. The window openings have a similar seal, although the inside seal is thinner. I represented it with Tamiya masking tape cut to shape, **22**.

I cut 10mm x 10mm sections of $\frac{1}{16}$ -inch Perspex for the ballistic glass windows and wrapped a strip of thin brass around the edges to represent the frame, **23**. The windows were glued to frames made from squares of .020-inch styrene.

Body armor

The ASK includes armor for the body of the Humvee in the area of the crew com-

partment. I photocopied both sides of kit part (No. B2) to create templates which I applied to .020-inch styrene, **24**. The resulting pieces were cut into three separate panels, **25**. Before attaching them, I sanded off raised-rivet detail on the kit part. The panels were detailed with bolt heads, **26**.

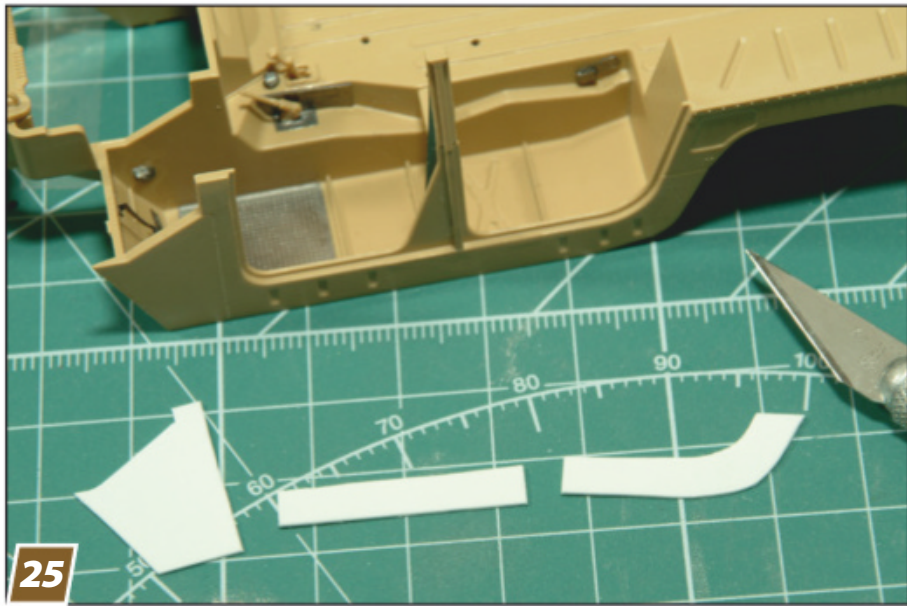
Sally had an armored windshield, including add-on armor for the frame and thicker ballistic glass windows. After removing the lip inside the frame, as well as the molded-on detail (including the hinges at the bottom), I glued strips of .020-inch styrene over the frame, **27**. I used the clear windshield part from both kits, gluing one into its proper location. I trimmed the lip on the vertical edge of the windshield from the second kit, **28**, then used a razor saw to remove enough of the body of the window on the other end for it to fit into the frame from the front, **29**. The window glass was sanded to shape; eventually, the outside edges were painted black to replicate a rubber seal. I removed

the mirror mounts until after painting, when they were reattached (and stowed forward as on the operational vehicle I was modeling).

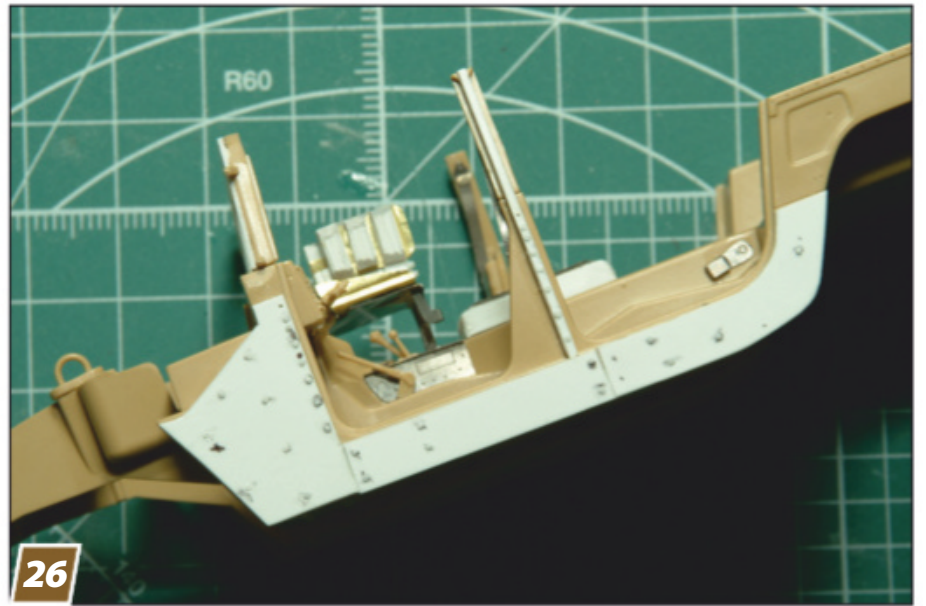
The sharp end

Delta Company's Humvees mounted either a TOW missile system, Mark 19 grenade launchers, or, in *Sally's* case, an M2 .50-caliber machine gun. Additionally, most carried an M249 light machine gun in a retrofitted mount on the rooftop armament ring.

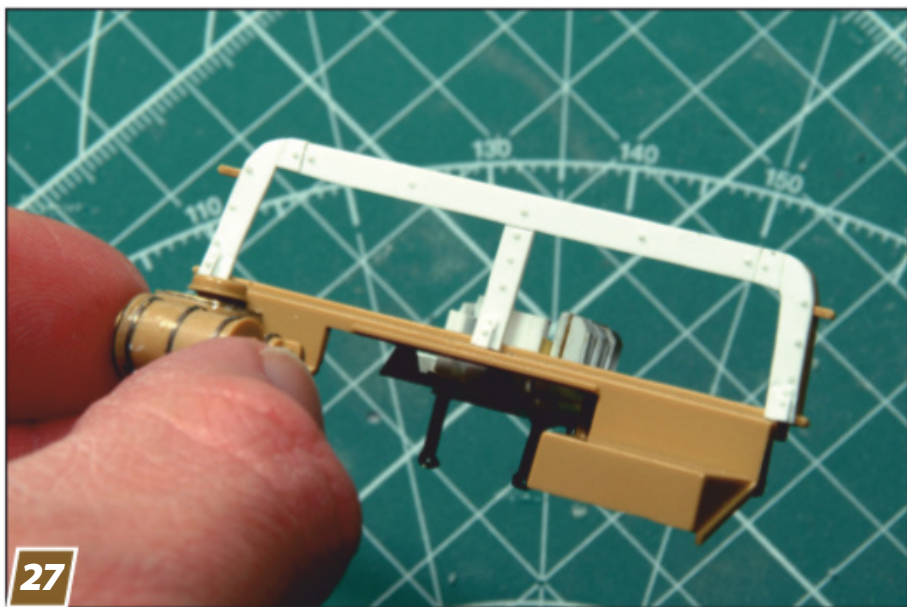
I started with the M249. The kit does not include the gun, but frequent *FSM* reviewer Tom Foti donated one from Trumpeter's U.S. Marines figure set. Following photos, I bent a 12mm length of $\frac{1}{16}$ -inch Z-bar styrene for the bracket, gluing it into place along the hatch opening. I shaped .020-inch sheet styrene for the base and added a short piece of $\frac{1}{16}$ -inch brass round for the pivot mount. The arm is cut from .020-inch styrene; I glued .030-inch styrene rod to either end for the



25 Each side armor panel is actually three pieces. I cut along the dividing lines in preparation for attaching the armor to the model.



26 I recreated the prominent bolt heads on the side armor with salami-sliced hexagonal styrene rod, then sanded the bolts even.



27 Details added to the windshield include strip-styrene hinges at the bottom and hex-rod bolt heads.



28 Armoring the windshield glass, I sawed the locating ledge from the vertical edge of a kit windshield piece ...



29 ... then removed a small sliver of the body of the window on the opposite end, restoring the ledge.



30 I built the M249 machine-gun mount from styrene sheet and rod. Note the FN Minimi-style open stock on the Trumpeter M249.

pivots and added a scrap of plastic to mount the gun. The final feature is a metal support arm for the gun, which I fashioned from twist-tie wire and thin brass sheet, **30**.

Trumpeter's M249 has the stock typical of the FN Minimi version of the gun,

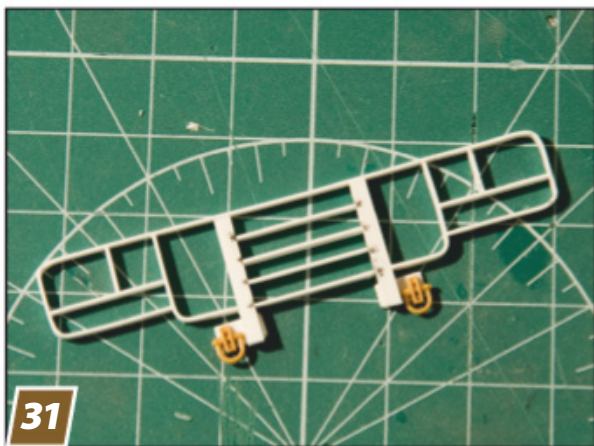
so I replaced it with .020-inch styrene cut and filed to the shape of the solid stock seen on the American weapon.

For the .50-cal mount, I added a traverse and elevation arm made from strip and rod styrene. I cut the gun shield from .020-inch sheet, following photos and

keeping in mind that these shields were cut and welded in the field — precise corners and shapes were not the norm.

Other external details

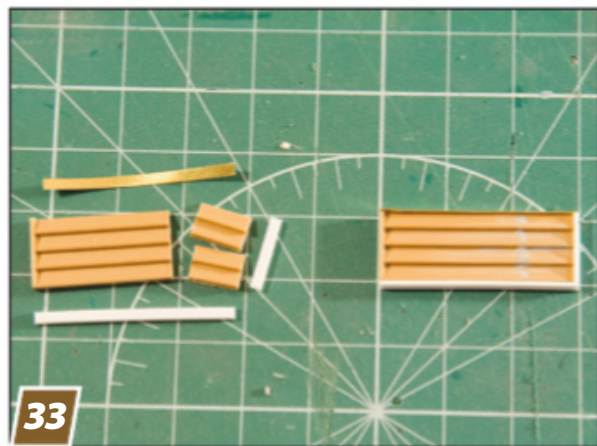
The front end brush guard of the Humvee I modeled was different from the kit, so I



31 The scratchbuilt brush guard features styrene mounting plates and the kit's tow hooks.



32 I detailed the styrene-strip and U-channel luggage rack with hex-rod bolt heads.



33 Mr. Surfacer 500 fills the gaps left after I kitbashed Tamiya accessories for side CIPs.



34 Desert-sand strips bear markings, reflecting differences on the full-size truck.



35 A 2mm-wide strip of .020-inch styrene boosts armor protection for the windshield.



36 I made all of the markings for *Sally* using a computer and laser-printer decal paper.

built a replacement from .020- x .060-inch styrene strip. I reduced a front-on photo of the vehicle to 1/35 scale to use it as a template. I cut and glued continuous sections of the structure on a flat surface, bending shapes around brass tubing of the appropriate diameter, **31**.

I built the trunk-lid luggage rack by gluing .020- x .06-inch strip in the groove of 1/16-inch U-channel styrene to approximate the shape of the rack's metal bars, **32**.

To mount Tamiya and Italeri jerry cans to the rear deck, I built racks from .010-inch sheet styrene. After painting, I added Tamiya masking-tape straps detailed with spare seat-belt buckles from the Eduard PE set.

For the spare tire, I removed all but

two of the wheel nuts from one of the extra kit's wheels. I drilled a hole in the end of the axle to take fine wire for strength, then glued the axle to some square stock. The square stock was attached to a styrene channel wide enough to fit over the lip of the kit tailgate.

Delta's Humvees bore combat information panels on the hood and on the rear quarter panels. I used an Eduard PE item for the hood CIP. To create the long, thin fender panels, I sliced the top two folds off the door panels provided in Tamiya's modern U.S. military equipment set, then cut that remainder into two 8mm-long sections and attached them to the side of the larger piece with the rail removed. I framed them with thin strips of .030-inch styrene topped with thin brass, **33**.

Coloring the truck

The Humvee I was modeling wore single-color NATO green camouflage, with the add-on armor painted desert sand. I airbrushed the subassemblies with acrylics, then highlighted panel centers with lighter shades to add depth to the finish. I painted areas of desert sand on the front and rear as a base for stencils, **34**.

I inserted the remaining interior detail, and added armor to the bottom of the windshield, **35**.

Delta's trucks carried a skull-and-crossed-missiles symbol during the first few months of the 39th's deployment. I found a clear photo of the symbol, converted it to black-and-white using Adobe Photoshop, increased the contrast, then reduced the image to 1/35 scale and saved

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Sources

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Jerry cans and stowage, Italeri (No. 6423), from Model Rectifier Corp., modelrectifier.com

PE CIP, Eduard (No. 35659), eduard.com

PE details, Eduard (No. 35629), eduard.com

Styrene sheet, strip, and rod, Evergreen Scale Models, evergreenscalemodels.com

Styrene rod, hexagonal rod, and channel, Plastruct, plastruct.com

Brass rod and sheet, K&S Engineering, ksmetals.com

Clear decal paper, Experts-Choice (No.123 or 124), bare-metal.com

it. I replicated the image, making minor changes to its outline to represent irregularities in its spray application. I used the same technique to replicate the *Sally* name on the top of the windshield. I produced the stencils using a freeware font called “Phantom stencil” and printed them on Experts-Choice laser-printer clear decal paper, **36**. A little MicroScale setting solution helped the decals conform to the surface.

Final assembly

With the paint and decals on, I built up the model from the inside out. I added ammunition boxes, packs, and a bright red cooler to the back seats, then assembled

the body, working slowly to prevent misalignment of the parts. I attached the chassis and hood next, weathering the tires with a motor tool before attachment.

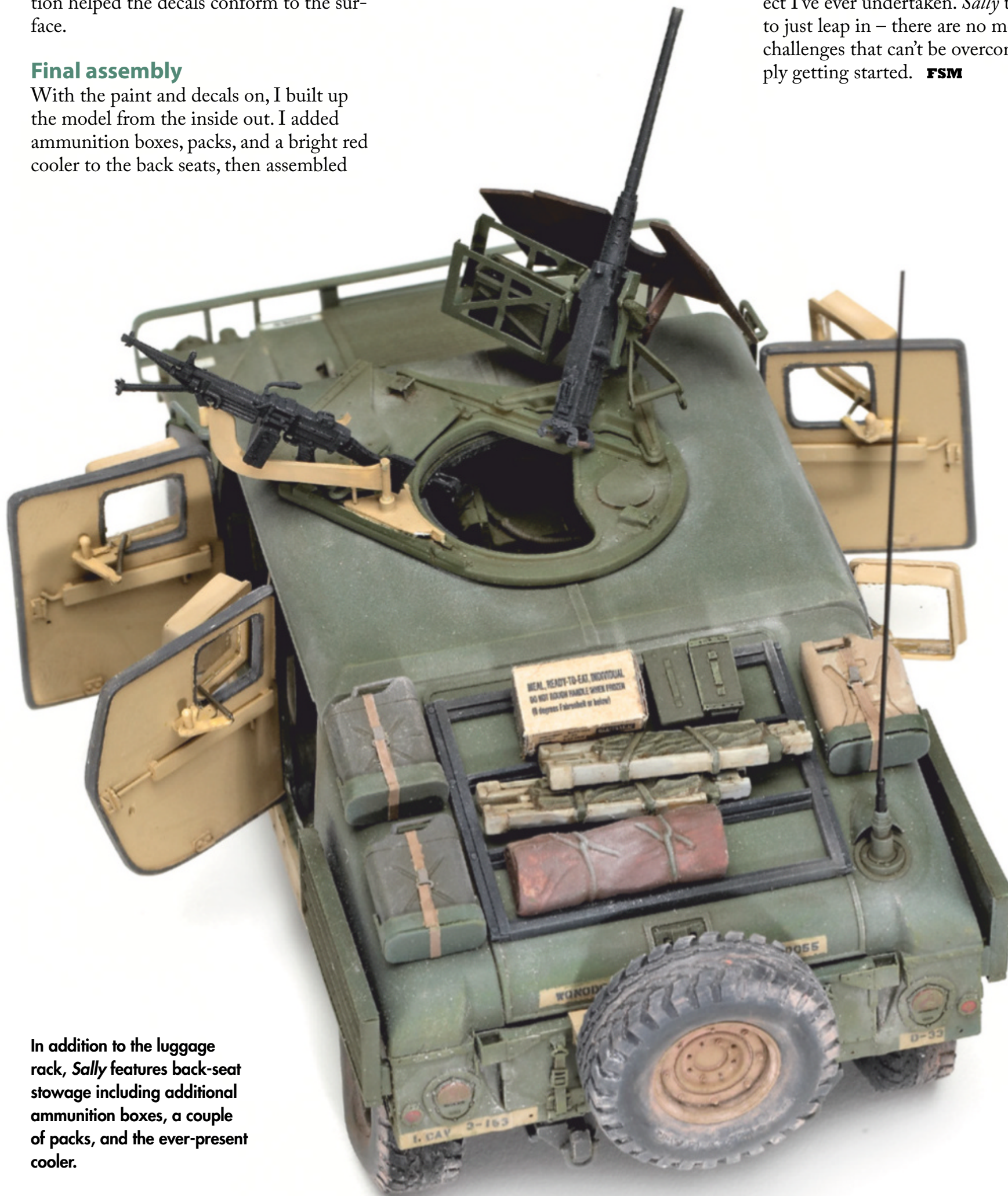
After assembling the major components, I snapped the doors shut temporarily and shot a coat of Polly Scale clear flat.

I made V-shaped brackets and handles for the windows, then weathered the

model with artist-oil washes, acrylic dry-brushing, and powdered pastels, replicating the vehicle’s dusty look.

To further represent the extra weight, I flattened the kit’s vinyl tires slightly. I glued small sections of styrene, filed to an oval shape, inside the tires to produce an appropriate bulge in the tire walls.

This is the largest scratchbuilding project I’ve ever undertaken. *Sally* taught me to just leap in – there are no modeling challenges that can’t be overcome by simply getting started. **FSM**



In addition to the luggage rack, *Sally* features back-seat stowage including additional ammunition boxes, a couple of packs, and the ever-present cooler.

Adding color to **ISRAELI ARMOR**

Layers and layers of paint build up Academy's 1/35 scale main battle tank

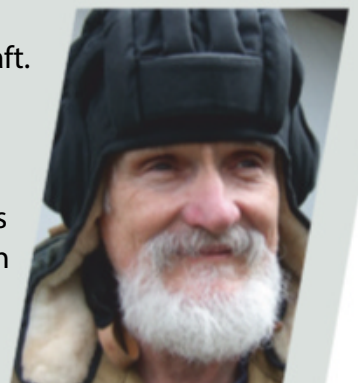
BY KAREL SUTT

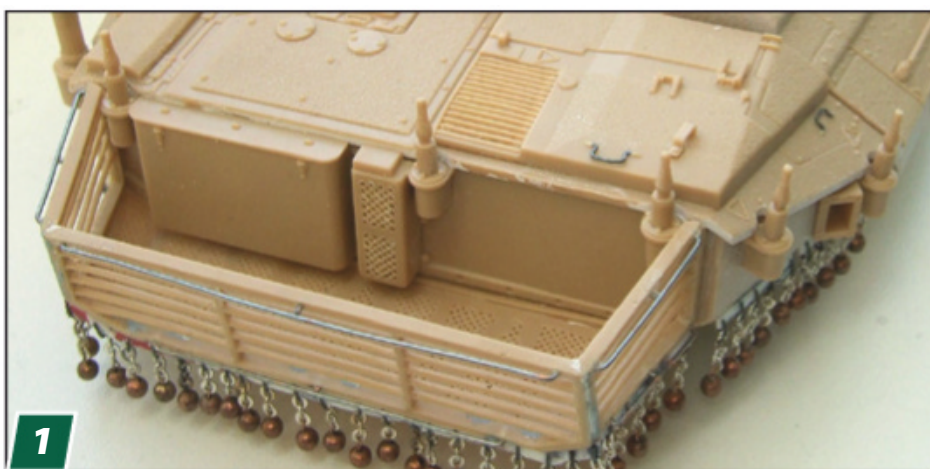


The Merkava Mk.IV's turret shape reminds me of a floating manta ray. Such a unique design was hard for an AFV lover like me to resist. While I had to scratchbuild the protective balls and chains, most of my time was spent weathering. I wanted to create a roughed-up beast, complete with wear, tear, chips, and washes. Highlighting all the details was well worth the effort.

About Karel Sutt

"I started modeling as a youngster, building mostly 1/72 scale WWII aircraft. Since then I've built everything, including several stone castles for my garden. Now I focus mostly on WWII German armor, with a few modern tanks now and then — like this Merkava! When I'm not modeling, I manage a power plant. I live in Louny, Czech Republic, with my wife, Hana, and tomcat, Gami."





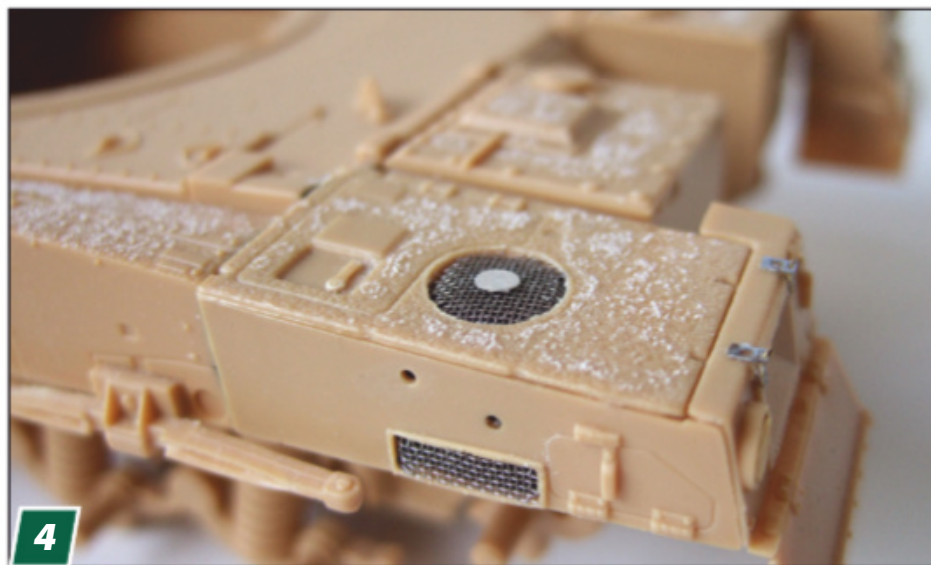
1 I bought the chain from a bead shop; the balls are individual links from the adjustable chain on a set of dog tags. I put them together with superglue. New railing made of wire was added around the basket.



2 The texture of the nonskid surfaces seemed understated. I found the solution in my kitchen: semi-coarse flour. I glued the granules down and swept the surplus away with a soft brush.



3 Metal netting replaced the Merkava's plastic engine covers ...



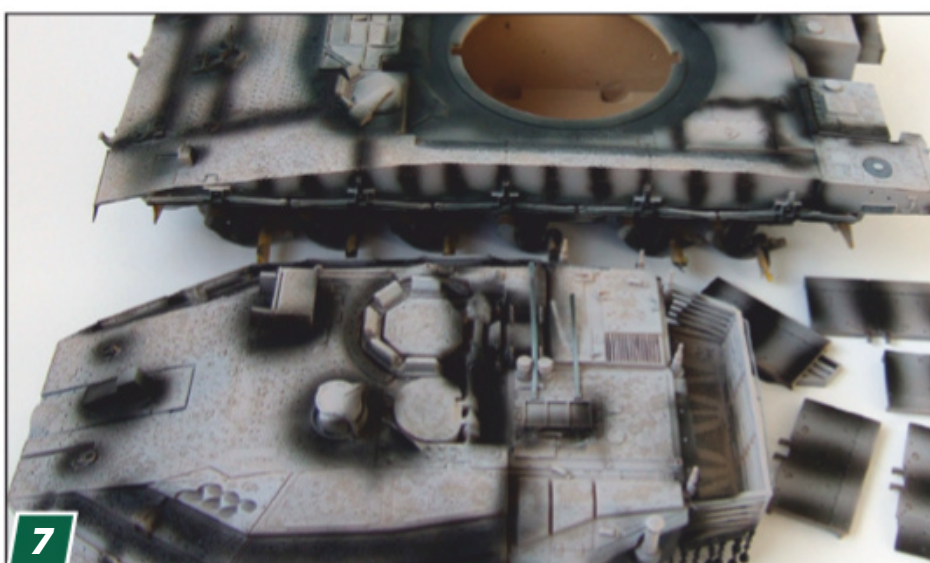
4 ... and ventilation hole covers.



5 I made the tactical marking panels out of bent copper wire and aluminum foil. These were attached to three sides of the turret basket.



6 Time to airbrush! All colors came from the Tamiya acrylic line. First I applied Mr. Surfacer 1000 to prime the entire tank.



7 I pre-shaded with a 9:1 mix of NATO black (XF-69) and gunmetal (X-10).



8 I airbrushed metallic gray (XF-56) everywhere but the nonskid surface.



Hairspray then covered the metal color. After letting that dry for 24 hours, I airbrushed a 1:9 mix of flat yellow (XF-3) and flat red (XF-7), again avoiding the nonskid.



A stiff, wide brush dipped in water gently removed the red and revealed metallic paint in small areas. Over this I sprayed gloss varnish as a protective layer to preserve the bared-metal effect.



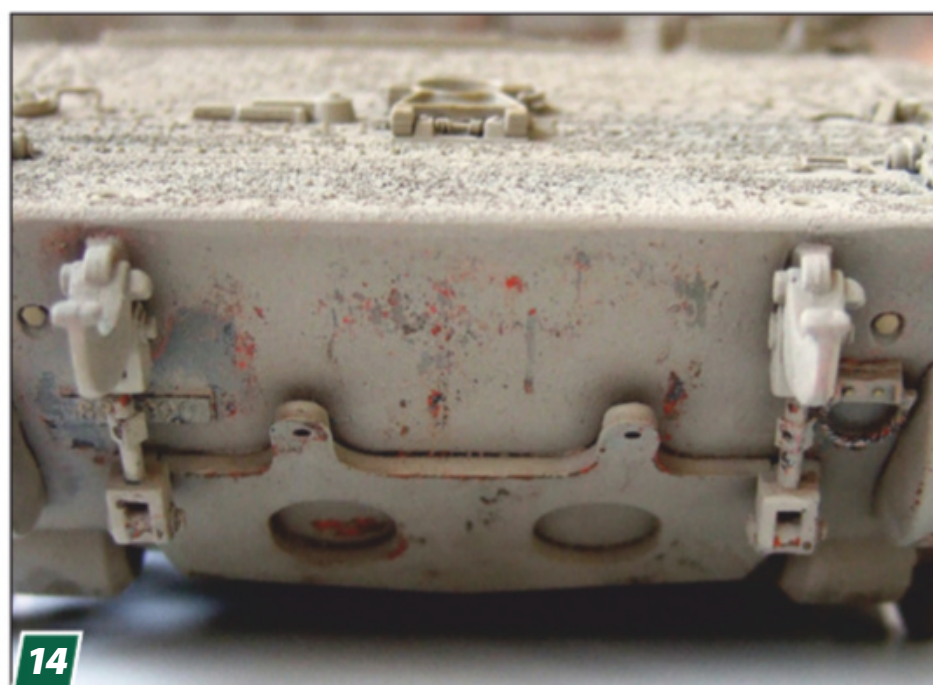
When the varnish dried, I applied more hairspray and then an 8:5:5:5 mix of olive drab (XF-62), deck tan (XF-78), khaki drab (XF-51), and neutral gray (XF-53) as a base coat under the camouflage. This new layer was brushed away lightly in areas to reveal red primer.



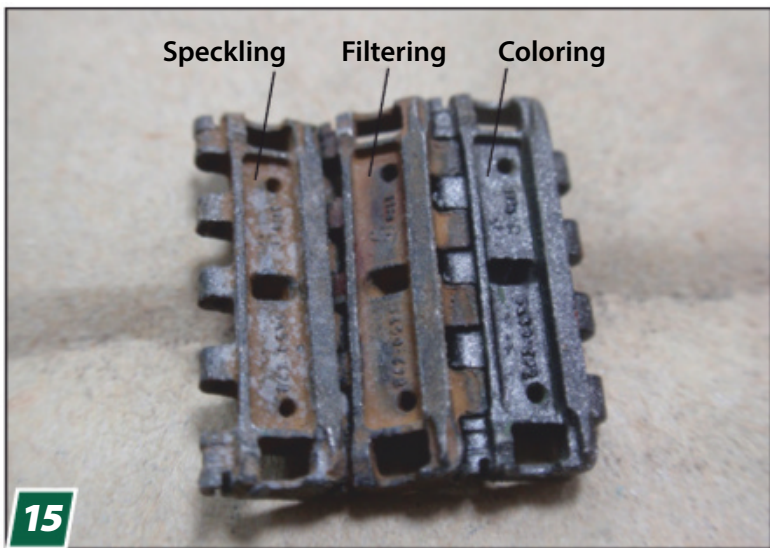
A close-up of the metal and the red primer exposed beneath the camo base coat.



A 1:1 mix of buff (XF-57) and medium gray (XF-20) with a drop of khaki (XF-49) created the final camo coat.



Here you can see how using the hairspray method after each new color revealed multiple layers. Before starting the weathering process, I sprayed a coat of varnish over the entire model.



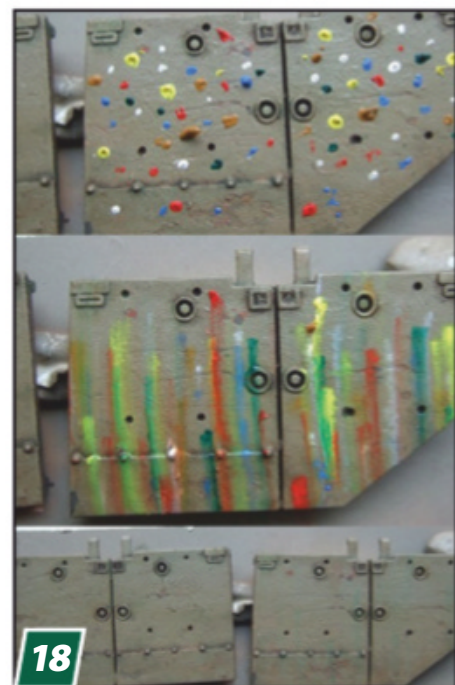
Friulmodel tracks were colored with a 9:5:5 mix of flat black, flat brown, and metallic gray, followed with AK Interactive NATO filter and rust streaks, then speckled with gray dots.



By adding either a drop of buff to lighten or a drop of khaki to darken the camo mix, I could create highlights and shadows. This is where references came in handy. I then applied two washes of green and brown artist oils diluted with Mig thinner.



Chipping effects were reserved for where the tank would come in contact with the rough terrain, namely on the front and back of the hull and the side skirts. I used a 000 brush to paint small, irregular spots of a 7:3 mix of deck tan and J.A. gray (XF-14). Inside of these, I painted a dark mix of 9:1 NATO black and metallic gray. Paints were diluted with Tamiya lacquer thinner.



After applying two filters of olive and green, I dabbed dot filters onto the vertical areas. A brush full of turpentine blended them.



Model a Canadian Forces LAV III

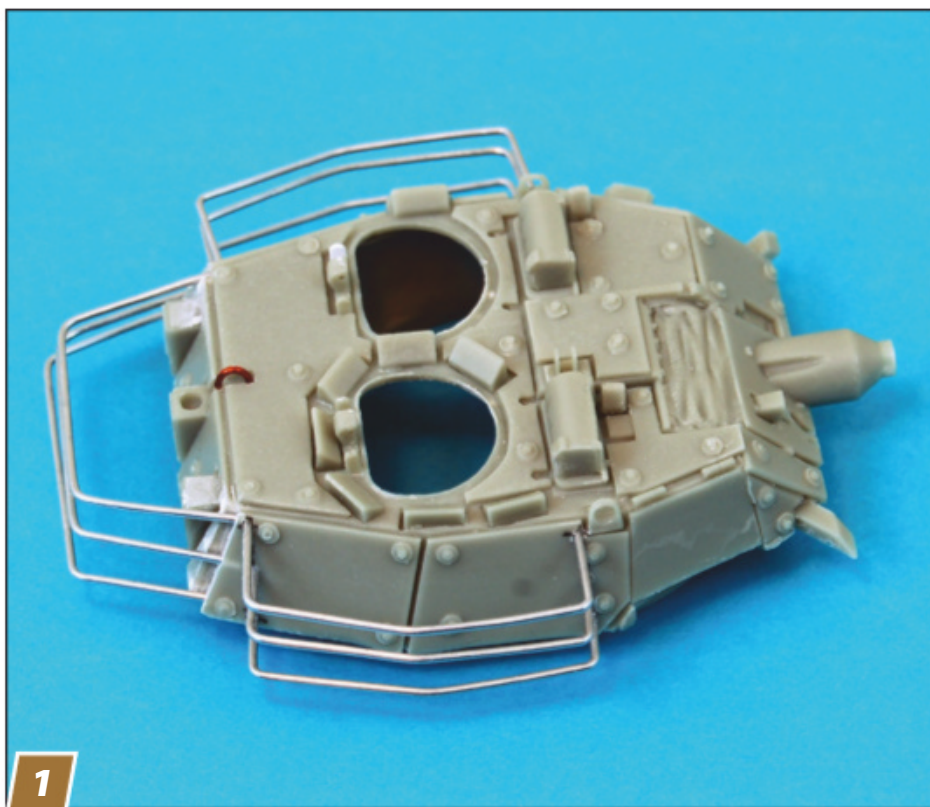
A straightforward conversion
builds this modern Light Armored
Vehicle

BY JAMES WECHSLER



Canada has more than 700 LAV IIIs in six different configurations. Jim's model represents a Command Post variant serving in Afghanistan.





1 The turret is a single large casting and about all you need to do is remove the pour block and clean up a little mold excess. The next step is to build the two side stowage baskets and the rear basket.

2 As I continued, it was a pretty straightforward job to install the vertical support strips and the two jerry-can holders to the side plates of the rear basket.

The LAV III is a third generation Light Armored Vehicle presently serving with the Canadian and New Zealand (NZLAV) armed forces. It is also the vehicle form which the U.S. Army's Stryker family of vehicles was developed.

The LAV III was designed using the lessons learned in the previous generation of vehicles that include the U.S. Marines LAV-25, the Australian ASLAV-25 and the Canadian Coyote. But it is a new design.

Canada has acquired over 700 of these vehicles in six different configurations. These are now serving in extended duty in Afghanistan.

This model is of a Command Post variant serving in Afghanistan around 2008. The basic kit is a conversion set from Real Models with the AFV Club M1126 Stryker as the donor kit.

The conversion set contains some large resin castings, some small parts, and a lot of photo-etched metal (PE) — 9 sheets to be specific.

But before you take a huge gasp at the amount of PE, let me note that it is made by Eduard under contract to Real Models. Not only is the PE the typically high-quality Eduard product, it comes with Eduard style instructions which makes it pretty easy to use. I do not solder and in looking through the instructions, I didn't see any need.

Another real nice addition in this set is a metal, fluted barrel made by The Barrel Depot. To be entirely honest, there's really nothing that beats a metal barrel. It pretty much eliminates risks of warping, damage,

or casting problems that can occur with resin barrels.

Finally, Real Models supplies two paper sheets of stowage boxes, warning signs, and street signs for use with the LAV in Afghanistan. Things like MREs, water bottle boxes, the large, red STAY BACK signs as well as some cool street signs are all there so you can load up your LAV with stowage.

Real Models also sells their own book on the LAV III called *Canadian LAV III in Afghanistan*. This book is great. It has a large series of clear, color photos of the LAV IIIs in Afghanistan. Pretty much a one-stop shop.

Turret stowage baskets – main supports

I almost always start each model by building the hull and suspension. Why? I think because the directions in plastic kits usually do that first and I have just ended up in a rut doing what I'm told. But not this time. I'm building the turret first, just to be different.

The turret is a single large casting and about all you need to do is remove the pour block and clean up a little mold excess. The next step is to build the two side stowage baskets and the rear basket, **1**.

These are made up of bent wire and PE parts. I've built baskets before and they can be a real pain. But the use of PE for the screens and brackets makes this project quite a bit easier.

The instructions tell you to use .040-inch brass wire but it looked a little thick to me so I switched to .032-inch aluminum wire. I switched to aluminum wire because it's a little softer and you can cut through it

(at least at this thickness) with a hobby knife.

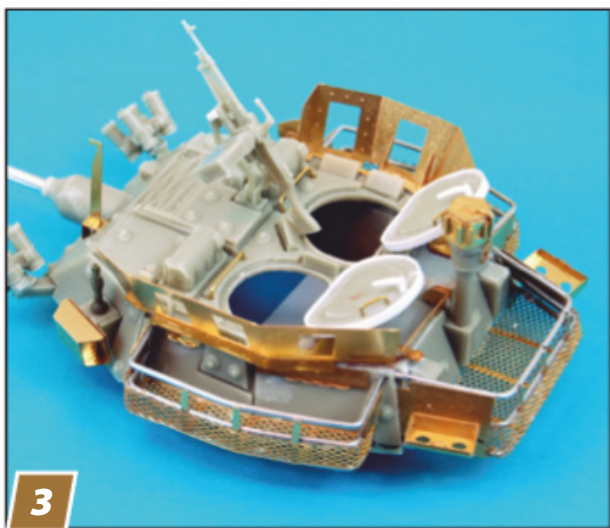
I deviated from the instructions in a couple of ways. First, the instructions suggest that you cut the basket rails so that they can be glued to the back and side of the turret. I decided to drill some locating holes instead. I did this mainly so that the baskets would be very strong once I got them assembled. As it turns out, they're strong even without gluing as evidenced by the picture where they are not glued but fit so well I can easily pick up the whole assembly.

The second way I deviated from the instructions was that I did not use the resin wire bending templates that were provided. Instead, I just made the lower rails by bending the wire using the PE screens as a template. Pretty easy actually. For the side baskets, I did the same for the middle and upper rails but left the side bars longer. Then I placed them in the locating holes and clipped the side bars until all three rails lined up. This actually worked really well.

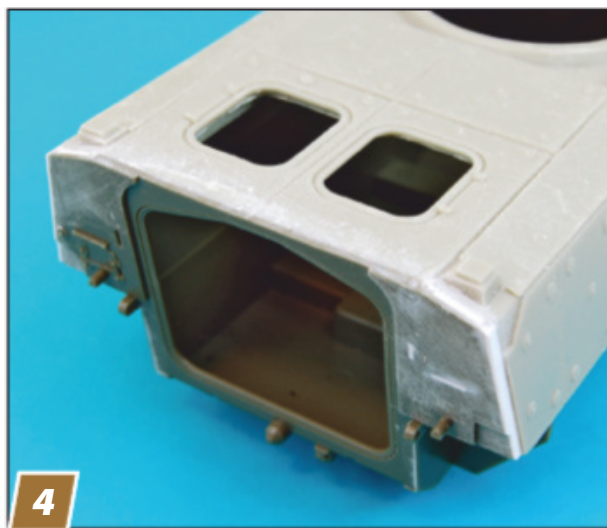
For the rear basket I ended up eyeballing the width of the top and middle rails and then I left the side bars long and again adjusted them by clipping them incrementally until the back lined up vertically. This was bit time consuming but the result is a set of rails that are on tight with the turret and now match the dimensions of the PE screens.

Completing the baskets

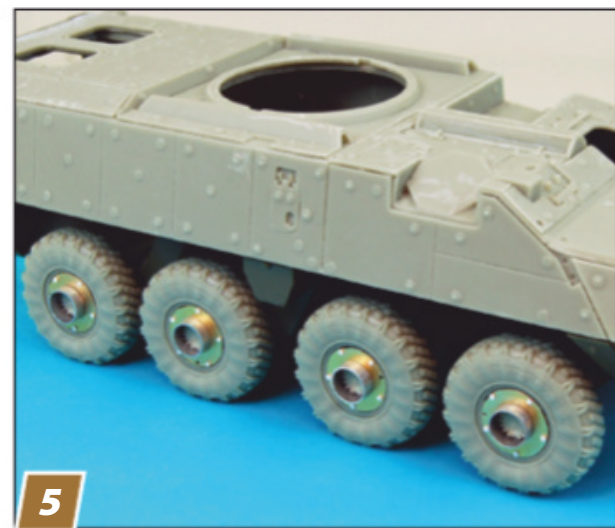
Well the extra work on getting the rails just right really paid off in this step. The screens pretty much fit right on the lower rails. Another big help on this step was that I



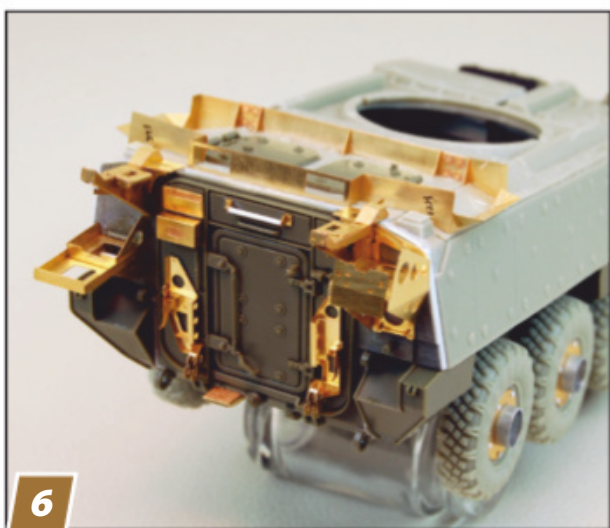
3 With the extensive turret modifications completed, I glued the PE plates to the top of the turret.



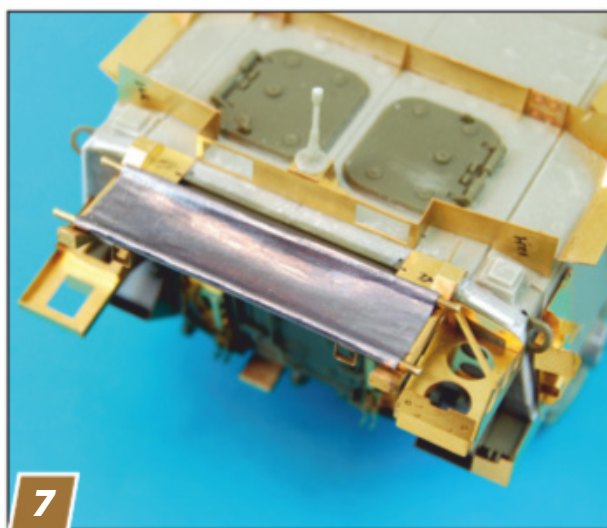
4 Careful test-fitting and some shimming with styrene strip helped smooth the cast-resin rear plate into the main hull.



5 Real Models provides an excellent set of replacement wheels designed to fit right on the suspension.



6 Some of the PE assemblies are quite complex, but thankfully, they're straightforward to assemble since the parts fold cleanly and the instructions are clear.



7 I combined brass rod and lead foil to model the LAV's rear-mounted stretcher. The foil is malleable and looks realistic as fabric.



8 The large rack in the back is for the pioneer tools. I added an ax, mallet, and shovel from the AFV Club kit.

didn't to install the top two rails until the screens were in place which made it easy to get to them.

The next step in building the turret baskets was to install the middle and top rails. Then I glued the support brackets in place.

I started to fit the large metal plates that are attached to the sides of each basket and butt up to the turret. The PE parts have a flange that I believe I was to bend 90 degrees to fit between the rails and the turret. Obviously since I'd drilled holes and mounted the rails, I couldn't do that so I just cut away the flange. To be honest, I like my approach better since it results in a stronger basket. One problem I did run into was that the height of these plates is a bit too high but it was pretty easy to simply trim them.

The side mesh screen also seems a bit too big but again, some careful trimming ahead of time made them pretty easy to install.

With these parts in place it was a pretty straight forward job to install the vertical support strips and the two jerry can holders to the side plates of the rear basket, **2**.

It may seem like building these baskets was complicated and difficult but that really

isn't the case. It does take patience and some careful planning, but the actual work was pretty straight forward. I'm glad I took the approach I did because the baskets are extremely strong so I won't have to worry about breaking them during the rest of the build.

The biggest bummer is that these LAVs are covered in stowage so much of my work is going to end up blocked from view.

Completing the turret

Well I wasn't kidding when I said the almost the entire turret was one large casting. To wrap up the turret I glued on the metal gun barrel, the wire cutter and the smoke dischargers, a pretty easy effort. There wind sensor is a really nice set of about eight PE parts that give great detail. I was pleasantly surprised by how easy it was to fold and assemble these parts.

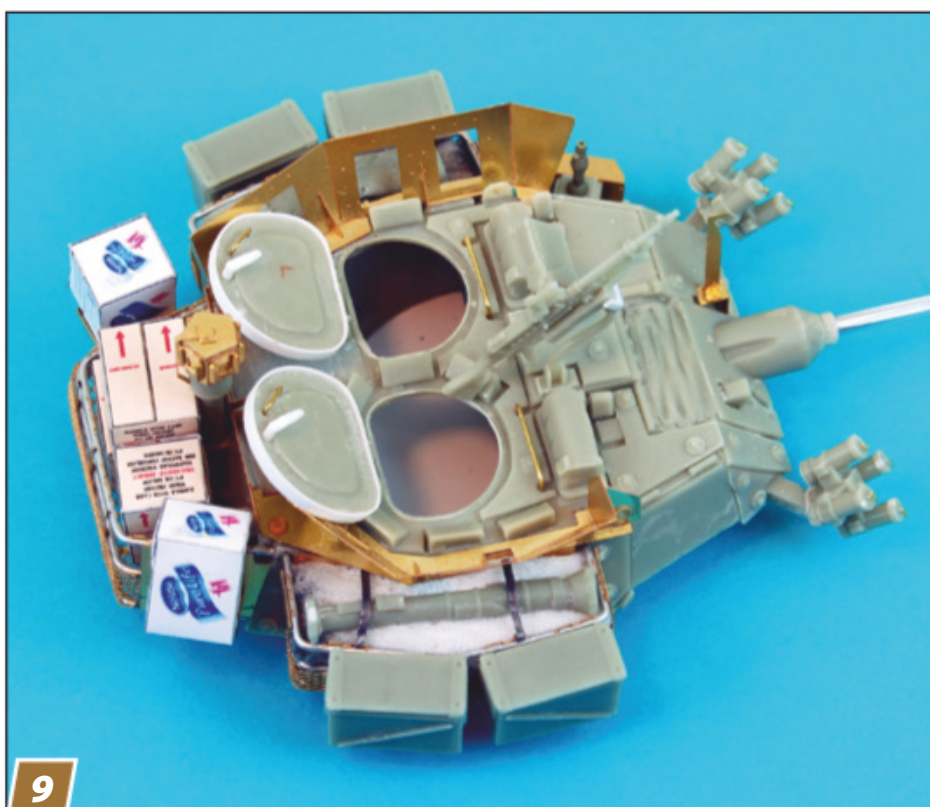
I then added the grab handles to the turret and the hatches. I also rebuilt the locking handles on the hatches since they were cast solid. In case you're wondering, the white strip of plastic running around the hatch is there because I screwed up and cut off the edge from the hatch when I was removing it from the pour block. My bad.

I'll add some additional tie downs and small items when I add the stowage.

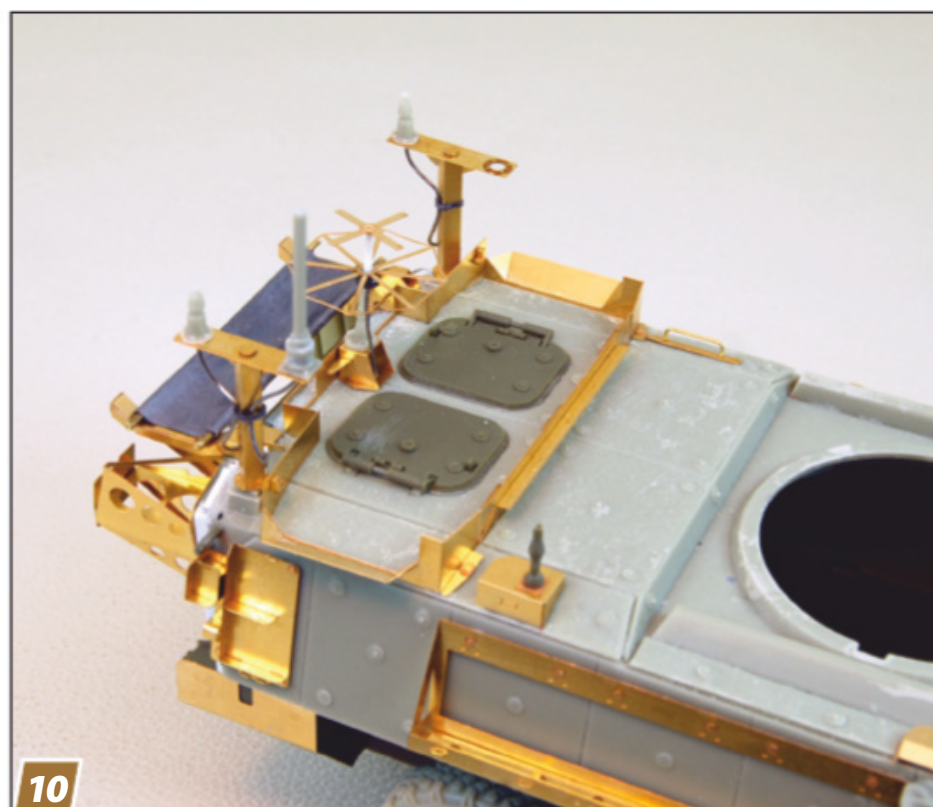
Turret blast shield

In order to install the blast shield, you have to remove the armor plate on the rear of the top of the turret (behind the hatch openings). No problem normally, just shave off the .5mm indicated in the instructions. Unless you have already built the turret baskets, installed the hatches opened, mounted the machine gun between the hatches, and installed the Laser Warning Receiver on its mast. Then you have a problem. I should have spent more time thinking this through at the beginning.

So I carefully cut loose the hatches, and of course broke off the hinges. But I didn't lose any parts so I was able to glue the hinges back in place. Then I had to figure out how to shave off the turret armor. My problem was that at the back was the Laser Warning Receiver (the large mast) and less than an inch forward was the machine gun. All I could think to do was to use my Mission Models Micro Chisel and slowly shave away pieces. Then I used a curved blade to scrape the turret top smooth because I couldn't get sand paper in there.



9 Before painting the model, I worked out where to place the stowage in the turret racks.



10 One of the reasons I really wanted to make the Command and Control version of the LAV III is that it has a ton of cool antennas.

Amazingly, I didn't break anything other than the glue holding a couple of the parts of the baskets together and that was easy enough to repair. Yeah, I'll plan better in the future.

So with the turret modifications completed, **3**, I glued the PE plates to the top of the turret without issue. Their position is pretty obvious since they have cutouts for the periscopes. But you have to guess at the bend angles and then adjust many times. I think Real Models could fix this very easily by etching the correct line into the plates that are glued to the top of the turret. Then it would act like a template and the bending and installing would be simple. Also, there are three small, triangular supports for each shield. Their position isn't super clear either and I found out the hard way that those are best installed AFTER the shields are glued in place.

Hull assembly

Real Models provides a complete replacement hull. After removing it from the pour block I was pleasantly surprised by how tight it fits to the AFV Club lower hull. Only a little putty in the seam and it is closed up nicely. But, it's about 1mm shorter than the AFV Club hull so the rear hull plate doesn't fit quite right. This 1mm is due to shrinkage in the resin.

To fix this problem I had planned to add a shim (small strips of plastic) around the rear plate. But, mostly by chance, I was comparing the Real Models rear plate to the AFV Club part. I realized that the two were quite similar. In fact, the AFV Club part has a few extra items on it that I could easily shave off and they'd be the same. With the only other difference being that

the AFV Club part is quite a bit taller. This makes a huge difference in that I could now butt the AFV Club part up to the Real Models upper hull and glue it tight. Then I trimmed the corners and only had to add a small shim on the hull sides. The shim was made using .020-inch-thick strip plastic that was .080-inch wide. Using this method, this whole effort was pretty simple and with a touch of putty, the hull sealed right up, **4**.

Suspension and wheels

AFV Club has done a real top notch job on the suspension. There are a lot of parts but thankfully the molding is first rate so the amount of clean up is minimal. Also, the instructions are quite clear and the sequence of installation is logical. The result is excellent with everything fitting tightly.

Real Models provides an excellent set of replacement wheels designed to fit right on the suspension. One thing I really like about these wheels is that they have a noticeable bulge at the bottom which gives a clear impression of the weight of the LAV, **5**.

Be sure to read the AFV Club instructions since there is small plastic part (F8) that you must glue to the inside of the Real Models wheels. Also, I found the locating pin on the AFV Club suspension to be a bit too long for the Real Models wheels so I shaved off just a bit to make sure the wheels pressed flat against the axles.

I ended up with a pretty good contact on all of the wheels. But to get a super solid ground contact I lightly slid the model back and forth on a sheet of sandpaper I laid flat on my workbench. Now the model sits per-

fectly.

The wheels have hub caps (not spinners) that are made from PE parts. One part is the flat ring and another is a rectangular part that you are supposed to roll into a tube. I confess, I have no idea how to do that and get a perfect circle. Is there some type of tool I should own? Instead, I bought a piece of 5/16-inch aluminum tube at my local hobby shop and cut the rings to length using my miter box.

One final note, the PE part has five small etched circles on it. The instructions don't show this but they are actually the locating marks for five hex bolts that hold the rim in place. I made the hex bolts using a punch-and-die set and .015-inch-thick plastic sheet.

PE – rear blast shield

With most of the resin and plastic parts attached, it's time to start on the large amount of PE. One key thing to understand is that there are actually two PE sets. There's the basic LAVIII set (35125) and another set specifically for the C&C/CP/ISF variant (35132). The second set has a number of parts that replace the parts in the first set so study the instructions carefully.

I started by assembling the rear blast shield which forms a protective shield around the hatches on the rear of the upper hull. I chose to start with this assembly because it covers a lot of space on the vehicle and it's critical that other parts don't interfere.

The parts are pretty straightforward to attach but I did find that scraping away the anti-skid texture on the resin hull where the parts attach makes a huge difference. It



11

I left the right-side boxes loose so he could remove them before painting the model. This view clearly illustrates the amount of PE added to the model.



12

Pile it on! Among the LAV's stowage, I found four water cans and mounted them in the back rack. Later, he secured them with a small strap made from lead foil.

only takes a small bump in the resin to have the whole PE part mount at an awkward angle so a little preparation goes a long way. After a little trial and error, I found that mounting one of the side parts was the best place to begin. Then I worked around the rest of the parts until I had the whole shield attached. Then the rest of the small bits went on without a hitch.

PE – rear hull plate

As you can probably see in the photo, some of the assemblies are quite complex. But thankfully, they are pretty straight forward to build since the parts fold cleanly and the instructions are clear. A hold and fold (I use the Mission Models Etchmate) is very helpful but, speaking from experience, it's possible to make these parts using just tweezers and razor blades.

One note, there is a large stowage box that mounts on the two large brackets coming off the top of the rear plate. This is available on the PE sheets but nearly all of the photos of LAV IIIs in Afghanistan show it removed. It would definitely block the view from the upper hatch blast shield. Instead, the troops seem to have laid a stretcher or cot on the brackets and thrown stowage on top of that.

Obviously, there is a lot of PE in this step and it does take a while to get it right. But you've got to admit that the result is really impressive, **6**.

Stretcher

I used brass rod for the poles since I wanted something strong and plastic rod was too flexible. I cut these to a length of 2 inches to basically match what I could see in the photos. I glued these to a rectangular sheet of lead foil and wrapped the sheet around the poles. I made sure to leave the spacing between the poles slightly larger than the

flat length of the brackets. That way I was able to press a sag into the foil to represent the weight of the stowage, **7**. Since it's still flexible, I plan to use the actual stowage to make matching indentations.

PE – right side

Like the rear hull plate, the PE on the right side is extensive and yet still pretty easy to assemble. There are a number of options for mounting the various racks. I made sure to use the big one in the middle. It is intended to hold Jerry cans but there are number of photos of LAVs with white water bottle boxes and/or tan MRE boxes being carried in that rack. So that will let me add a lot of color to the model.

As for the other options, I've decided I'm going to use as much of the PE as possible so I've chosen the options that let me do that. It comes with the kit and it looks cool so I might as well go ahead and use it, right?

PE – left side

More of the same on the PE. Lots of parts but they all go together cleanly. One note is that the large rack in the back is for the pioneer tools. This isn't noted in the instructions but I saw it in the photos. I just grabbed an axe, mallet, and shovel from the AFV Club kit and mounted them based on the photos. There may be other tools in there too but I couldn't figure out which ones. Also, you can see these racks empty, and partially loaded so I figure I've got it about right, **8**.

Boxes

Real Models includes a printed set of boxes for the LAV. There are six types. The ones at the top of the photo are water bottle boxes and the ones on bottom are rations. The most important aspect is that they are

different sizes so it's possible to choose the ones that fit the various stowage racks and tie downs around the vehicle.

Turret stowage

I really had to think about what to do for the side stowage baskets. They are reasonably narrow and most typical items don't fit. I got the stowage set from Real Models (No. 35194) and decided to use just the rocket launcher and the small rolled up tarp. Instead of trying to fit the other items into the basket, I went with an old trick.

I cut a piece of thick cloth to the width of the basket and then rolled it up. Once rolled, I dipped it in Woodland Scenics Scenic Cement. While still wet, I shoved it into the basket and then placed the rocket launcher on top (the tarp is on the top in the left basket). Then, I used a clip to add some pressure while the whole thing dried. The result is that the resin parts are now pressed into the cloth giving a sense of weight. I didn't worry too much about the accuracy of the tarp since, as you can see from the photo, it is almost completely blocked by other items.

Once dry, I added the small PE tie downs and a couple of lead foil straps over the rocket launcher. Then I glued the ammo cans to the outside of the turret basket since this arrangement can be seen in many photos of the LAVs in Afghanistan. I'm not entirely sure of how the ammo cans are attached since I don't see any straps in many photos. I'm guessing they are tack welded to the turret rails.

For the rear basket, I'm going to put ration boxes inside and water bottle boxes on the water can holder racks. Right now they are loose since I'll need to paint the model first and then I'll add the boxes and the straps. One point to keep in mind: No items hang off the back of the rack since



13

With its heavy load of PE, I primed the model with Testors Model Master flat gull gray. Next he painted the tires and added the overall coat of olive drab.



14

I built up a layer of dust on the model by spraying a heavily thinned (about 20% paint to 80% thinner) mixture of Tamiya buff and Tamiya thinner.



15

Next, I gave the whole model a wash using thinned raw umber oil paint from Winsor & Newton. He thinned the paint with Mona Lisa Odorless Paint Thinner.



16

How cool is this? You don't often get to add a big red "Stay back" sign to your armor models.

they interfere with the hull blast shield and the hull antenna, **9**.

Antennas

One of the reasons I really wanted to make the Command and Control version of the LAVIII is that it has a ton of cool antennas. The most striking are the two large 'T' antennas on the left and right corners of the upper hull. These are provided as really nice PE parts. I was worried that trying to fold a square tube might be tough but it turned out to be easy, especially since the top and bottom parts have a nice etched pattern to locate the tube. The result is a strong part.

To the 'T' I added a resin spring base for the aerial that will be added later. I also added a large post type antenna that is provided in the update set. This appears to only be on one of the 'T' supports and I

chose the right one for no particular reason other than I have a photo of it installed there. Also shown in the photo are the wires coming out of the antennas. I made these out of solder wire and the attachment posts I punched using my punch and die set.

The third antenna, in the middle of the upper rear hull, is also provided in the update set. There are a couple of photos of this in the Real Models LAV book and it's noted as being a satellite antenna.

In the photos it's strapped to the center post antenna. My best guess is that it's done that way to raise it high enough so it won't interfere with opening and closing the rear upper hull hatches, **10**.

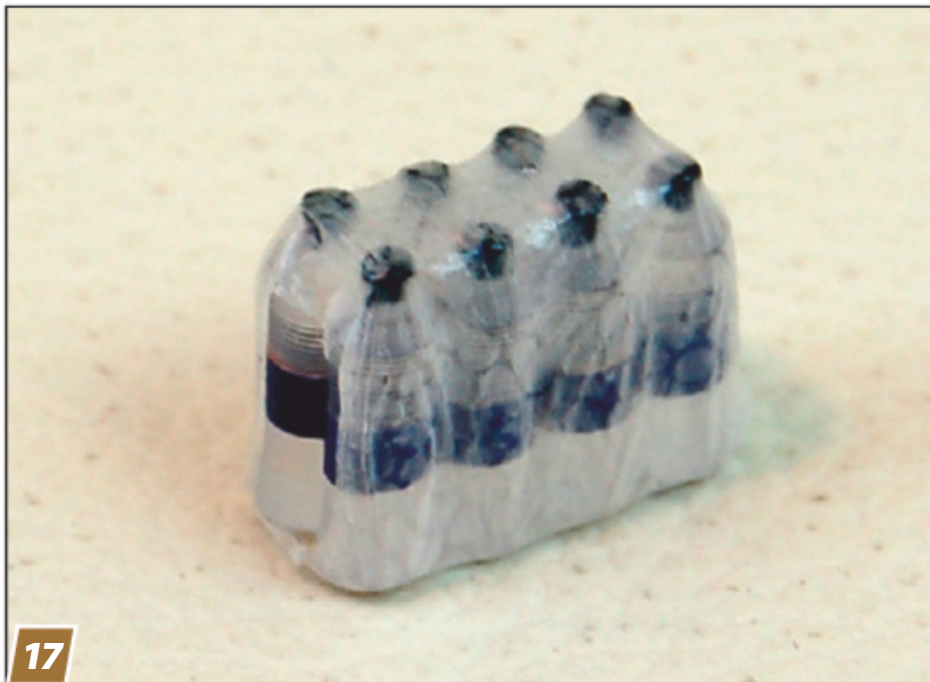
Right side stowage

Turning back to the stowage, this is what I've come up with for the right side of the

LAV. Like the turret, the boxes are loose so I can paint the model and I'll add straps when I permanently attach them. But the two resin tarps forward of the boxes are mounted since I can paint them while they are already on the model. I did modify the straps on the front one to connect to the brackets. I just shaved off the existing molded-on strap from the edge to the cross-strap and then replaced it with one made from lead foil, **11**.

Left side stowage

The left side has less stowage than the right. One reason was I really didn't want to block too much of the cool PE parts I worked hard to get assembled correctly. I also found four water cans and mounted them in the back rack and ran a small strap made from lead foil. Lastly, you can see the row of boxes that will be lying on the



I used Accurate Armour's water bottle set for this job. They seem a bit bigger than the ones in use in Afghanistan but they were the best I could find.



I attached the water bottles and the rations boxes using Gator Glue then added straps made from lead foil.

stretcher. These too are loose and will be attached and strapped down after the vehicle is painted, **12**.

With all the detail I added, it's hard to believe how quickly this kit went together considering the scope of the conversion and the amount of PE.

Ready for paint

With the LAV's construction and detailing out of the way, I was really looking forward to painting and weathering. I started out by giving the model a coat of Testors Model Master flat gull gray enamel as primer. I don't normally use a primer, but with so much PE installed it seemed like a smart move. I'm not sure what it is about gray, but it seems to cover much better than any other color.

I painted the tires using Model Master Acryl U.S. Army helo drab. It's a dark gray that to my eye looks a lot like old, dirty rubber. I painted the rest of the model using Model Master flat black enamel. Afterward, I did some panel fading, first with Model Master olive drab, then with a light dusting of Model Master faded olive drab.

At this point, the model looks notably more washed out than a clean, factory-fresh LAV would. This is intentional. For me, painting is the beginning of weathering. When I look at the photos of LAVs in Afghanistan, they look very washed out due to the amount of dust that's accumulated on them. That's why I went this route and started with these colors.

Next I dry-brushed the model with Model Master Afrika dunkelgrau, which is a tannish gray. I touched up the gray on the tires with a brush and gave the model a heavy coat of clear flat, **13**.

Detail painting

The bulk of the detail painting on the model is the stowage. I painted the tarps and stretcher canvas in Model Master Afrika khaki braun and dry-brushed them with lightened dunkelgrau. I painted the straps with dunkelgrau, too.

I also painted the rocket launcher in the right turret basket and the ammo cans on the outside of the stowage baskets using Model Master green drab. Afterward, I dry-brushed them with more Model Master Afrika dunkelgrau.

I used Model Master Metalizer gun-metal to give the turret machine gun a base coat of paint, then dry-brushed it with Model Master Metalizer dark anodonic gray. The butt of the gun is painted dark tan, which seems a good match for wood.

At this point the model looks pretty contrasty and looks overdone; again, that's by design. After the washing and dusting that will follow, the contrast will decrease. I wanted to start with a fairly high amount of contrast so it wouldn't fade away completely as I progressed with the rest of the weathering.

Pre-wash dusting

Before applying a wash, I wanted simulate a buildup of dust on the lower hull and running gear. So, I airbrushed a heavily thinned (about 20% paint to 80% thinner) mixture of Tamiya buff and Tamiya thinner. This has the effect of lightening the affected areas without washing out the details. I focused on the bottom of the model and worked my way up along the hull sides for this step, **14**.

After the wash, I will repeat this dusting process to extend it to the rest of the model in gradual amounts.

Oil wash

I gave the whole model a wash using thinned Raw Umber artist oil paint from Winsor & Newton. I like to thin this paint with Mona Lisa Odorless Paint Thinner (available at art supply stores). It's a very weak thinner; it will dilute the oil paint but it's not strong enough to attack the finish on the model. I'm not terribly careful with the dilution ratio when I mix a wash, but I'd guess it's about 20% paint and 80% thinner.

Hopefully it is visible that the model is now not nearly as stark now that the wash has blended the colors together and given the finish a more integrated look, **15**.

Stay back!

One of the really cool things on some of the LAVs in Afghanistan is the large red sign that's sometimes carried on the front and back of the vehicle. I don't speak the language, but I'm fairly certain they say something like "Stay back." These signs are included in the printed sheets that come with the kit. I mounted them on a sheet of .010-inch sheet plastic that I also painted red.

How cool is this? You don't often get to add a big red sign to your armor, **16**, so I couldn't resist.

Water bottles

In some of the photos I noticed water bottles in thick plastic shrink wrap, similar to what you might find in a grocery store. I was intrigued and thought I'd have a go at modeling a set. I bought Accurate Armour's water bottle set to use for this job. I think these water bottles must be a bit bigger than the ones in use in Afghanistan, but they were the best I could find. I painted



19

Once again I dusted the model using an airbrush, letting the effect build up as it would on a vehicle operating in a desert-like area.



20

I cut apart a Verlinden scenery set and added detail using brick and stucco sheets from Plastruct. White glue helped fill gaps.



21

I couldn't find any commercially available Canadian tankers, so I used references to subtly convert a couple of Marines.



22

I used Model Master enamels to paint the crew. A wash of artist oil paint finished the job.

the caps blue and just used an old blue decal to simulate the marking stickers.

I glued all eight bottles together using Gator Glue, which is great for this application since it doesn't leave a white residue like superglue.

When the glue was dry, I wrapped the set in a kitchen shrink wrap that has a slightly tacky side. (My wife uses this at home, so I just scavenged a bit.) I hit it with a hair dryer until the edges shrunk up around the bottles, giving me just the look I wanted, **17**.

Turret stowage

I attached the water bottles and the ration boxes using Gator Glue and then added straps I made from lead foil. I had to be super careful to thread them through the tiny tie-downs without ripping tie-downs from the basket, **18**. Tough work, but patience was the main skill.

Post-wash dusting

One of the effects of the wash is to blend all of the colors together. As a result the dusting I did previously faded slightly, so I repeated the process with a couple of changes.

Once again I used Tamiya buff mixed with Tamiya thinner. I focused on the underside again, but this time I made sure to avoid the wheels. Later, I'll add pigments to them, and I don't want to lighten them up too much before that step.

I continued to add the thinned buff mixture up the sides of the hull and then covered the entire model in a very light coat.

Once all of this was dry, I did another round of dusting with similarly thinned Tamiya deck tan. It's a lighter color than buff and makes a nice complement in the dusting process. Again, I focused mainly on the underside of the hull and avoided the

wheels. I didn't go too far up the hull sides since I wanted to control the amount of lightening.

My main goal in this step was to get as much of a dusty effect as possible so I could minimize the use of pigments, **19**. Pigments can really wash out the look of a model and after installing nine sheets of PE that was the last thing I wanted to happen!

Pigments

I limited my use of pigments to the lower hull and the wheels. I used a mixture of Mig Productions pigments and applied them dry using a large brush and an eyeliner sponge (from the cosmetics department).

I wrapped up the model construction by adding the antennas. I added the three upside-down water bottles to the turret antennas; I believe these are used to hold a



My LAV vignette illustrates the massive bulk of the vehicle as well as all of the fine detail and stowage that covers it and keeps its crew operating.

special infrared glowstick for vehicle identification.

Base layout

Originally, I thought I'd make a simple base with just some flat groundwork.

But then I realized I had Verlinden's Desert City Ruined Gateway (No. 1786). As configured in the set, it's quite long, so I cut it in half.

The problem with the Verlinden set is that there's no detail on the back of the gateway. I wish I had epoxy-sculpting skills, but I don't.

Instead I bought some Plastruct brick and stucco plastic sheets. I love this stuff because it's inexpensive, and since it's styrene it's easy to use.

First I cut out the bricks to match the wall contours. Then I cut out some of the stucco and trimmed it to look like it had been partially knocked off the walls, **20**.

I glued everything together and trimmed and puttied where the bricks met the resin parts. I used a knife to add notches and nicks. I saw no need to be super careful.

I shaved the edges of the stucco to give them a blended look and put a thick coat of

white glue along the edge of the stucco and bricks to make sure there weren't any gaps.

Finishing the base

With the wall rework done, I painted the walls Model Master Afrika khakibraun. I then dry-brushed them with dunkelgrau. I painted the stucco areas using Model Master radome tan over a khaki base coat.

Once the paint was dry, I gave the whole thing a wash of about 20% Winsor & Newton raw umber oil paint and 80% thinner. I followed this with another dry-brushing of the khaki areas using lightened dunkelgrau.

Figures

I was disappointed to realize that there are no figure sets of modern Canadian soldiers, so I started with a set of modern U.S. Marine tankers. After comparing them to my reference photos I realized that I wouldn't be able to completely accurize the figures, so my goal was to cover the main points.

First, I added shoulder pads I made from sheet plastic. There's mesh under the pads that looks like it's attached to the shirt, so I simulated that with lead foil.

I made a small modification to the helmets to make them look more like the Canadian equipment, and I also did a little carving on the headgear. Then I added straps on top of the helmets using lead foil. Finally, I added a Royal Models PE microphone set.

In the end, these figures aren't perfect, but I think they're reasonably close to modern Canadian vehicle crew and should be OK for this build, **21**.

Figure painting

Again using my reference photos, I painted the figures with lightened Model Master Afrika dunkelgrau and then added the camouflage mottling using straight Afrika dunkelgrau, **22**.

The figures' skin is painted with Model Master wood and dry-brushed with Model Master tan. After a clear flat coat, I gave the figures a light wash using highly thinned Winsor & Newton raw umber artist oil paint.

This has been a great model to build. Even with the extensive amount of PE I installed, I'd still deem it an easy, enjoyable project of an important piece of modern armor. **FSM**

PIGMENT WASHES DIRTY

Layered paint camouflages a captured 2S1

BY AARON SKINNER

The Syrian Civil War is a rich source of inspiration for modelers. The conflict involves a lot of Russian-built vehicles used by Syrian government forces and captured by opposition groups. The battlefield ranges from open desert to cities, and the Internet is filled with images of tanks, APCs, and artillery in interesting camouflage and field-applied markings.

Prompted by photos of Syrian self-propelled guns in rebel hands, Brett Avants built Trumpeter's 1/35 scale 2S1. The combination of the subject matter and its worn appearance were inspiring. He was eager to apply key aspects seen in images to his model, including three-color camo, field-applied slogans, and a hodgepodge of military and civilian crew.

"These vehicles looked very worn and battle-scarred," says Brett.

After a coat of Vallejo Russian green primer (74.609), Brett air-brushed Vallejo Model Air camo black green (71.018). This color served as a base for chipping with hairspray used as a release agent.

He airbrushed Ammo by Mig Jimenez (Ammo) Russian green base (A.MIG-0932) over the hairspray, then used a damp brush to remove some of the paint and reveal the darker green underneath.

More hairspray covered this layer before he added camouflage with Ammo red brown shadow (A.MIG-0912) and Ammo sand yellow (A.MIG-0030). After chipping these layers, he let the model dry for a couple of days.

"I love the Ammo acrylic paints," Brett says. "I use them straight from the bottle with my Grex and Badger Krome air-brushes. If I need to thin them, I use a drop or two of Vallejo air-brush cleaner (62.067). Yes,

cleaner!" He typically sprays the paints at 17 psi. Air pressure is the key, he says. Tweak the regulator until the paint is spraying the way you want it, then apply it in thin layers, gradually building up the density until smooth, opaque coverage is achieved.

He took a layered approach to weathering as well, starting with an thin, overall application of Wilder Nitroline brown filter (HDF-NL-13) to give the vehicle a worn look.

Washes with Wilder deep shadow ((HDF-NL-02) and orange-brown artist oils came next.

After adding subtle scratches with Ammo Russian green highlight (A.MIG-0934) and a 00 brush, he used a host of Ammo weathering products — dust effects (A.MIG-1401), streaking grime (A.MIG-1203), and engine grime (A.MIG-1407) — and burnt umber oil paint to turn the vehicle into a combat veteran.

"I also used a number of sand, rubble, and dust pigments from Ammo and MMP on the lower and upper hull," Brett says. "On the lower hull, the pigment was applied dry, then fixed using pigment fixer from a dropper."

Before that layer dried, he sprinkled on several colors of dry pigments. They contrasted nicely with the wet layer when everything dried.

"I used this kit to develop my pigment wash technique to simulate dust and dirt on armored vehicles," he says. These washes are a mix of the pigments and fixer that he flowed into nooks and crannies on the 2S1's upper surfaces. When dry, it looks like accumulated dry dust and dirt.

"On subjects like this one, I would encourage modelers to stretch and try techniques that they have never done," says Brett. **FSM**

Crew: After adjusting figures from two Warriors Scale Models sets — a Mideast tanker and a Hezbollah soldier — to fit the hatches, Brett painted them with Vallejo acrylics. He thinned the paint with water and Vallejo glaze medium and applied thin layers to build up color.

Streaks: Brett applied Ammo by Mig Jimenez dust effects and streaking grime to the hull and turret, then dragged the enamels down. The result looks like dirt and grime that's run down the vehicle in the rain.

Base: Working with a VLS street scene, Brett painted with Tamiya NATO black (XF-69). Then, he misted Tamiya medium gray (XF-20) mixed with Tamiya lacquer thinner over the asphalt area, just enough to make the street look dark gray with lighter patches. The sidewalk received a thin coat of Tamiya deck tan (XF-55), then he applied repeated artist-oil washes of burnt umber, sepia, and Mars black. Pigments added dirt and dust.

A WAR-WEARY GUN

Meet Brett Avants

Brett, 49, built his first model when he was 8; it was a Monogram 1/48 Stuka his dad got for him. “We built it together and it was a blast,” Brett says. “I have been hooked ever since.” Armor quickly became his main interest, and he built a lot of the old Aurora, Monogram, and Tamiya kits. “Shep Paine was an inspiration, and I still have my original *How to Build Dioramas*,” he says. Like

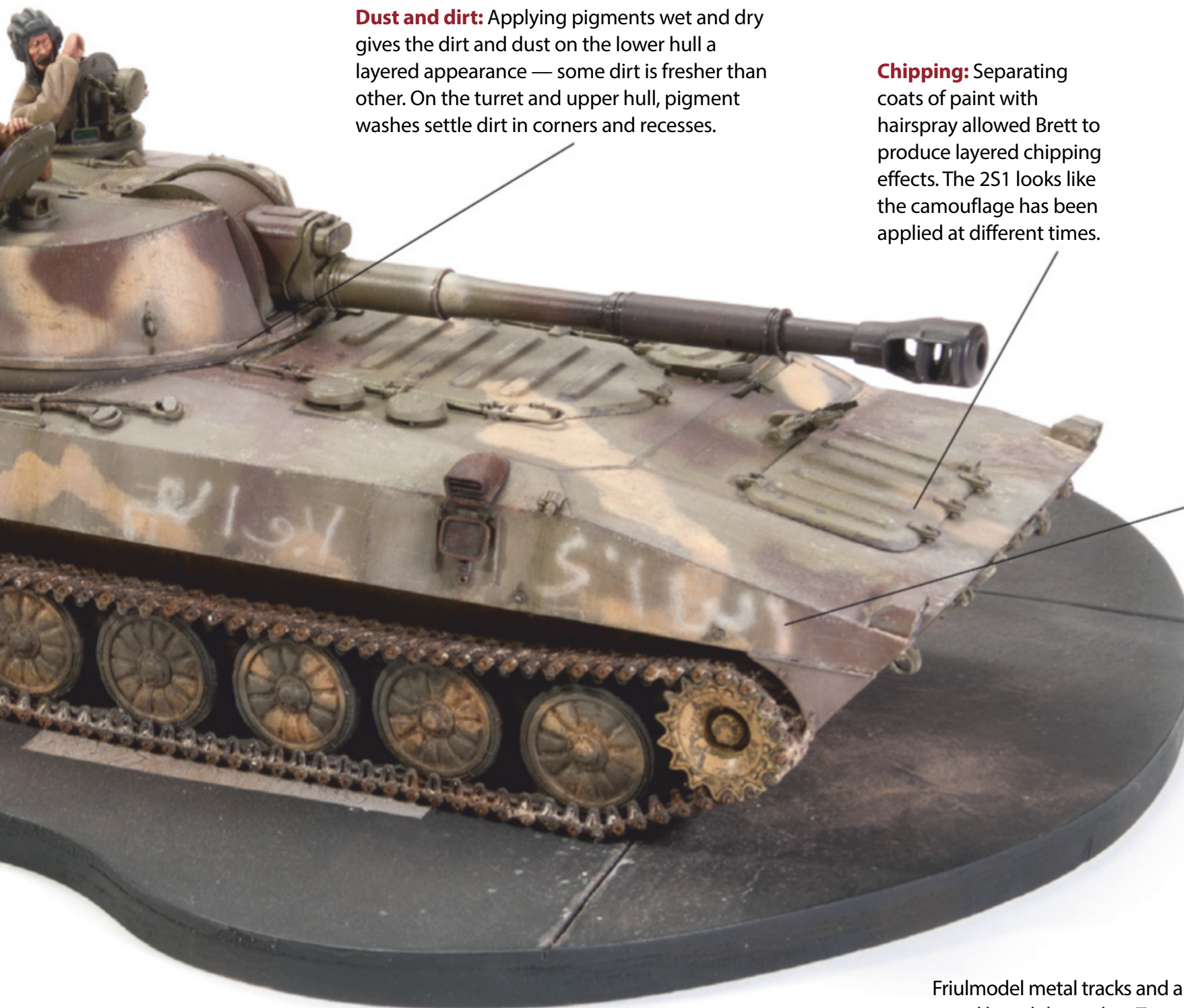
many, Brett’s active modeling took a hiatus for life, military service, and kids. Nowadays, the bug is back full-time and Brett’s building more — mostly armor, with some mecha and sci-fi kits, and a few aircraft. Brett and his wife of 27 years live in St. Charles, Mo., in suburban St. Louis. He says the area is home to some world-class modelers and figure painters.



Dust and dirt: Applying pigments wet and dry gives the dirt and dust on the lower hull a layered appearance — some dirt is fresher than other. On the turret and upper hull, pigment washes settle dirt in corners and recesses.

Chipping: Separating coats of paint with hairspray allowed Brett to produce layered chipping effects. The 2S1 looks like the camouflage has been applied at different times.

Slogan: Brett wrote the Arabic script with a fine-tip Badger Krome airbrush spraying Tamiya flat white (XF-2) acrylic mixed with Tamiya lacquer thinner at low pressure. “I had to practice several times to get the right look and right amount of paint,” he says.



Friulmodel metal tracks and a Model Point turned-metal barrel dressed up Trumpeter’s 1/35 scale 2S1 before careful painting and weathering created a Syrian army gun in the service of rebel forces.



▲ **MAYNARD J. NIJBOR**
WAUSAU, WISCONSIN

Maynard marked Classic Airframes' 1/48 scale Westland Wyvern as a Royal Navy attacker during the Operation Musketeer, the British military response to the 1956 Suez Crisis. He painted the model with Testors Model Master enamels starting with the yellow, then masking for the black stripes. Sky type "S" and dark sea gray finished the camouflage.

► **CHRIS GRAETER**
COLCHESTER, VERMONT

In Iraq in 2004, the 20th Engineer Battalion used the M9 armored combat earthmover for route clearing. To replicate one of those vehicles, Chris detailed Takom's 1/35 scale kit with solder and copper wire for plumbing and scratchbuilt jerry-can racks and painted with AK Real Color lacquers. The base is insulation foam with drywall compound for the road and Vallejo Earth Textures for the groundwork.





▲ **RYAN LABIENIEC**
TOLLAND, CONNECTICUT

After building Minicraft's 1/72 scale B-24D out of the box, Ryan used Kits-World decals to mark it as *The Squaw/Sleepy*, one of the famous Ploesti raiders. He painted the bomber with a custom mix of Testors Model Master acrylics using sea salt, artist-oil washes, and pastels to weather the Liberator's camouflage.

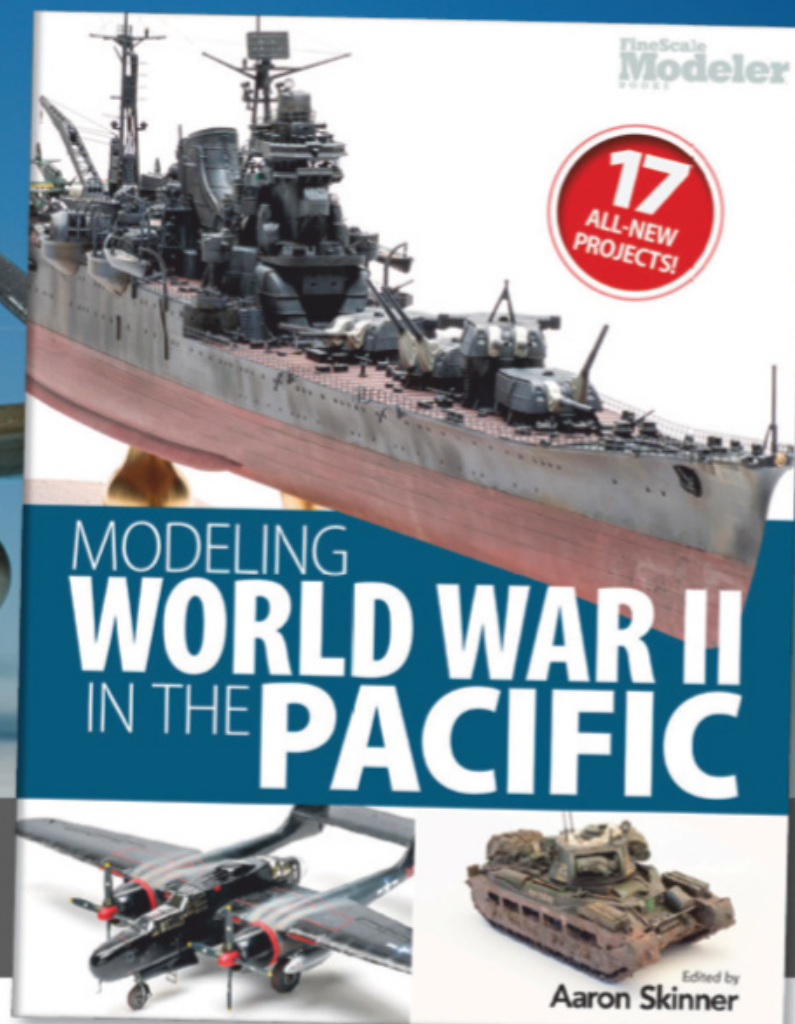
◀ **MARK MINNIS**
CANAVOY, PRINCE EDWARD ISLAND, CANADA

Harkening back to World War I, Mark built Meng's 1/35 scale Rolls Royce armored car on operation in Palestine. He lowered the turret and altered the driver's ports to backdate the vehicle to the correct 1914 model. Using Tamiya acrylics, he airbrushed the base color, then hand-brushed the splotchy camouflage.

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