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MODELING WWII TANKS

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Armor Improvements

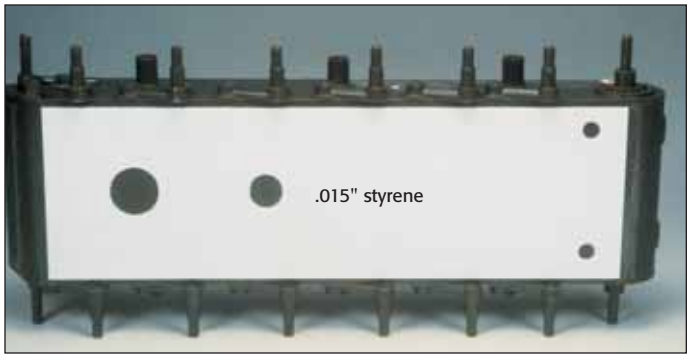
Bringing Tamiya's early-'70s Russian KV-1 up to modern standards

By Cookie Sewell

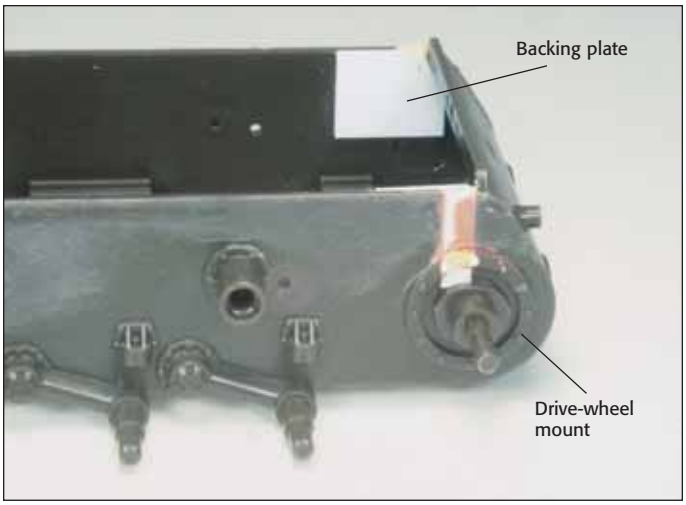
Visit almost any hobby shop and you'll discover that behind the display of brand-new, state-of-the-art kits are rows and rows of older kits. While their level of detail may leave a little to be desired, most have accurate outlines, and with a few detailing tricks and aftermarket parts, a has-been kit can be transformed into a real head turner.

Tamiya's KV-1 (kit No. MM-166) is a perfect candidate for such treatment. Originally released in the early '70s, the kit is typical of the battery-operated "carpet crawlers" of the era. Fortunately, the KV-1's hull was big enough to swallow up the motorization pack without modification, and aftermarket individual-link tracks are available to replace the kit's poorly detailed vinyl tracks.

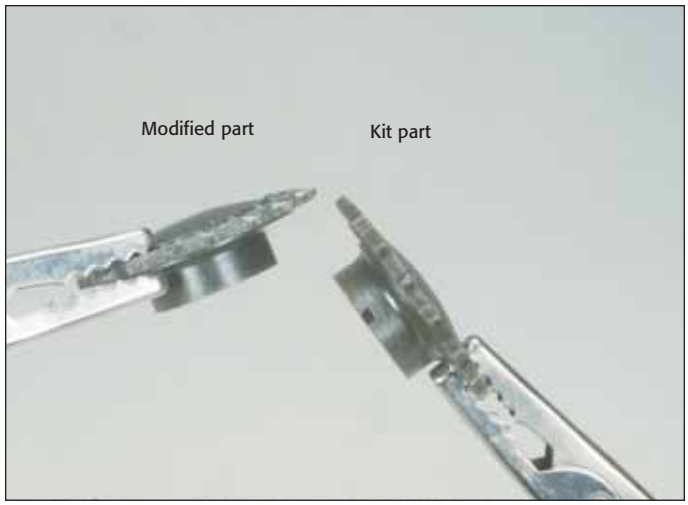
The kit portrays a standard-production KV-1 with a cast tur-



1 Sheet-styrene armor covers the kit's motorization holes.



2 **Strengthen all of the hull plugs with scrap-plastic backing plates.**



3 **You'll need to file down the driver teeth before they'll work with aftermarket tracks.**

ret; it's likely based on the sample sent to the United States by the Soviets in 1942, which currently resides at Aberdeen Proving Ground's Ordnance Museum. A trip to the museum with my camera provided plenty of reference photos.

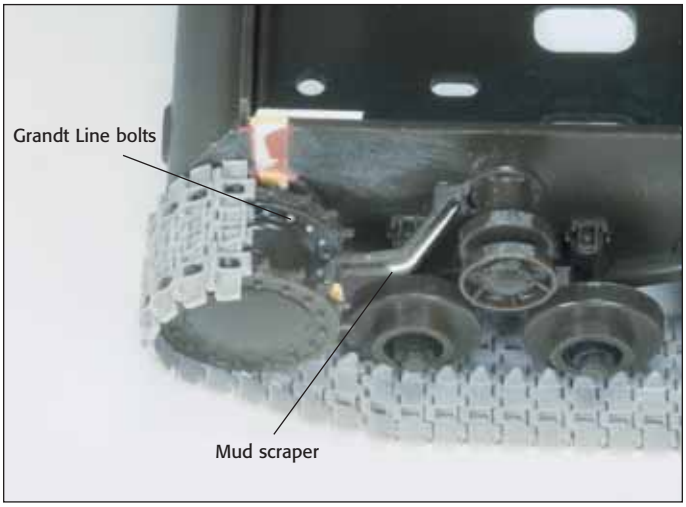
I wanted to model a tank used by the Leningrad Front in 1942. It was a slightly different version, with a squared-off rear deck, so I'd have to do a little plastic surgery.

Getting started. I started the project with the lower hull; it's full of holes for the motorization system. The holes on the bottom surface are the easiest to fix. Full-size KV-1s had a 20mm steel-plate belly pan. I made one from .015" sheet styrene and added it to the model, **1**. I cut holes through it to represent the escape hatch under the driver's position, an electrical-system access hatch, and two drain holes under the final drives at the rear of the hull.

Filling the holes in the sides of the hull was more difficult, as they cut through the mounts for the drive wheels. Like many of Tamiya's early kits, the hull is .050" thick, making it easy to cut accurate filler plugs from sheet styrene. After cutting the plugs to shape, I insert them in the slots and backed them with pieces of scrap plastic.

Each side of the hull has a slot that cuts through the molded-in circular drive-wheel mount. Filling the slot is easy, but restoring the missing section of the mount requires more work. After measuring the mount, I cut an identical ring out of sheet styrene, then sliced out a section to match the missing piece of the mount. A little filler hid all of the joints, and Grandt Line bolts added detail, **2**.

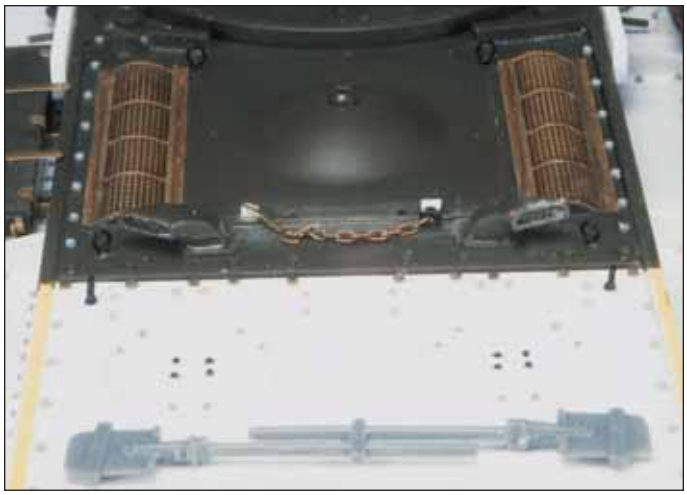
Modelkasten's tracks are good – *too* good, in fact. The track links are close to scale, but most of the model's running gear is not. To get the tracks to fit properly I had to file down the driver teeth until the notches in the links would fit down over the teeth and touch the face of the driver, **3**. Afterward I added Grandt Line bolts to the outside face of the inner half of the



4 **Installing the individual-link tracks was tedious, but the results were worth it.**

5 **Carefully remove the fenders with a razor saw and set them aside.**

6 **Drill out the grilles, then clean up the openings with a hobby knife.**



7 **The completed engine deck with its photoetched grilles in place.**

driver, using the outside driver half as a guide.

Make sure the drivers rotate freely after you install them – this will make it easier to adjust the tracks for tension and fit when you install them. I installed the mud scrapers just before the top track run, **4**. Remember that the KV-1 had "dead" tracks, which tend to stretch and sag.

Upper hull. Moving to the upper hull, I decided that since I was going to add a new rear end, I might as well replace the kit's thick fenders. I'd use them as patterns for the new ones, though, so after I removed them I set them aside, **5**.

I drilled out all of the hull's grilles with a motor tool, and trimmed the openings with a hobby knife, **6**. Afterward I cut off the rear of the hull right behind the engine deck.

The new rear end was constructed from sheet styrene using "layered" construction, a technique that enables me to build in realistic joints and panel lines without scribing. After building the new rear end using .040" sheet styrene, I added an outer facing using pieces of .010" sheet. By leaving small gaps between the .010" pieces, I get realistic, uniform panel lines.

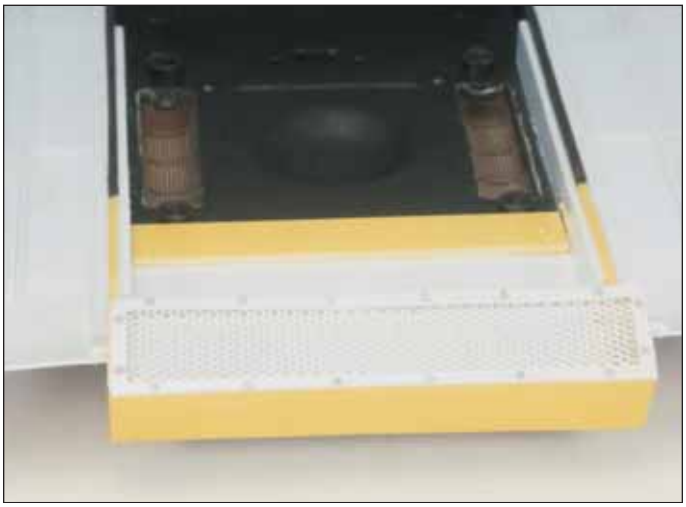
Using a razor blade, I removed the prominent bolts and mounts from the kit hull and transplanted them to the appropriate positions on the new hull. I also added a set of shovels from an Italeri/Zvezda T-34 kit.

I detailed the engine deck using parts from Eduard's photoetched set. I also added new lift rings and a few Grandt Line parts, **7**. Before I added the deck to the model, I roughed up the edges with a file to simulate torch marks – the full-size deck was crudely cut from armor plate.

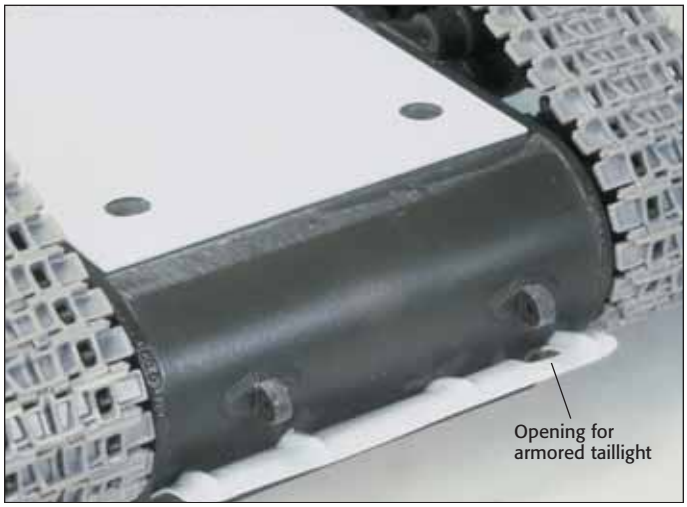
Next I added a new rear radiator exhaust grille I made from extruded-aluminum mesh. It's a simple rectangular screen over the exhaust vent, **8**.

Using the kit parts as a guide, I made a new exhaust-deflector plate from .010" sheet and backed it with .030" mounts, **9**.

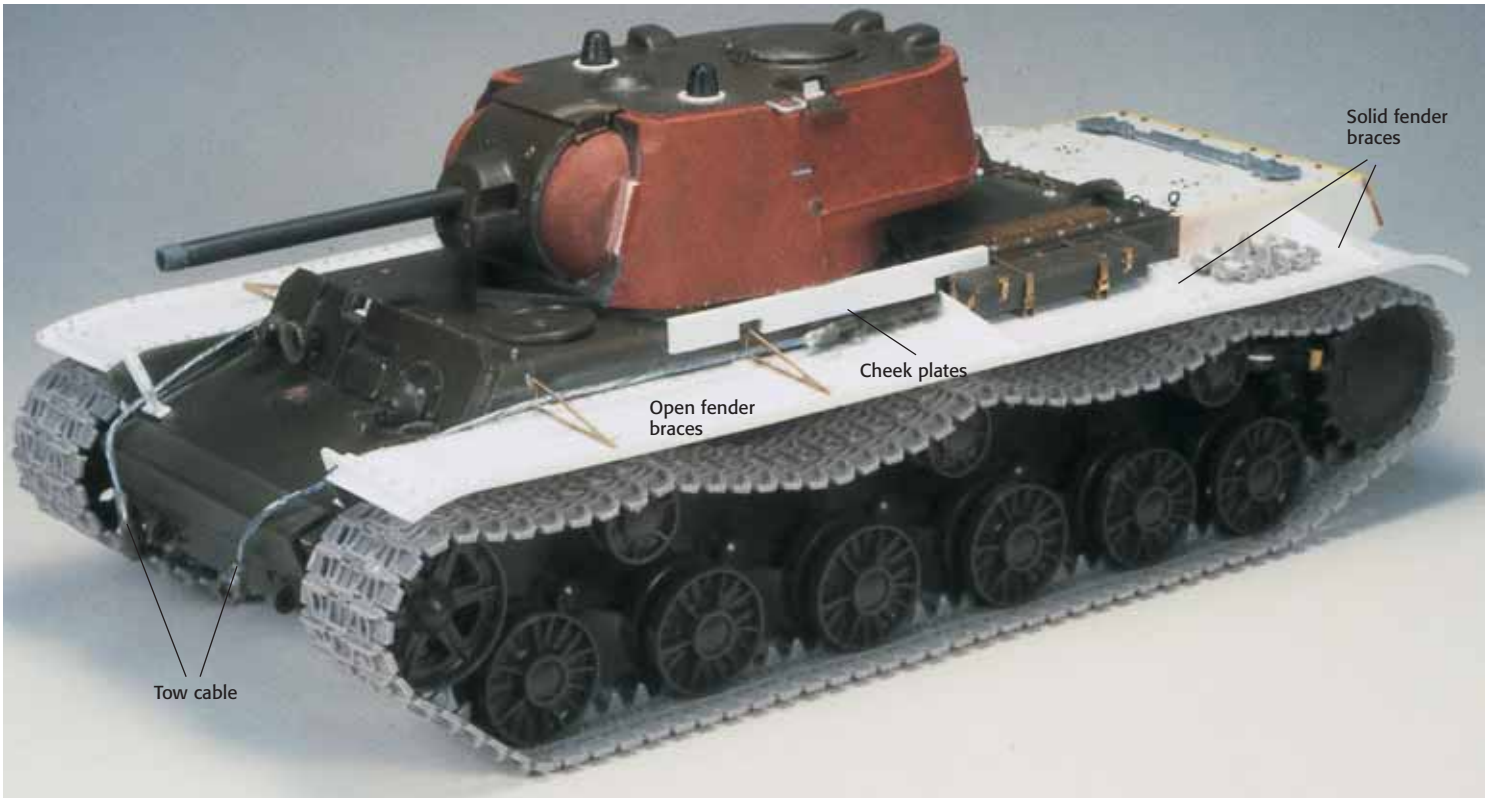
The KV-1 had armored covers over its radiators to keep shell



8 **Extruded-aluminum mesh has the correct diamond-shaped pattern for the exhaust grille.**



9 **Cut a hole in the left end of the exhaust-deflector plate for the armored taillight.**



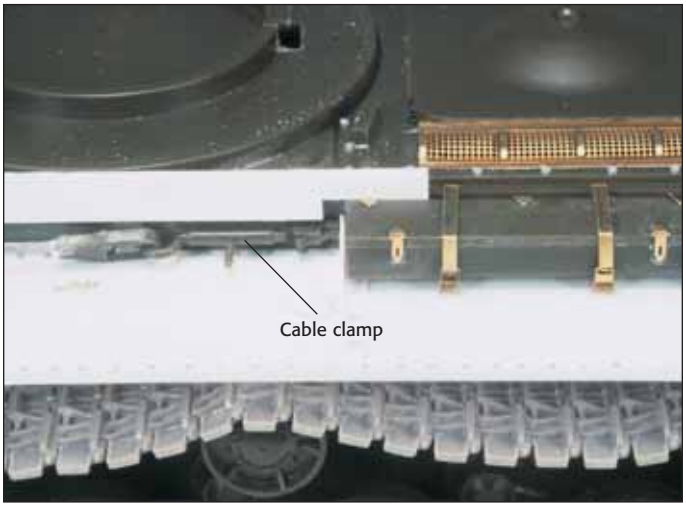
10 **Photo references helped place the model's external details.**

fragments from ripping through the intakes and causing damage. I made covers from styrene sheet and strip, painted them, and glued them in place inside the hull under the grilles.

Moving to the outside of the hull, I added new "cheek" plates I made from .060" sheet styrene. New fenders were next. I started by making new mounts from .030" square strip. Using the kit parts as a pattern, I made new fenders, cut each one into three sections, and added .010" styrene butt plates. Reinforcing strips were added along the outside edges of the fenders, and T-bar reinforcing strips were added underneath.

KV tanks had five triangular fender braces welded to each side of the hull. One of my reference photos showed two open braces at the front, and three solid braces at the rear, and this was the version I decided to model. The front braces are On the Mark photoetched pieces, and the rear ones are made from .010" styrene. Bolts and rivets complete the fender detailing, **10**.

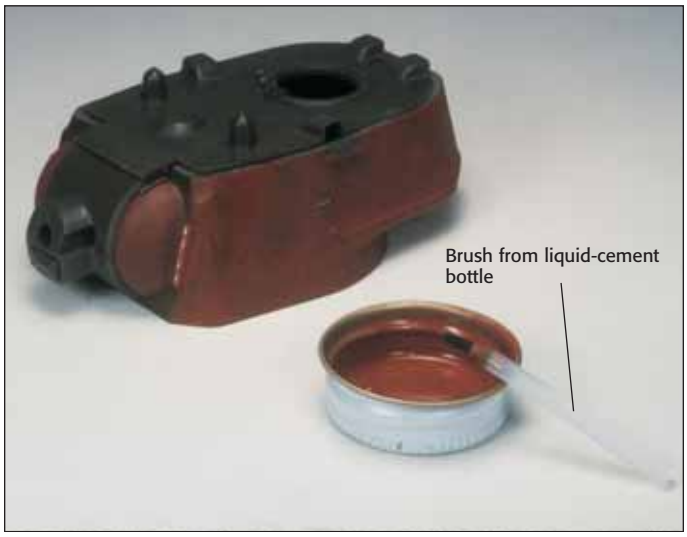
I glued a single tool/spare-part storage box on the left side of the hull, **11**, and two auxiliary fuel tanks on the right, **12**. I



11 **Photoetched hardware really brings the kit's tool/spare-parts box to life.**

12 **Instead of using parts from the photoetched set, I made stronger styrene fuel-tank mounts.**

13 **A circle template helped make a reinforcing ring for the rear machine-gun mount.**



14 **An old paint-bottle cap is perfect for mixing putty and liquid cement.**

used Eduard's fittings for the storage box, and made fuel-tank mounts from .005" and .010" styrene.

Turret detail. Tamiya's kit really shows its age when you examine the surface of the turret. The KV-1's turret had a pronounced cast texture, and the kit's version is far too smooth. Some of the other details are lacking, too, so I had plenty of reworking to do.

Since I wanted to model an uparmored version of the KV-1, I needed to add a reinforcing ring around the rear machine-gun mount and a massive mold-separation line around the lower-rear portion of the turret. I made the reinforcing ring from sheet styrene, cemented it to the back of the turret, and sanded it to shape, **13**. Stretched sprue simulates the mold-separation line. I added styrene "cheek" pads on the front of the turret.

I decided to use a mixture of Dr. Microtools putty and Testor liquid cement to add the cast texture to the turret. Using a cut-down brush from the glue bottle, I applied the mixture to the turret in small areas, usually around 1" square. While the mixture was still wet, I stippled it with the stubby brush, **14**. The trick is to keep at it – don't stop even if the putty starts to peak like a meringue pie! Repeat the process until all of the cast surfaces are covered. After about 30 minutes, give all of the surfaces a second coat of putty. With a little light sanding, the surface will have a realistic cast appearance, **15**.

The Soviets trimmed the rear of the cast turret crudely; to replicate it, I notched the lower-rear section of the turret with a hobby knife.

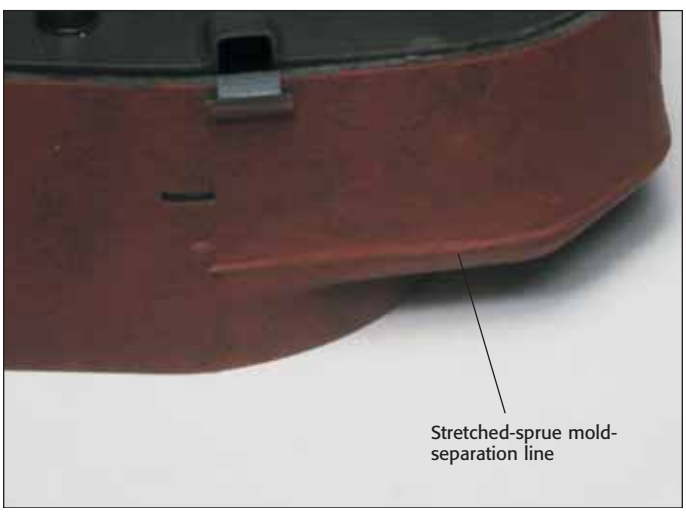
I finished the turret with several detail parts. I trimmed off the kit's crude PT-4-7 sights and replaced them with ones from Tamiya's T-34/76 (kit No. 3559). I added a T-34 F-35 gun barrel and made interiors and periscope heads for all of the kit's periscopes.

Final details. First I painted the tracks. I applied a base coat of Floquil red oxide and allowed it to dry thoroughly. A black wash filled the recesses, and dry-brushing with silver simulated wear.

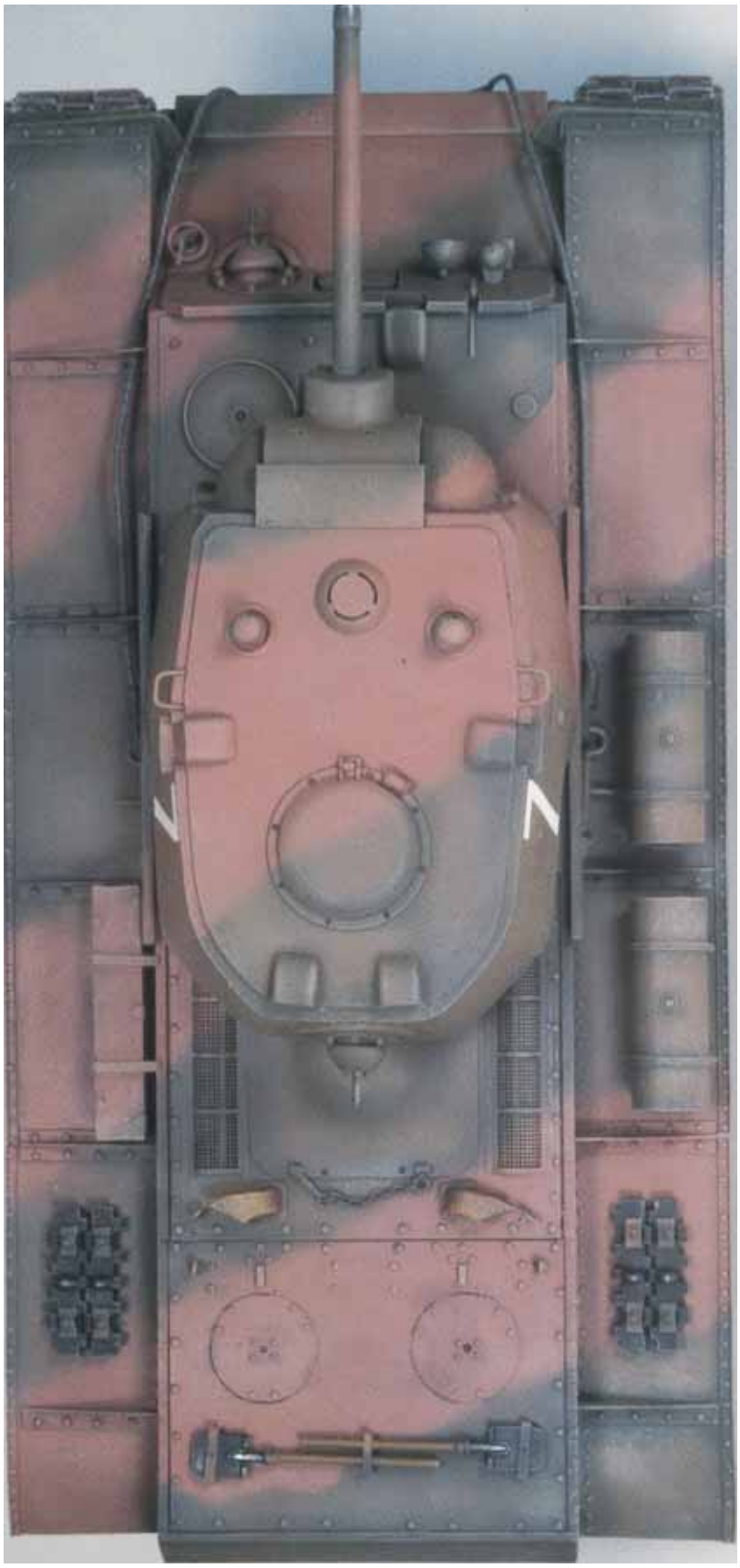
My KV-1 would wear a two-tone paint scheme, with a red-brown pattern added over the camouflage green. I airbrushed on a coat of Floquil RLM 72 dark green, then added the red pattern using Floquil German red brown, **16**. The red pattern was only applied to the upper surfaces of the tank, so some masking may be necessary.

After I applied a black wash to the model and did little dry-brushing, I airbrushed on a coat of Future floor polish to prepare the model for decals. After I applied them, a coat of Testor Dullcote, followed by a coat of Floquil dust, gave everything the proper look.

Like many of Tamiya's early armor kits, the KV-1 is a survivor. With a little extra work and some basic techniques, it holds up nicely against newer kits in my collection. **FSM**



15 **The finished turret, before paint. Stretched-sprue makes a realistic mold-separation line.**



16 **A top view of the model after application of the paint scheme and decals.**

SOURCES

Detail parts

Eduard distributed by **Precision Parts Corp.**, P.O. Box 305, Ogdensburg, NY 13669, ✆613-224-9071

Grandt Line Products 1040B Shary Court, Concord, CA 94518, ✆510-671-0143

Modelkasten available from **VLS**, 811 Lone Star Drive, O'Fallon, MO 63366, ✆314-281-5700

On the Mark Models P.O. Box 663, Louisville, CO 80027, ✆303-665-9424

Paint, cement

Floquil-Polly S 206 Milvan Drive, Weston, ON M9L 1Z9, Canada, ✆888-476-5597

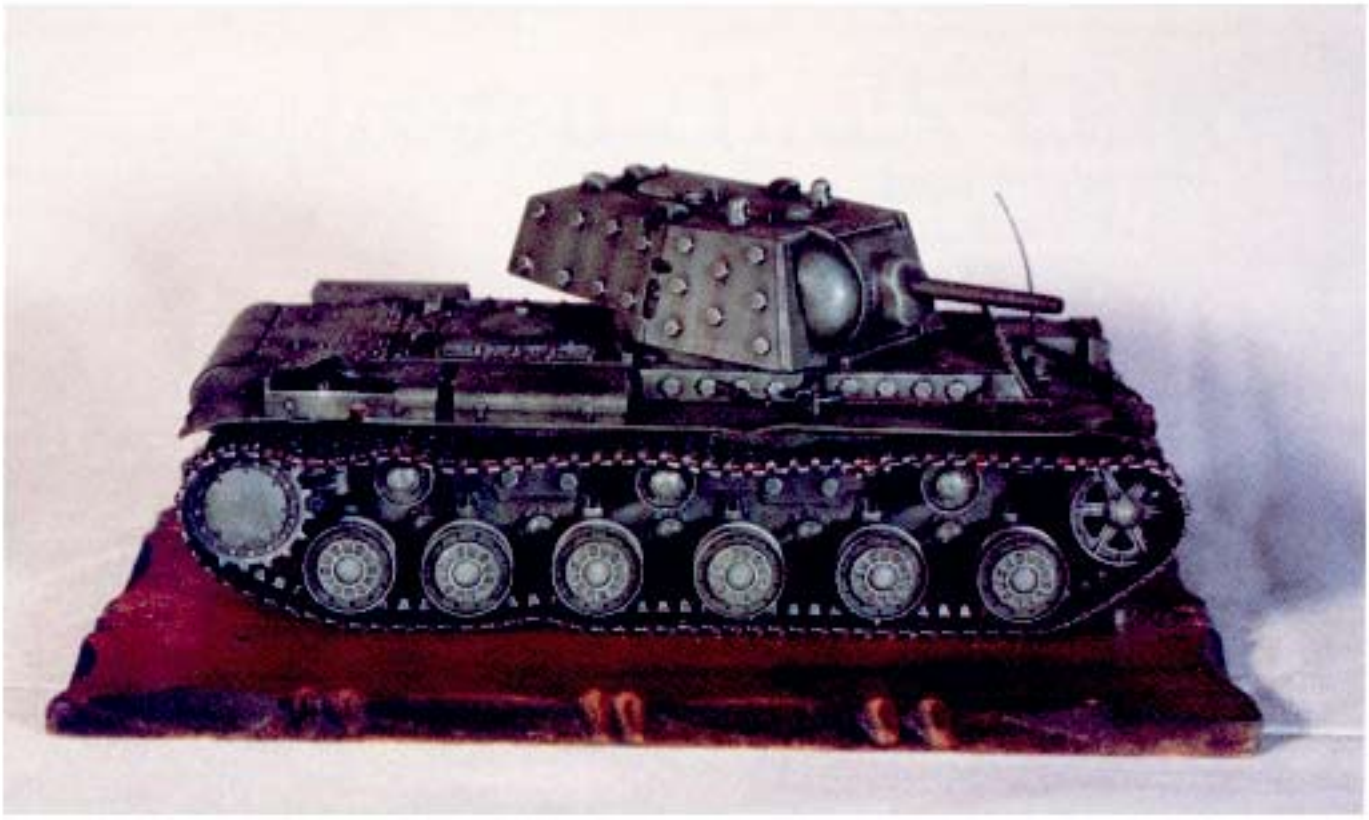
Testor 620 Buckbee St., Rockford, IL 61104-4891, ✆815-962-6654

Putty

Dr. Microtools P.O. Box 21585, Columbus, OH 43221

Styrene components

Evergreen Scale Models 12808 NE 125th Way, Kirkland, WA 98034



The KV-1E is an easy conversion of the prime Soviet heavy tank. Added armor, a shortened gun, and road wheels from the Tamiya KV-II kit cover most of the changes.

Modeling the Soviet KV-1E heavy tank in 1/35 scale

Adding appliqué armor to Tamiya's KV-1C produces a new version

Erroneous intelligence reports on the power of German tank guns caused the Soviets to beef up their tanks. The KV-1 received appliqué armor on the turret and hull.

BY DAN TISONCIK

THE SOVIET KV heavy tank series is a popular modeling subject but the lack of good technical information has hindered many modelers' attempts to produce an accurate replica. Fortunately, the KV series has been well illustrated in recent publications, notably Zaloga and Grandsen's *Soviet Tanks and Combat Vehicles of World War Two*. These publications provide accurate details of the different production variants from the first produced in 1939, to the later variants in 1942.

The KV heavy tank was designed by a team headed by Lieutenant Colonel Zh. Kotin to replace the T-35 heavy tank. The KV designation stood for Stalin's friend and defense commissar, Klimenti Voroshilov.

Erroneous intelligence reports on the effectiveness of German tank guns caused the Russians to beef up the ar-

mor protection on their tanks. Early models of the KV were fitted with appliqué armor, consisting of 35 mm-thick steel plates bolted to the turret and hull sides. These refitted versions were then designated KV-1 Model 1940 "s ekranami" — KV-1 (with appliqué) or KV-1E.

There is no kit of the KV-1E, but with a little work you can easily build one. The basis of this conversion is MRC-Tamiya's kit No. MM 166 (out of production) — it's a KV-1 Model 1941 with a cast turret and other late improvements (Tamiya calls it a KV-1C). The conversion involves adding appliqué armor to the turret and hull, shortening the gun, replacing road wheels, and final detailing.

Kit modifications. The early KV turret was a simple welded structure. The roof was horizontal while the front, rear, and sides were all flat armor plates, angled 15 degrees from vertical and welded together. Converting the kit turret to the earlier welded version with the appliqué armor requires the most work. Start by transferring the full-size templates of the turret plates, Fig. 1, to .040" sheet styrene, then cut out the parts with a straightedge and a sharp knife.

Assemble the kit turret according to the instructions, then attach the four styrene armor plates to the sides. They should be centered around the pistol ports on each side of the turret with a small gap between each pair. Next, add the back panel and small plates at the front corners of the turret, overlapping the trunnion bulge reinforcing bars.

After the plates are dry, fill the gaps at the corners with putty, then sand. Bevel the top edges of the plates and the front and back corners at 45-degree angles. You can simulate the weld marks at the corners with a thin bead of putty textured with a knife.

The main armament of the early KVs was the inadequate Machanov L-11 gun. The kit's gun is the later F-32, so I shortened the barrel by cutting 11/16" from the rear, Fig. 2. Attach the kit's ball-mounted rear machine gun to the rear plate and the lift rings and grab handles to the turret top. Carefully drill out the PT-47 sighting periscopes and side/rear episcope cowlings and fill them with Microscale's Kristal-Kleer or white glue. I place a small piece of cellophane tape over the opening, and add the Kristal-Kleer from inside the turret, Fig. 3. Let the Kristal-Kleer dry for 48 hours before removing the tape.

There are only a few simple changes to the hull. Using the templates, cut out and bevel the upper and lower hull appliqué armor plates and glue them to the sides, Fig. 4. You'll need to remove the small rectangular plates on the kit hull before fitting the upper forward appliqué plates.

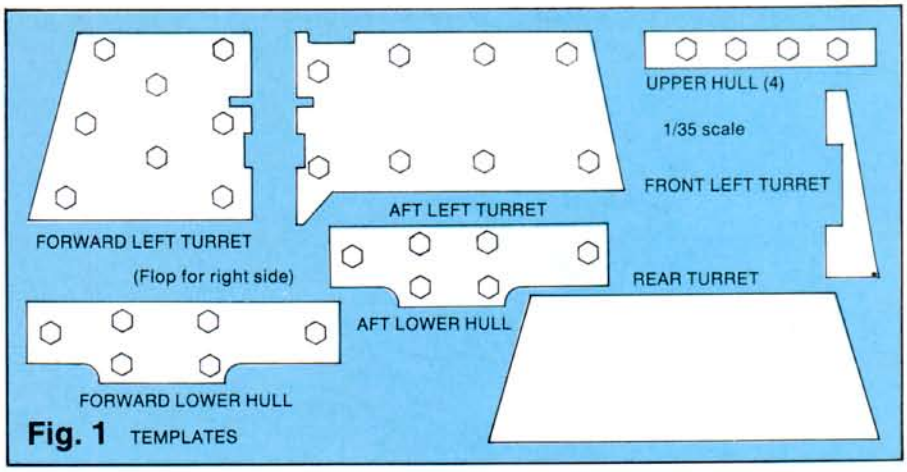


Fig. 1 TEMPLATES

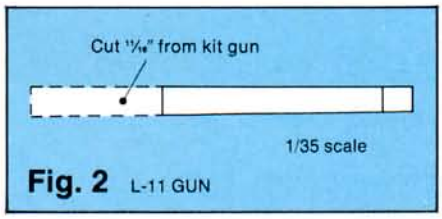


Fig. 2 L-11 GUN

Fig. 3 EASY LENSES FOR PERISCOPE AND EPISCOPES

Big bolts. The next project is adding the large hex-head bolts that fastened the appliqué armor to the tank. I cut 72 1/16"-thick pieces from .10"-diameter styrene rod and converted them into 3/32" hexagonal bolt heads by cutting them with a razor blade and a rotating template, Fig. 5. An easier (but more expensive) way is to buy 0-80 hex-head brass machine screws, found in model railroad hobby shops or from Walthers' catalog (see source block). Simply cut off the threaded portion of the bolts and attach the heads with super glue. Position the bolt heads by marking the locations on the styrene plates with a pencil. This is the most tedious part of the conversion but it makes the model.

More small improvements. I drilled out the engine air intake screens and replaced them with No. 60 brass mesh screen and frames made of .010" styrene strips, Fig. 6. Next, I drilled out the exhaust stacks with a motor tool. The engine deck latch cable was removed and replaced with fine scale chain link, attached to the engine deck with wire eyebolts.

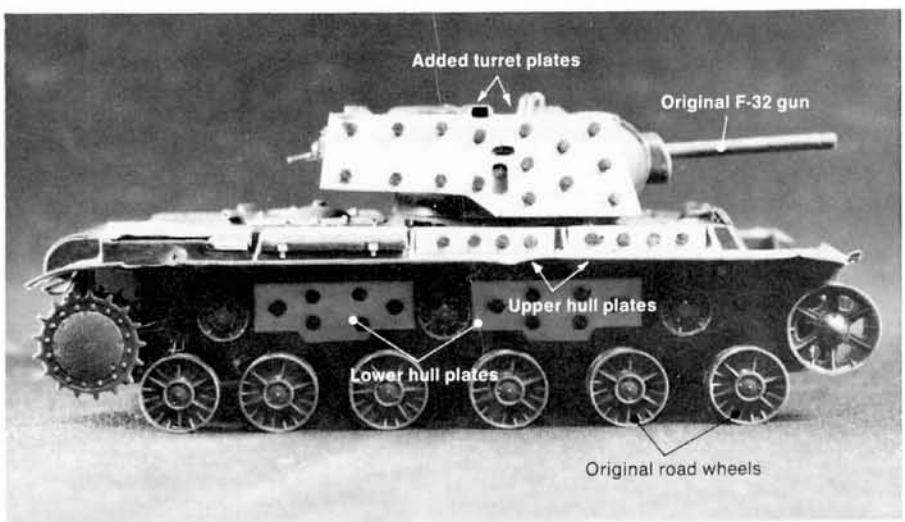


Fig. 4. The appliqué armor plates have been added to the turret and hull. The hex-head bolts were shaped from discs cut from styrene rod. Note the original road wheels and that the gun has yet to be shortened.

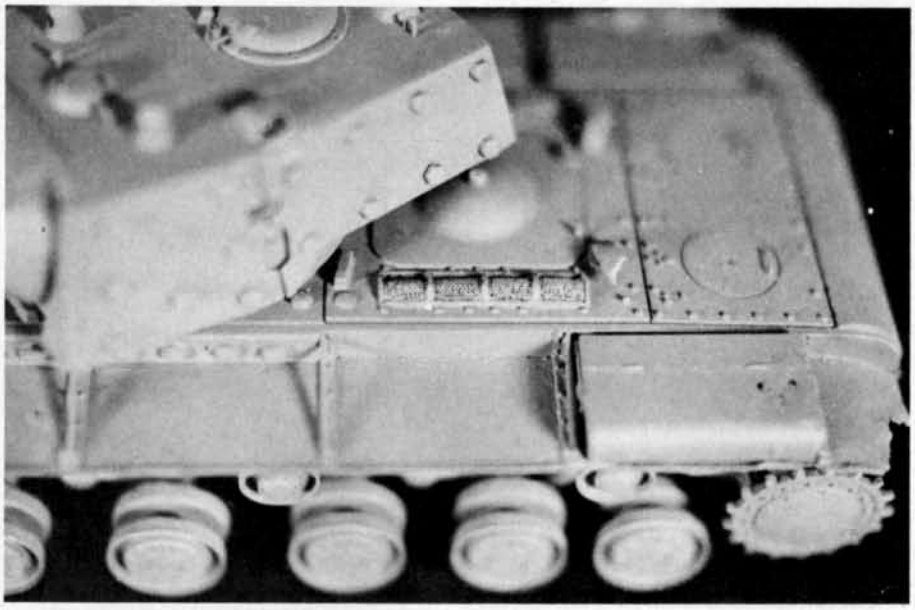


Fig. 6. Dan carved out the kit intake screens and replaced them with fine brass mesh.

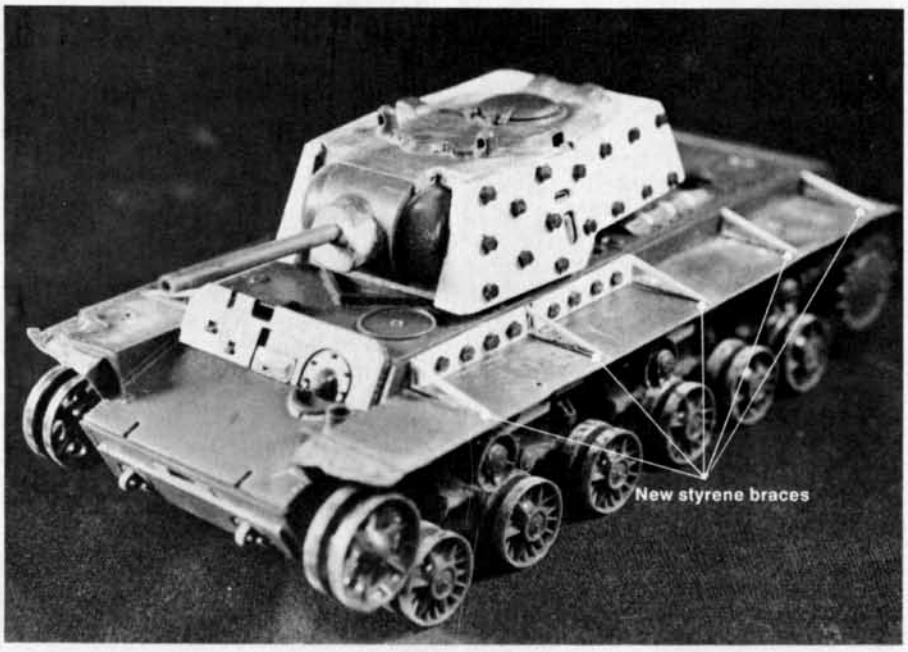


Fig. 8. Although some KV-1Es had fender braces similar to the kit's, Dan replaced them with styrene strips to show an alternate design.

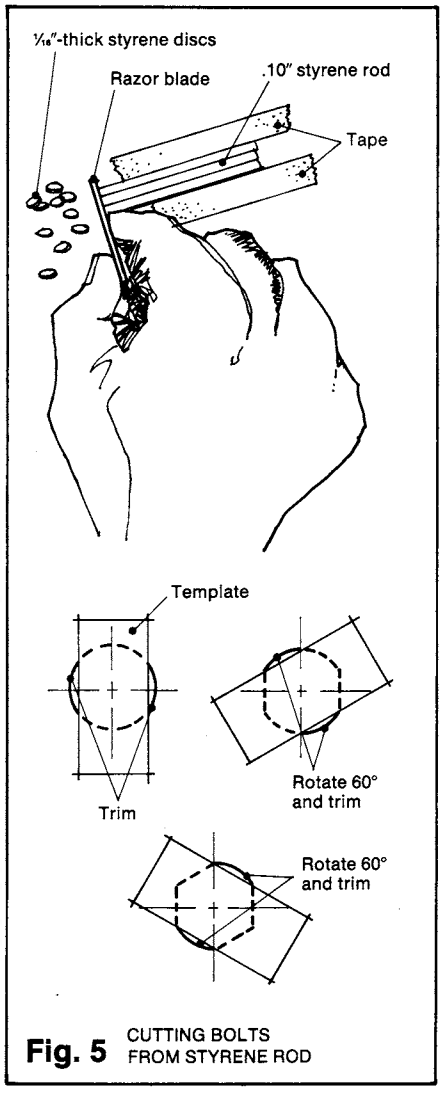


Fig. 5 CUTTING BOLTS FROM STYRENE ROD

The fender braces in the kit were molded as solid wedges. Both this style and steel strips were used on the KVs. I replaced the solid ones with .020" strips of styrene beveled to fit, Figs. 7 and 8. I also added .010" supports around the braces and embellished these with Grandt Line nut/bolt/washers. The headlight was drilled out and replaced with an MV Products parabolic plastic

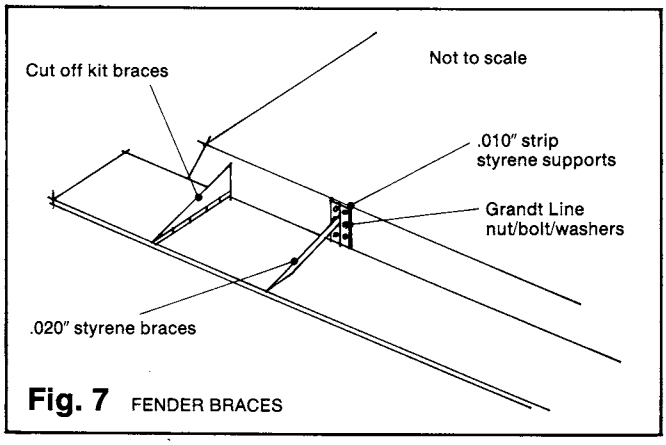


Fig. 7 FENDER BRACES

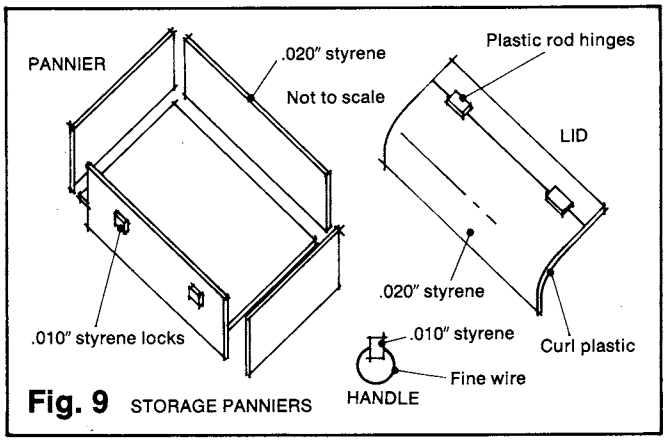


Fig. 9 STORAGE PANNIERS

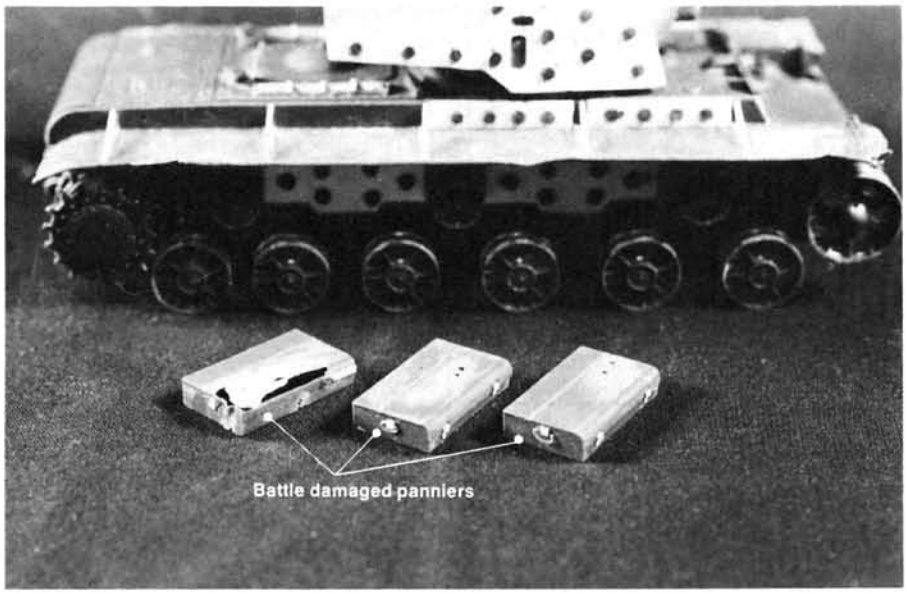


Fig. 10. The storage panniers were battle damaged by grinding the sheet styrene thin and gouging holes with a sharp knife.

lens (available from Walther's). The electrical cable molded on the glacis was replaced with fine telephone wire.

The three storage panniers attached to the rear of the fenders were scratch-built from .020" sheet styrene, Fig. 9. I detailed them with .010" strip styrene locks and wire grab handles. All the battle damage to the fenders and stowage panniers was done by thinning the plastic with a motor tool, then softening it with a hot knife, Fig. 10.

The last step was replacing the kit road wheels with the early resilient pattern wheels found in the Tamiya KV-II kit (MM 163, also out of production), Fig. 11. The return rollers were modified by carving off the inner spokes.

Finishing. I airbrushed a light coat of Floquil Primer (R9) over the entire model, let it dry overnight, examined it closely for flaws, and made repairs.

Next, I gave the entire model an overcoat of Pactra Forest Green, lightened with successive dry-brushings to give it a faded, weathered look. To further enhance the weathered look, I applied a wash of Pactra Flat Black to the entire model, and followed it with a wash of Pactra Ebony Black which settled in the recesses and strengthened the contrast. The rims of the road wheels were dry-brushed with silver and rust to produce a worn look. The tracks were oversprayed with Pactra Rust, weathered with black/brown thin-

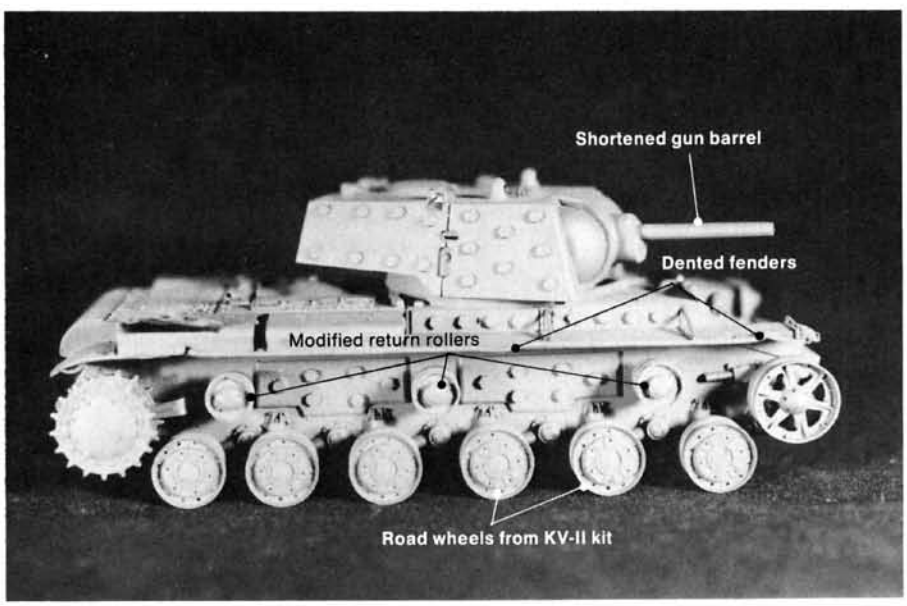


Fig. 11. Here's the model with all the modifications completed and primed. Note the short gun barrel and modified return rollers.

ner washes and highlighted with Pactra Gunmetal and Aluminum. I added rust streaks on the track edges, hex bolts, armor plates, lifting rings, and battle-damaged areas.

This is a fairly simple project as armor conversions go and produces a distinctive variation on the Soviet classic.

FSM

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- Zaloga, Steven J. and James Grandsen, *Soviet Tanks and Combat Vehicles of World War Two*, Arms and Armor Press, London, 1984

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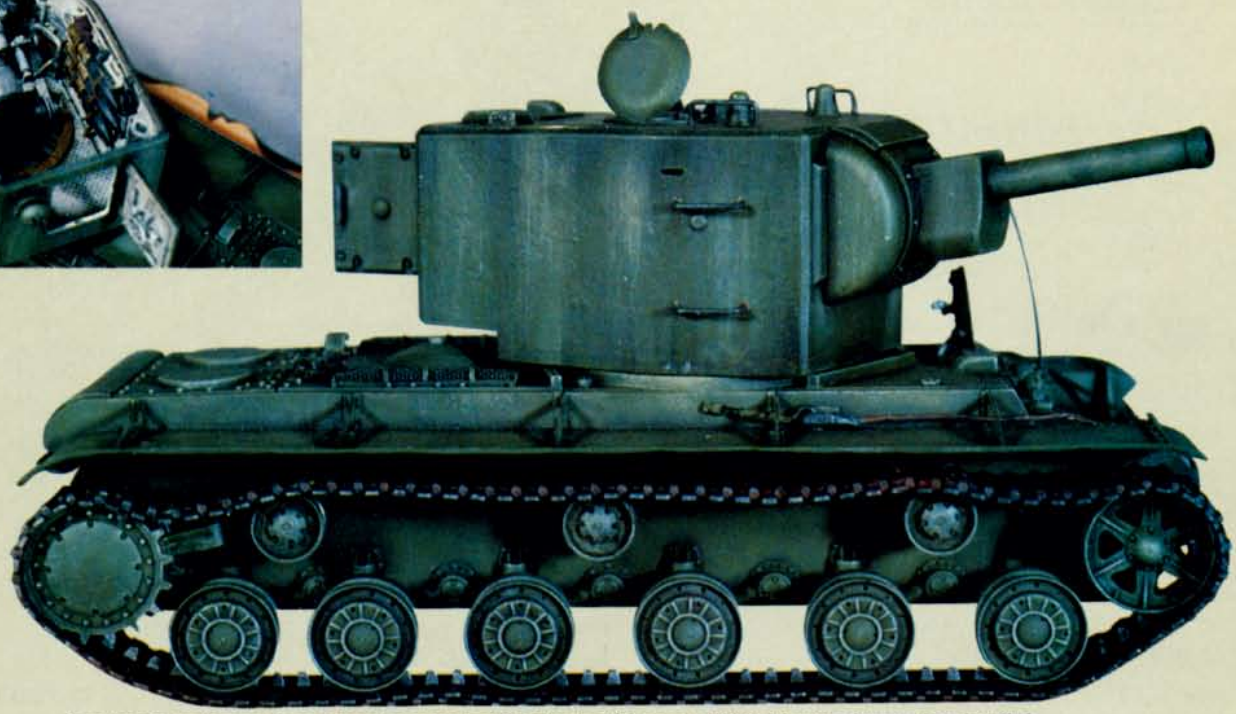
- Grandt Line Products, Inc., 1040B Shary Court, Concord, CA 94518
- Micro Kristal-Kleer, Krasel Industries, 919 Sunset Drive, Costa Mesa, CA 92627
- Wm. K. Walthers, Inc., P. O. Box 18676, Milwaukee, WI 53218

Meet Dan Tisoncik

A modeler for over 10 years, Dan is the division geologist for Champlin Petroleum Company in Denver, Colorado. Building detailed dioramas of World War Two scenes is his primary modeling interest. Dan devotes months of research to his projects, limiting his output to one diorama a year. He hopes to build a diorama on each major battle of the war, which ought to keep him busy for a long time. Dan's latest diorama is called "Crush the Fascists" and pairs this KV-1E with a KV-II outside Kiev during the struggle with Germany in 1941. It took a first place at the 1986 IPMS national convention in Sacramento.



Dan had interior motives when he selected Tamiya's 1/35 scale KV-2. Plenty of room for details!

Adding an interior to Tamiya's 1/35 scale KV-2

Inside tips for World War II tanks

BY DAN TISONCIK

THE WORLD WAR II Soviet KV-2, an artillery fire-support variant of the Soviet heavy tank KV-1, mounted a 152 mm field howitzer in a tall, slab-sided turret. It entered action against Finland's Mannerheim Line in winter 1940.

Winter on the Finnish frontier was hardly an ideal setting for a tank that weighed more than 53 tons. It was a clumsy vehicle. The weight of its gun and turret precluded firing on the move or traversing the gun on an incline. While its thick armor could repel most antitank shells, the greatest threat to the KV-2 was mechanical failure.

Why a KV-2? When I decided to model a tank interior, I chose Tamiya's 1/35 scale KV-2 (kit No. 3563). The kit provides no interior detail; wide viewing angles through the rear door and roof hatches make detailing worthwhile.

The techniques described here can be used on most WWII armored vehicles. Depending on the model, interior modeling may be as simple as installing a vision block inside a small, open hatch, or as complex as scratchbuilding an engine.

Driver's compartment. In the KV-2 the driver sat forward and slightly to the right of center, looking through a small hatch (for direct vision) or a block episcope. The radio operator sat behind and to the right of the driver. The machine gunner sat under a circular emergency hatch to the left of the driver.

Start by removing the molded ejection pins and battery supports inside the hull. Next, lay out the hull floor using tread-patterned .030″ sheet styrene, Fig. 1. Scribe storage bins in the floor, and detail the panels with wire lift-rings and brass hinges.

Install .020″ sheet-styrene bulkheads between the driver's compartment (the front quarter of the hull) and the fighting compartment, Fig. 2. The fighting compartment rear bulkhead is also .020″ sheet; detail it with circular engine-access hatches (.020″ sheet) and Grandt Line bolts, Fig. 2. I added 1/16″ electrical conduit and an engine control panel from my spare parts box.

I pulled the gunner's and driver's seats from my scrap box, too, mounting the seats with Plastruct angle and detailing them with folding arms of .010″ strip styrene, Fig. 2. Fashion a foot throttle and brake from styrene rod and stretched-sprue cables, Fig. 1. I made the steering levers from spare parts.

The cables running from the driver's seat to the compressed-air reserve cylinders (used to start the engine in cold weather) are model railroad brass fittings. The air cylinders are from Italeri's Tool Shop, cut to size and mounted

on the front bulkhead with strip styrene and Grandt Line bolts.

The driver's instruments and controls — tachometer, speedometer, gear shift, choke, and hand throttle — are stretched sprue and telephone wire. The transmission housing and instrument panels are spare armor and HO scale model railroad parts. I scratchbuilt the radio operator's fold-up seat from .010" sheet styrene and detailed it with Grandt Line bolts, Fig. 3. The radio is from my spare parts box.

Finish the driver's compartment with overhead wiring, Fig. 4 (next page). I used telephone wire and split 1/16" aluminum tubing for electrical conduits, and made a distribution panel from strip styrene and stretched sprue knobs. I detailed an H&R Products 7.62 mm DT machine gun with a cartridge bag made of HO scale truck springs coated with tissue paper.

Fighting compartment. Machine gun magazines and 152 mm ammunition fill the fighting compartment.

A rack with shelves and walls made of .010" sheet styrene, Fig. 5, holds five circular, cartridge-type machine-gun magazines. The rack is 9 mm x 9 mm. I drilled 3/16" holes in each shelf, die-punched 7/32" disks to replicate magazines, and mounted the rack on the inside bulkhead with Plastruct angle and Grandt Line bolts, Figs. 4 and 5.

The 152 mm ammunition-rack frames are made of Plastruct U-channels, Fig. 5. I mounted the channels and attached .010" strips perpendicular to the Plastruct as braces for the curved, sheet styrene troughs (.010" sheet). I shaped these troughs in hot water, then divided each of them into two sections to hold the propellant charges and the projectiles. I made two-stage 152 mm ammunition using 7/32" aluminum tubing for the casing and balsa wood for the shells, Fig. 3. Lead foil "leather" straps hold the ammo in its racks.

Turret. Most of the KV-2's turret was occupied by the 152 mm gun and its ammunition. The turret roof had two PTK periscopes that could be traversed 360 degrees. Additionally, there were three side-vision block episcopes, direct-vision slits, and pistol ports in the turret walls. The rear wall mounted a 7.62 mm machine gun with 12 rounds stored on the side walls.

The 152 mm howitzer, with a cartridge-type screw breech block, was mounted on the turret floor. The gunner, sitting opposite the commander, used a direct telescopic sight and a simple clinometer (range finder), traversing the main gun by either hand crank or electric motor.

As with the hull, start with a floor of .030" sheet-styrene tread plate. (Remember to cut out the kit turret ring.)

I modeled the 152 mm howitzer after

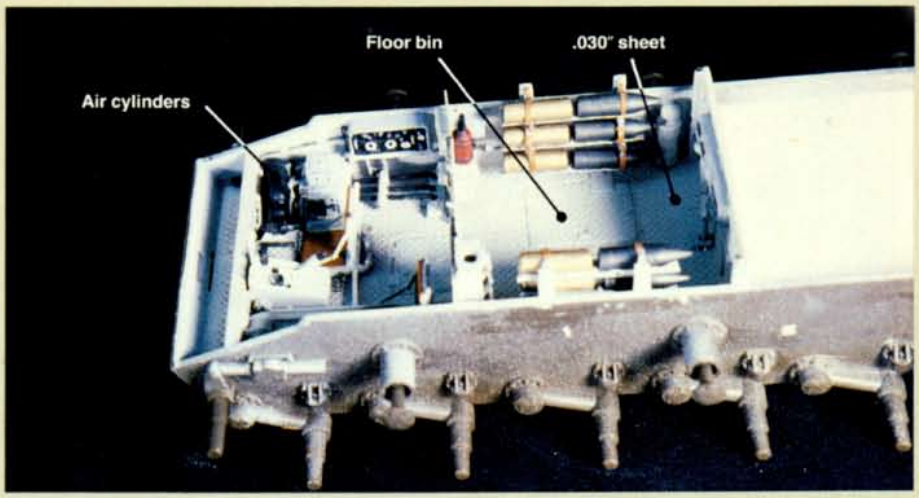


Fig. 1. Scribe bin doors in the floor, then add brass hinges and lift rings.

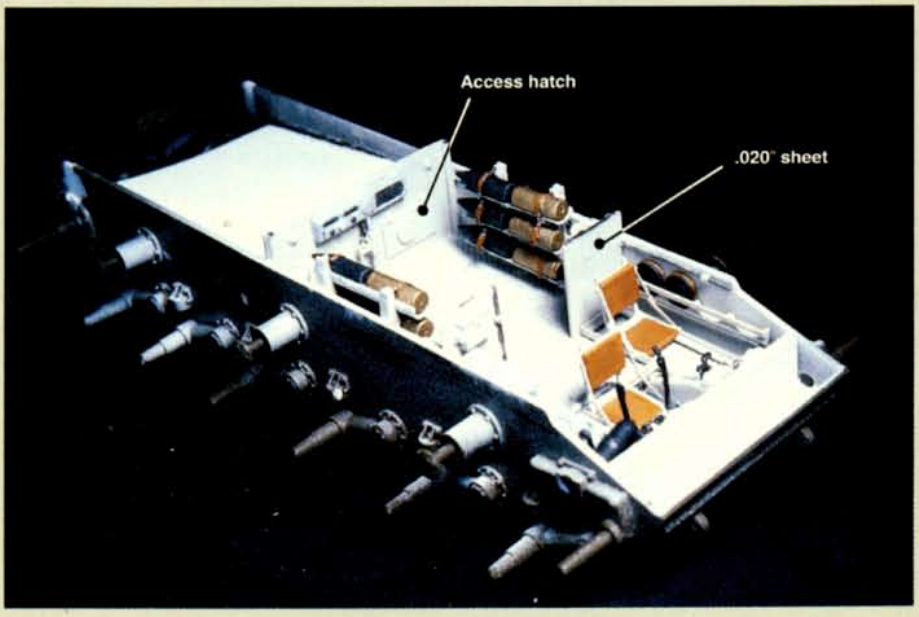


Fig. 2. The bulkheads are made of .020" sheet and detailed with model railroad parts. Keep spare parts handy for radio and control panels.

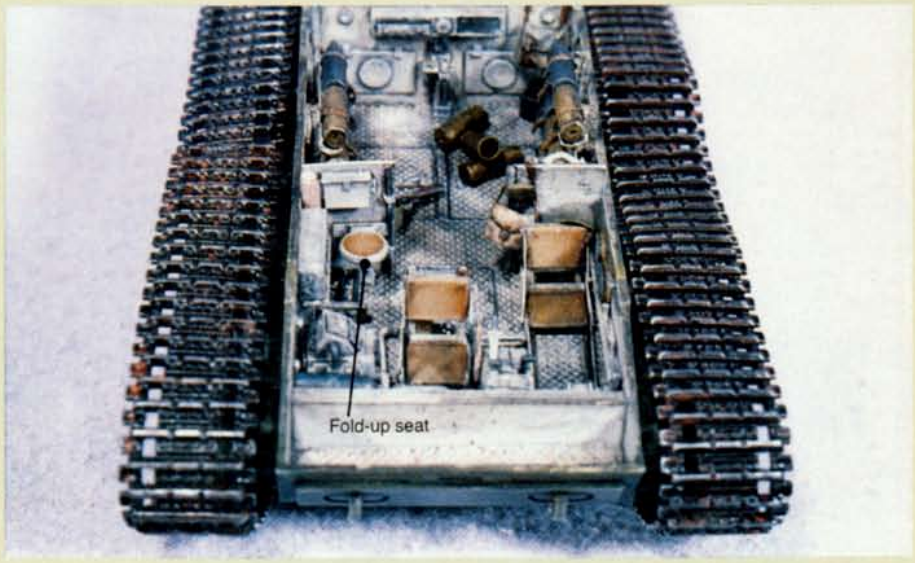


Fig. 3. Most of what you see is scratchbuilt from scrap plastic and .010" sheet styrene.

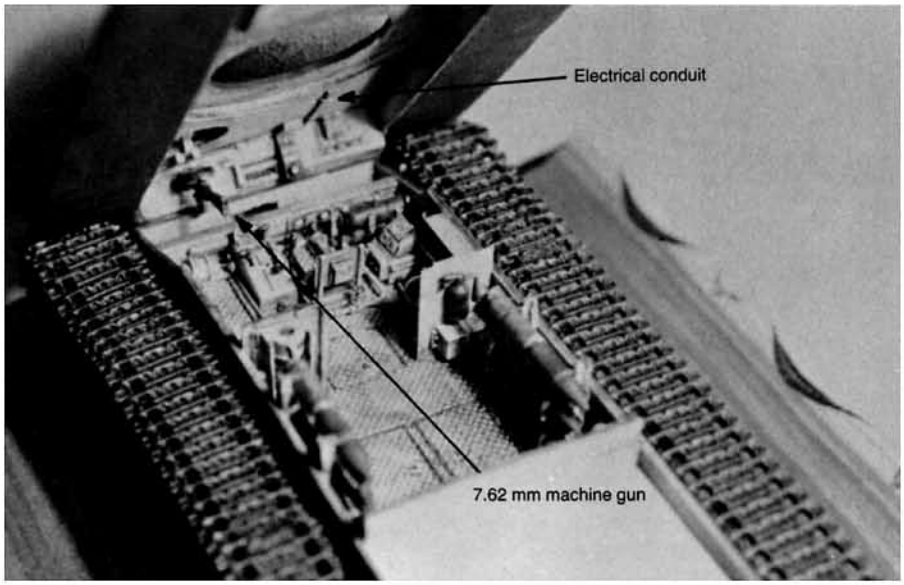


Fig. 4. Aluminum tubing and telephone wire satisfy Dan's 1/35 scale electrical codes.

field artillery of that era, using 1/2″ and 7/32″ aluminum tubing for the barrel and breech, and four sections of 5/32″ tubing for the recoil mechanism, Fig. 6. The gun is supported by two vertical braces of .030″ sheet "welded" to the turret floor. To replicate the screw portion of the breech, I cut concentric disks of .019″ sheet, Fig. 7. The locking and firing mechanisms are made of .010″ styrene rods and strips. The clinometer to the left of the breech is from my scrap box. The turret-traversing mechanism (motor and wheel) is aluminum tubing modified with styrene strips and HO scale railroad parts. I made the gunner and commander seats from .010″ sheet and mounted them with .020″ styrene and Grandt Line bolts.

I modeled ammunition, racks, magazines, and wiring the same as before, Figs. 7 and 8. After carving the distributor box and intercom from block styrene, I detailed them with dials of

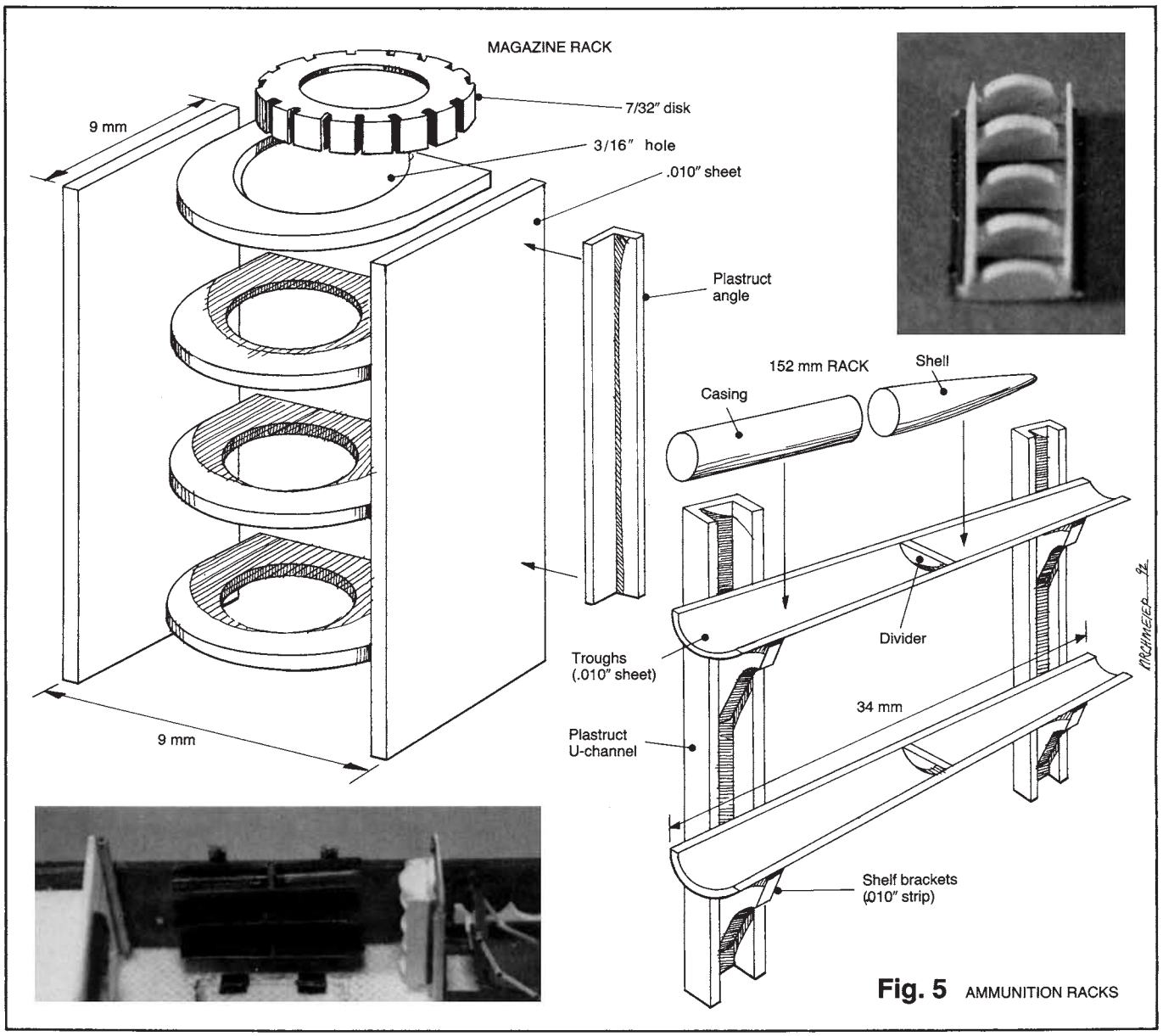


Fig. 5 AMMUNITION RACKS

stretched sprue. Stowage boxes from my spare parts collection are mounted to the wall with Plastruct angle and Grandt Line bolts.

The turret-ring pad is lead foil textured with tissue paper and white glue, Fig. 7. I left the rear door open to show off the locking mechanism, made of four strips of styrene and operated by a locking wheel, Figs. 8 and 9.

Turret roof details include two periscopes from Tamiya's 1/35 scale T34/42, turret ventilators (from my spare parts), three episcopes carved from 1/4" block styrene, and electrical conduit traversing the turret's top and sides, Fig. 10. A sprinkling of miscellaneous field equipment — helmets, packs, hand guns, water bottles — completed the interior.

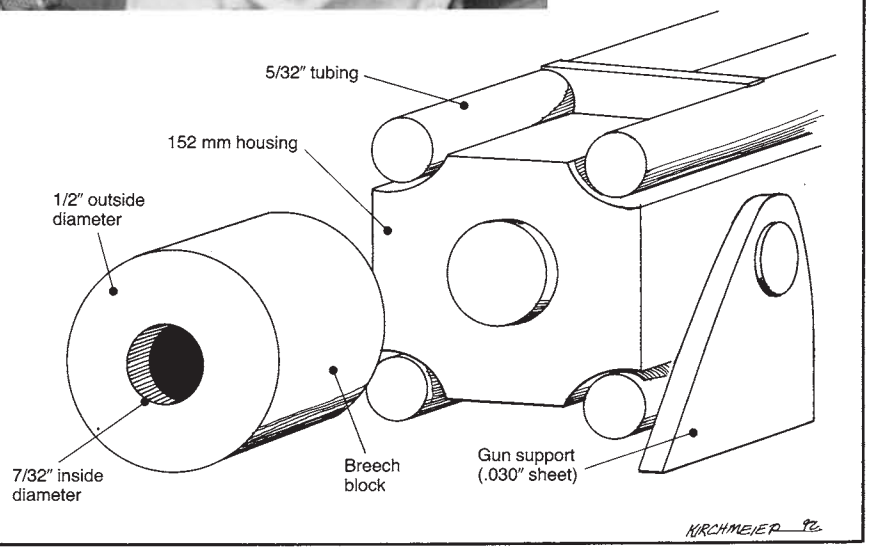
Exterior. The exterior of Tamiya's KV-2 needed only minor reworking. I replaced the rear engine screens with No. 60 brass mesh and replaced the rear engine deck latch with scale chain. After replacing the fender supports with .020" strip, I added fender braces of .010" strip to the hull sides and substituted braided lead wire for the tow cable. I installed an M. V. Products parabolic lens in place of the kit headlight and cut off the molded lead wire and replaced it with telephone wire. I bored out the machine gun barrels and modified the return rollers by removing the inner wheel braces.

Finishing. I airbrushed the exterior a light coat of Floquil Primer (R9), and the interior a light coat of Testor's camouflage gray (masking the exterior to prevent overspray). A black wash gave the interior a grimy, scuffed look. The interior details are gunmetal, brass, leather, gloss black, and white, Fig. 3.

Next, the exterior received an overcoat of Pactra artillery olive; I added progressively lighter coats (lightened with white) to develop a subtle, weathered look. I finished weathering by alternating flat black and rust washes.

The tracks were oversprayed with Pactra rust, weathered with black and brown washes, and highlighted with a mix of gunmetal and aluminum.

Fig. 6
BREECH



Detailing opportunities. Tank interiors can get crowded fast. Here's a checklist of the major elements that provide opportunities for detailing:

- armament
- communications
- electrical systems
- ammunition bins
- sighting devices
- traversing mechanisms
- crew compartments
- engine compartment

It might not be possible to replicate every detail. But with these techniques (and lots of spare parts and imagination) you can more closely simulate a tank interior. FSM

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- Milson, J., *Russian Tanks 1900-1970*, Stackpole Books, Harrisburg, Pennsylvania, 1971
- Scheigert, H., *Stalin Giants KV-1 and KV-2*, Podzen-Pallas, Verlag, Hamburg, Germany, 1979
- Zaloga, Steven, and James Grandsen,

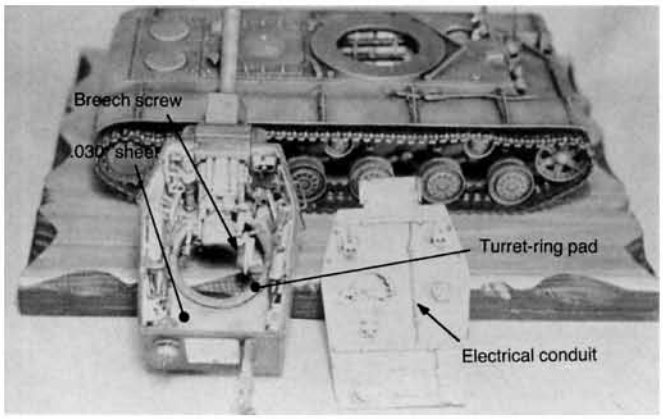


Fig. 7. The 152 mm howitzer is welded to the floor and surrounded by scratchbuilt details and items from Dan's spare-parts box. The lead-foil turret-ring pad is textured with tissue paper.

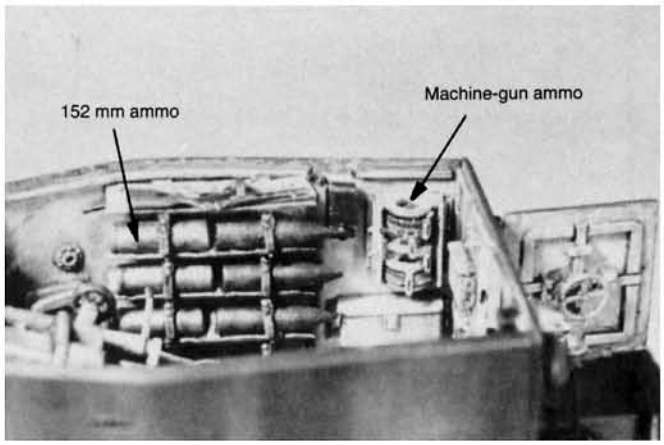


Fig. 8. Another machine-gun magazine rack and more stowage for the 152 mm ammunition.

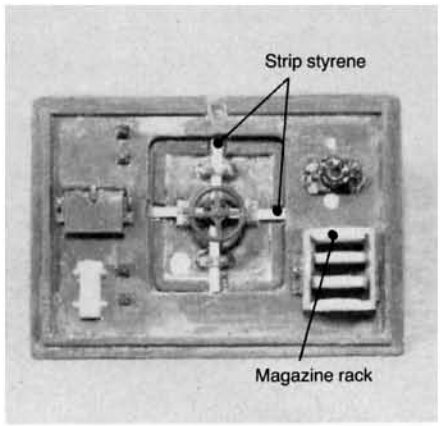


Fig. 9. The lock is made of four styrene strips and a hatch wheel from the junk box.

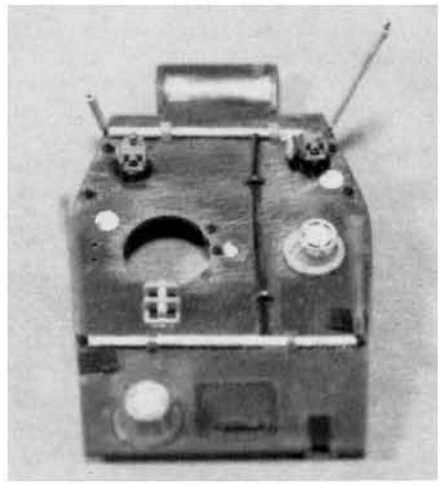


Fig. 10. Electrical conduits, air vents, and view scopes occupy the turret roof.

Soviet Heavy Tanks, Osprey Publishing, London, 1981

SOURCES

- Sheet styrene: Evergreen Scale Models, 12808 N. E. 125th Way, Kirkland, WA 98034
- Scale nuts and bolts: Grandt Line Products, 1040B Shary Court, Concord, CA 94518
- 1/35 scale 7.62 mm DT machine gun: H&R Products, P. O. Box 67, McHenry, IL 60051
- Brass sheet and tubing: K&S Engineering, 6917 W. 59th, Chicago, IL 60638
- Brass screen: LMG Enterprises, 1627 S. 26th St., Sheboygan, WI 53081
- Parabolic light lens: M. V. Products, P. O. Box 6622, Orange, CA 92667
- Patterned sheet styrene: Plastruct, 1020 S. Wallace Place, City of Industry, CA 91748
- Punch and die: Waldron Model Products, P. O. Box 431, Merlin, OR 97532
- HO scale railroad parts catalog: Wm. K. Walthers Inc., P. O. Box 18676, Milwaukee, WI 53218

basic techniques
advanced results

The history bug bites! Cookie chose to model a Soviet KV-85 using a resin conversion. Resin kits make it possible to build many models that may never be available in injection-molded form.

Building Your First Resin Conversion Kit

A SOVIET KV-85

AS EVERY ARMOR MODELER knows, with each new challenge you conquer, the history bug bites a little deeper.

By Cookie Sewell

If you build 1/35 scale armor kits, eventually you realize that for every kit released, there are more than 100 that haven't seen the light of day, many with unique historical relevance. But many others are fascinating vehicles. Good thing there are aftermarket conversion kits.

When I decided to model the Soviet KV-85, I selected the KV-85 conversion from Mike Bishop's MB Models. It's an ideal beginner's resin kit. It has six parts: three resin (the one-piece upper hull, the turret assembly, and the 85mm gun barrel) and three white metal (the two-part commander's hatch and the loader's hatch). To complete this kit, you need only one plastic kit, a Tamiya KV-1 (No. 3566).

Preparing to start. The first step in building this model is obtaining a good fit; first of resin parts to each other and then to the styrene parts.

My resin turret had a warped ring and bottom. I used a motor tool to open up the turret well in the upper half of the resin hull. I cut off the retainer ring on the base of the resin turret then made a styrene disc 1mm smaller than the diameter of the opening. I also cut a strip of .020" styrene the length of the circumference (π x diameter) and 10mm high, and two .040" strips the length of the diameter, also 10mm high.

I scored the disc at right angles, cemented on one .040" strip, cut the other in half and cemented those parts on either side. I wrapped the .020" strip around the assembly, **A**.

After sanding the turret base flat with a piece of sandpaper attached to a drafting board, I cemented the new base to the

turret. A few strokes with a file took out the warp in the hull, and bingo, a smooth, tight fit.

Next came dry-fitting the resin hull to the Tamiya lower hull. I cemented the Tamiya rear hull piece in place and checked the few photos I had of the actual KV-85 for fit and fittings.

I decided to build a specific KV-85 – a production model from the 3rd Tank Corps. The resin kit is of a prototype, so it includes the DT machine gun mount on the glacis and the central appliqué armor strip on the lower glacis. The production models had neither, so I stripped the machine gun mount from the resin hull and filled in the lower hole on the Tamiya hull.

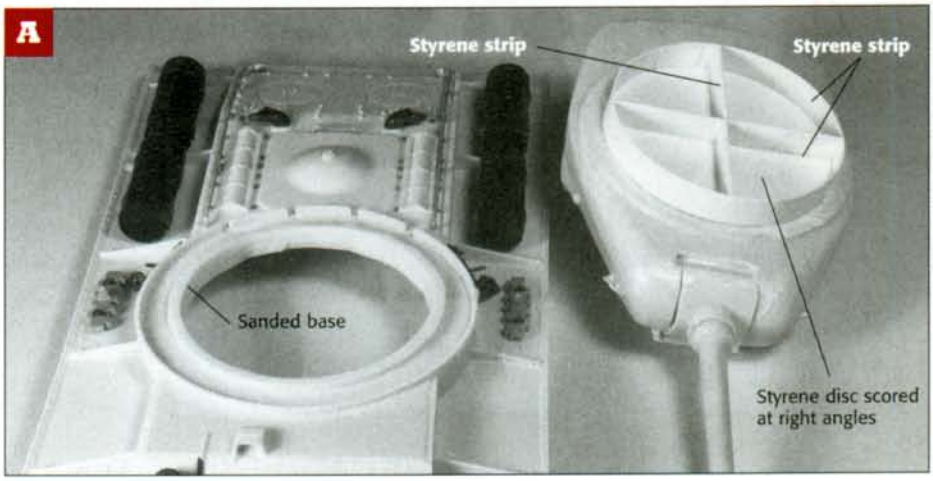
The belly pan of the production model included an escape hatch, a servicing hatch for turret electrical connections, and three drain plugs, which I added, **B**. The mounts for the towing shackles were cut out and cemented in their same locations on the new plate, **C**.

I mounted the final drives and filled the slots above them with .040" and .020" sheet, laminated to equal hull thickness. There is a molding part on the rear of the resin hull and angular differences with the Tamiya hull, so the inside of the rear of the resin hull deck must be ground down until it's about .040" thick, and the forms of the Tamiya hull trimmed to match.

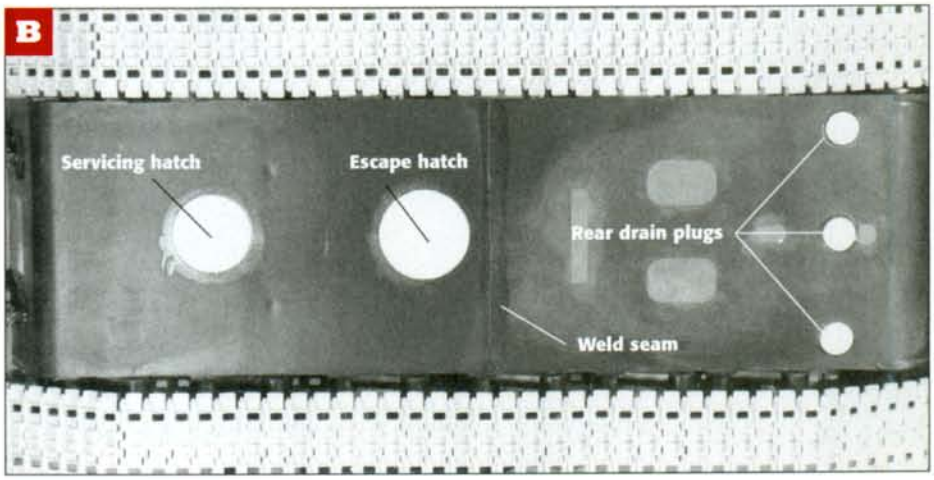
The resin hull did not fit at the front, but simple shims made from .020" strip plugged the gaps at the edges of the upper glacis and the top of the lower glacis. Finally, the battery box bulkhead slots in the sides of the hull and the lower hull motorization holes were filled in with styrene scrap and putty.

Starting regular construction: lower hull. The suspension of the model was not assembled according to the instruction sheet. I attached all the idlers, drivers, return rollers, and other minor parts in the normal manner, but didn't cement the outer wheel halves to the inners. Instead, I mounted the inner halves in place using the slippery plastic retainers. Then I placed the outer wheel halves in their normal positions. This allowed me to assemble the tracks and at the same time remove the outer wheel halves to paint behind them and the tracks.

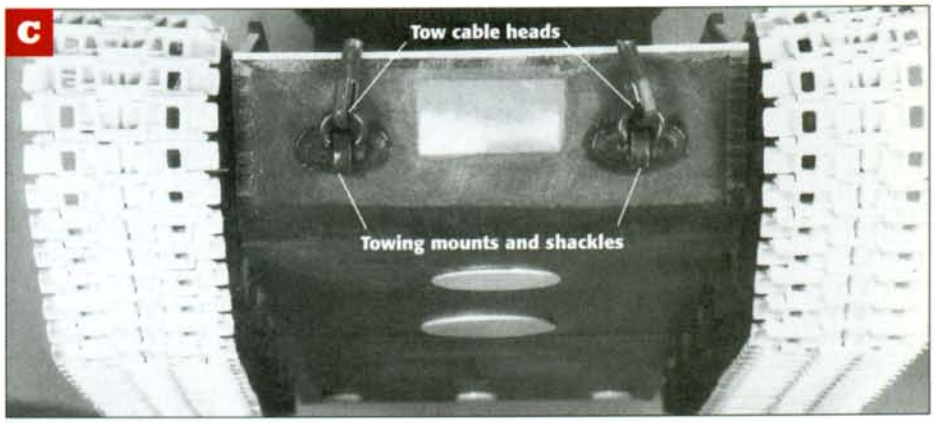
Because I wanted the sagging "dead tracks" look of a Soviet tank, I used Model Kasten KV/IS individual track links. I installed them and added the



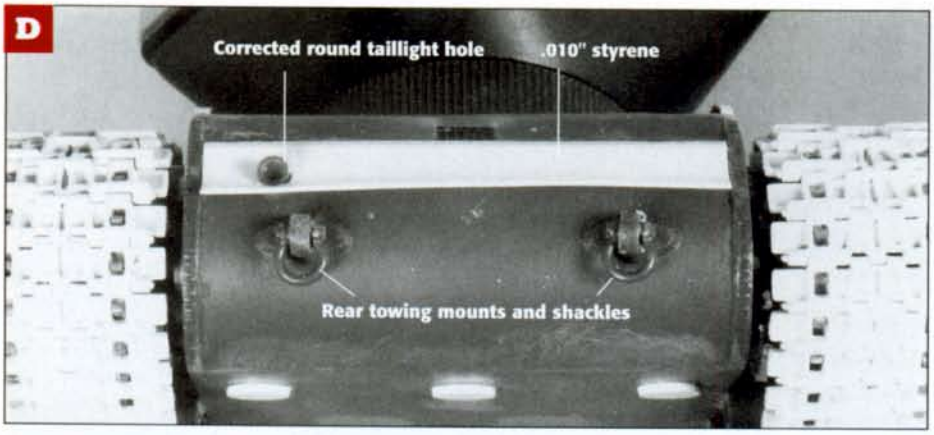
Correcting the turret ring and sanding the base solved the warp and fit problems with these two parts.



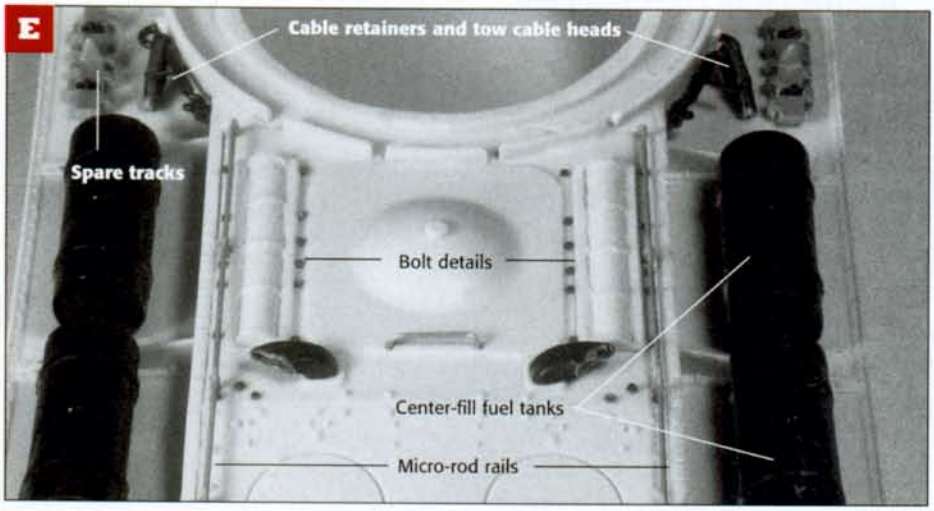
The belly pan of Cookie's production model with new hatches and access panels added.



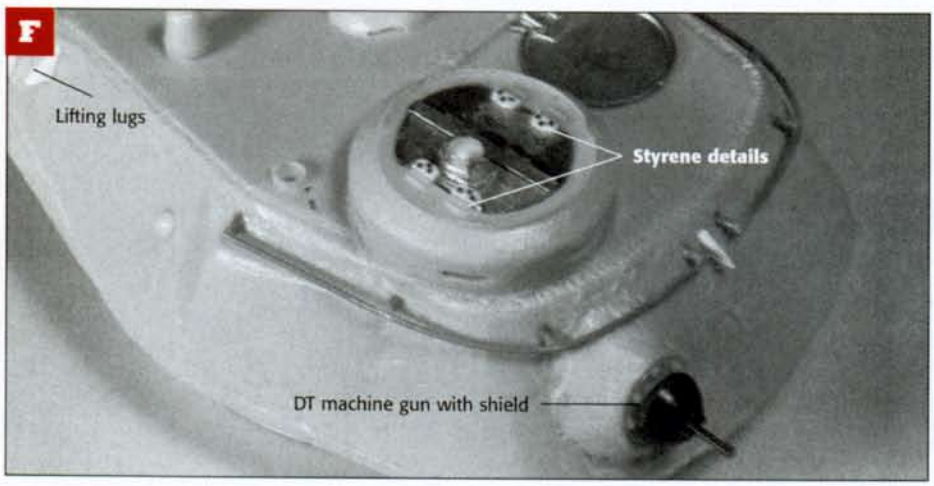
The front of the lower hull shows where the appliqué armor hole has been filled and the bracket mounts for the towing shackles cut out and added to the hull. The shackles are in place along with the tow cable heads.



Rear of the hull with a new heat deflector. The taillight has a round hole rather than a square one as seen in the Tamiya kit.



The rear of the engine deck with a view of the hand rails showing how they fit against the engine deck.



The turret with all of the add-on parts in place and the corrections to the commander's hatches. Be careful when handling this assembly as the machine gun is quite vulnerable.

remaining lower hull details. I cut off the plastic cables of the tow ropes and drilled out the heads with an .040" drill to take wire cables later on. They were then slipped over the shackles and the shackles cemented in place.

The last thing I did on the lower hull was to add a new hot air deflector plate for the radiator exhaust at the rear of the hull. I made it from .010" sheet, with the correct round hole for the taillight, **D**.

Resin and plastic meet. The hardest part of assembling plastic parts to resin parts is getting a strong bond. Super glues will work well for small parts, but larger pieces that may have stress placed on them during handling or painting need reinforcement. My secret is to drill holes in the resin and styrene parts and pin them together with plastic rod.

For my service model of a KV-1, I scrounged up four T-34 fuel tanks, modified them to match the center-fill KV type, and mounted them on the fenders, **E**. Two track links were added as spares with scrap and Grandt Line details, and the cable retainers were mounted on the hull along with the remaining tow cable heads.

Rails were added from styrene rod by cutting some pins and cementing them where the supports go. I clipped, sanded, and bent the rail to size and shape, and installed it with plastic cement. I added the kit exhausts, moved and made a new mount for the kit headlight after hollowing it out for a lens to be attached later, and added a horn from a 1932 Plymouth to match the production horns.

The bolt heads on the engine deck of the resin hull had been marred, so I used a single-edged razor blade to carefully strip the details from the Tamiya upper hull and add them to the resin hull.

Finishing the turret. Completing the turret was easy. I tried the white-metal hatch covers and found that while the loader's hatch fit with some trimming of its opening, the commander's hatch was a poor fit. I filed away the hinges on the hatch cover, cemented the halves together with super glue, then filed them to fit, **F**. Once in place, I added new styrene details to replace the ones that I had removed.

The model needs five obtuse-angled lifting lugs added to it: one in the center rear, two on the front upper turret, and two just below them on the mantlet casting.

The railings were applied in the same

manner as the hull railings, and the DT machine gun and its shield were added to the ball mount at the rear of the turret.

My gun barrel was warped. Trying to bend the parts back cold would have caused them to shatter, so I put the part in boiling water for a few seconds, then straightened it. Then I sanded the circumference to fit inside the collar of the mantlet. I damaged the bolt detail on the collar and had to replace it with Grandt Line parts. Lastly, I carefully drilled a 1/8" hole in the center of the gun barrel and the mantlet, and used a section of Evergreen 1/8" plastic tubing to assemble the gun barrel for strength.

The last step was the addition of a stretched-sprue antenna to the turret; I used a four-meter whip which scales out to 114mm.

Painting and marking. I used the base coat/top coat method of painting the model, using RLM 73 green as the base and Floquil hunter green as the top coat.

The tracks on the KV-85 tended to rust quickly, so I used a series of sprays first to paint the tracks before applying the green colors. First, I coated the entire track inside and out with Floquil rust. I then sprayed a strip down the center of each track with Floquil box car red to simulate the heavier rust that accumulates there. I dusted the tank with Floquil grime to lighten both colors, did a quick application of a black wash to the hinges, and finished with Rub 'n Buff antique silver to highlight the parts of the track that contact the ground.

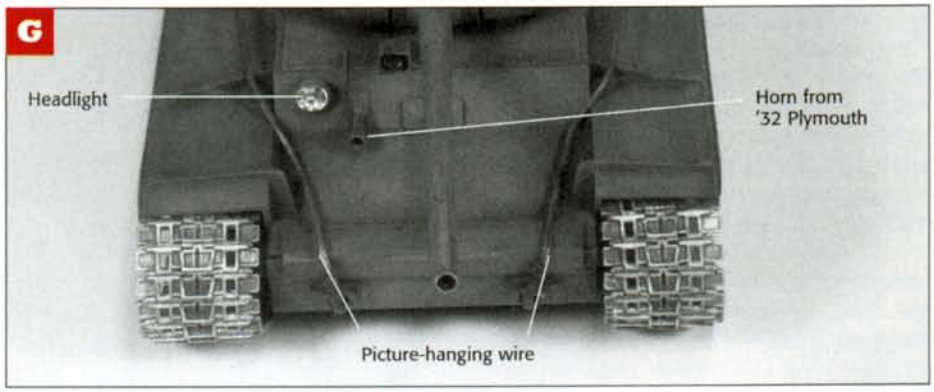
All other painting followed six steps: base coat, top coat, black wash, dry-brushing, acrylic wax and decals, Dullcote and weathering.

The last step was final assembly. All parts were cemented in their final resting places with super glue. Two cables made from Bulldog picture-hanging wire were cut to length, soaked in a model railroad chemical blackener, bent to shape, and installed in the cable heads on each side of the tank, **G**. Micro Kristal-Kleer was used on all the view ports, and an M.V. Products lens was cemented into the headlight with Walthers Goo.

Resin isn't a perfect modeling medium, but it is amazing how far it has come and how fast. While it calls for new modeling techniques and solutions, simple conversions like this KV-85 are well within the skills of most modelers. **FSM**

A WORD OF CAUTION

Resins, when sanded, produce fine dust that can irritate the eyes and throat. This dust is worse when a motor tool is used. Make sure you wear a good-quality respirator. Those with allergies or asthma should exercise extreme caution.



The front of the model showing the fit of the tow cables. Since plastic cables are difficult to bend, Cookie substituted wire for the towing cables.

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Konstruktor Boevykh Mashin (Combat Vehicle Designer), edited by N.S. Popov, Lenizdat, St. Petersburg, Russia, 1988

Protivoborstvo (The Opposition), by D.S. Ibragimov, DOSAAF Press, 1989

SOURCES

Sheet and rod styrene
Evergreen Scale Models, 12808 NE 125th Way, Kirkland, WA 98034

Bolt details
Grandt Line Products, Inc., 1040B Shary Court, Concord, CA 94518, ✆510-671-0143

RESIN TANK AND MILITARY VEHICLE CONVERSION KIT SOURCES

The following is a sampling of sources for armor resin conversion kits. Write to the companies for complete listings of their models. Remember that many do not keep models in stock, but cast them upon receiving orders.

Accurate Armour Ltd.
Units 15/16, Kingston Business Park, Port Glasgow PA14 5DG, Scotland, ✆44-1475-743-955

Azimut
171 rue de Charenton, 75012 Paris, France, ✆33-43-07-06-16

MB Models
7325A Cross County Rd., North Charleston, SC 29418, ✆803-767-4209

Panzer Concepts
19401 N. Seventh St., No. 77, Phoenix, AZ 85024, ✆602-581-8158

Precision Models
Marcel De Backerstraat 22, B-2180 Antwerp, Belgium, ✆322-32-32-39-30

Tank Workshop
6102 W. Solano Drive S., Glendale, AZ 85301, ✆602-971-7716

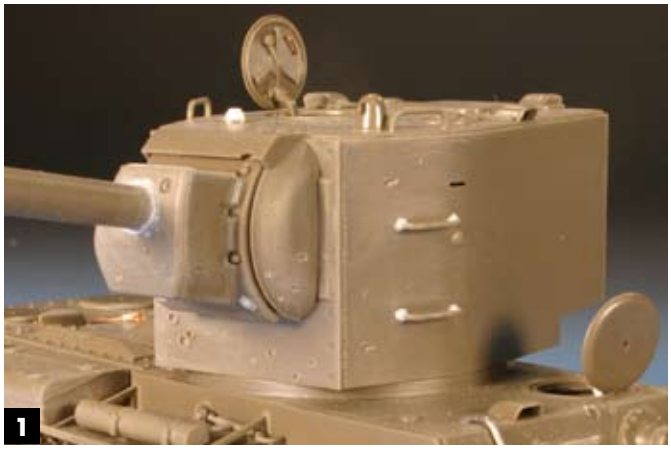
Verlinden Productions
c/o VLS, 811 Lone Star Drive, O'Fallon, MO 63366, ✆314-281-5700

Easy-to-do KV-2

Paint and weathering tips from a top modeler

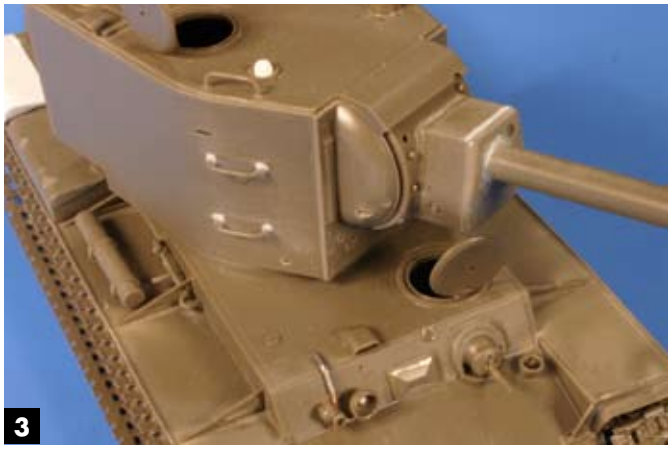
By Charlie Pritchett

Charlie chose a small scale to have a big time building Tamiya's 1/48 scale KV-2. He didn't stray far from the box contents, either.



Before painting, Charlie modeled battle damage by melting spots on the hull and turret with hot nails to replicate bullet and shell hits.

Styrene sheet and strip cap off a beat-up toolbox. Bits of putty represent welds on grab handles.



When a periscope cover went missing, Charlie modeled parts in its place. He also bored out the headlight and installed a bulb he made by remelting stretched sprue, then ran a conduit and wires to it.

After drilling out a pistol port, Charlie chucked a chunk of styrene into his motor tool to make a plug he attached to a bit of leftover chain.

Like many modelers, I was puzzled when Tamiya, with its long line of 1/35 scale armor, started releasing these kits in 1/48 scale. However, being a sucker for anything new from Tamiya, I couldn't resist.

I didn't really care for the die-cast-metal lower hulls that come with these models, but I've gotten used to them. The only drawbacks are that, in most cases, the suspension cannot be articulated, and the large posts for screwing the hull halves together prohibit adding a full interior.

Nevertheless, these 1/48 scale kits are well detailed, easily built, and a relaxing break from intricate 1/35 scale builds. Now, when I finish in a fraction of the time I would spend in 1/35 scale, instead of asking "Why?" I think, "Why not?"

Thinking inside the box

When a friend handed me this 1/48 scale KV-2, I determined to skip the aftermarket details and just make the best of what I had.

Assembly was simple; I completed it in a Sunday afternoon at the kitchen table. Deviating only slightly from the instructions, I divided the link-and-length tracks into upper and lower sections, split at the sprockets and idlers, to make painting and weathering easier. I saved cementing the engine deck in place until the very end so I could unscrew and separate the upper and lower hull during painting and weathering. Also, I left off the rear right-side toolbox and the headlight to detail them later.

Detailing the parts

After the model was assembled, I added several impact scars according to photos of this monster pockmarked with holes and craters. (No wonder; it must have been an attractive target!) I simply heated a nail over a candle flame and gently prodded the plastic in strategic locations (and used smaller nails for lower calibers), **1**. It's easy and effective – just don't get carried away!

Other easy-to-add details lend a personal touch to the tank. I modeled an open toolbox on the fender (right rear) with Evergreen styrene, using the kit part as a pattern, **2**. After the cement dried overnight, I pinched the toolbox lid between my fingers to make it look mangled. I "dented" other toolboxes with a flat nail file, polishing as I went to match the texture of the surrounding plastic. Similarly, I thinned the front and rear edges of the fend-

5

Starting his finish with a base coat of Model Master burnt umber …

6

… Charlie applied a custom-mixed, panel-by-panel coat of olive green …

7

… then lightened it a little and airbrushed highlights.

8

Dry-brushing with burnt umber produced darker shades in worn spots.

9

In Australia and New Zealand, Vegemite is a healthful food spread. Here, it's used for masking paint.

10

With Vegemite masks applied to spots on the hull, turret, and road wheels, Charlie sprays a dusty coat of Tamiya buff.

ers with a file before gently pinching them between my fingers to bend and distort them.

Typically (for me), I dropped the right periscope cover on the floor and it disappeared, never to be seen again. I used a punch-and-die set to shape a styrene piece depicting the periscope removed from its socket, **3**.

I chucked a spherical burr in my motor tool and drilled out the headlight, then installed a bulb I made from a piece of stretched sprue melted back over a small flame, **3**. To simulate electrical plumbing, I annealed a short section of steel tubing and bent it to form the conduit, then ran two fine copper wires from the conduit to the lamp and horn. I drilled out the pistol port on the rear turret plate and fashioned a new plug from styrene rod chucked in my motor tool, then attached a photoetched-metal chain left over from an Aber 1/35 scale German tool set, **4**.

Painting

I began by airbrushing a few thin coats of Testors Model Masters

11 The effect is moderated by light scrubbing with a Scotch-Brite pad.

12 Leaving more buff at the bottom replicates dust build-up.

13 Sharp edges in the buff coat depict flaking mud and scraped grime.

14 Other blemishes are mixed in artist oils and selectively applied.

raw umber enamel over the entire model, tracks and all, **5**.

If I don't find the color I want in a jar, I mix one. In this case, I mixed an olive green for the second coat and airbrushed the centers of all of the major surfaces, **6**. Adding a few drops of white and yellow to the olive-green mix, I airbrushed a final, highlight coat, **7**. Then I set the model aside to dry overnight.

The next day, I dipped a large, flat brush into the original raw umber base color, wiped most of it onto a paper towel, and gently dry-brushed raised details and edges of the model, **8**, adding definition and repairing some olive-green overspray. I wanted the paint to look faded and oxidized, with the contact points darker from wear.

And weathering

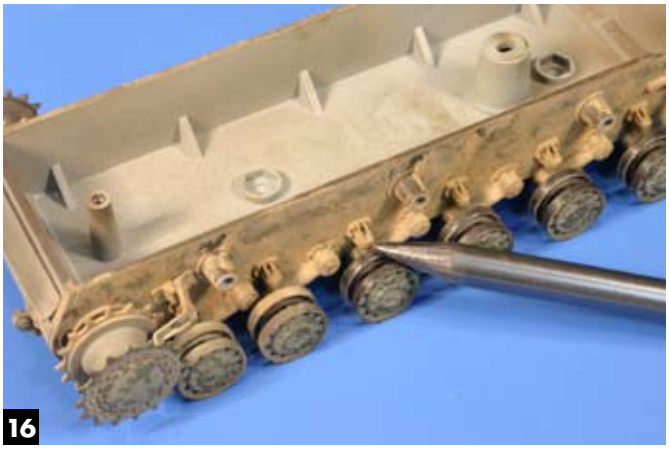
I borrowed a chipped-paint masking technique from a New Zealand modeler, Lee Smith, based on Kraft Vegemite, a yeast extract with a consistency like peanut butter but no oily residue (I didn't taste it). I avoided a long trip by finding this Australian product at a local World Market.

In my case, I wasn't trying to model chipped paint but to depict dust using Vegemite as a temporary mask. I loaded some on a small brush and dabbed it on areas I wanted to mask from the dust coat, **9**. Then I airbrushed a thin layer of Tamiya buff on the lower hull, running gear, and turret sides, **10**. The Tamiya water-based paint dries rapidly; soon after painting I took the model to the kitchen sink and washed off the Vegemite. This left a homely patchwork of "clean" spots in the layer of dust, an effect

15 Weathering extends to the engine deck, where darker shades replicate oil spots and soot from the exhaust. Powdered pigments give texture to the corrosion on the exhaust. Charlie opened an engine hatch to create interest but covered the empty interior with flat black.

I smoothed out by gently scouring the dusty areas with a Scotch-Brite pad, **11**. This removed much of the dust, leaving it in corners and crevices. I repeated the process but left more of the dust, especially on lower surfaces, **12**. The patchy effect looked good on the wheels to simulate areas where thin, dried mud flakes off, **13**.

Many KV-2 photos show stains all over the vehicles, even in



16 A graphite pencil is just the thing for bare steel on road wheels …

17 … as well as worn edges …

18 … while a blending stick keeps the effect from looking fakey.

19 A watery wash of buff shows dust on the turret top …

20 … and faint rain streaks on vertical surfaces.

21 A machine gun barrel is easily replaced with steel tubing.

seemingly illogical locations. I simulated these stains by selectively applying raw umber and burnt sienna artist oils thinned and mixed with Weber Turpenoid, a less aggressive turpentine substitute, **14**. For the engine deck, **15**, I mixed in a little black for more contrast to simulate oil stains. I added more or less Turpenoid to vary the intensity and transparency of the stains. Exhaust pipes were painted and textured with a fresh coat of burnt sienna artist oil, then treated with rust-colored pigment powders applied with a small brush. Soot from the exhausts was simulated by gently scrubbing black pigment powders onto the surface with a dry brush, then blowing away the excess.

Throughout the painting and weathering, I assembled and disassembled the model several times. This allowed me to check the uniformity of the weathering process, and provided easy access to areas hard to reach otherwise, such as the driving surfaces of the road wheels.

The polished metal of steel wheels rolling on steel tracks was achieved with a graphite pencil, **16**. I also added graphite to impact points and edges on the turret, hull, and hatches, **17**. The graphite was further polished with an artist's blending stick, **18**, typically used on charcoal, pastel, and pencil drawings. The tracks were simply weathered with a wash of earth-colored pigment

Crew figures convey the scale and nationality of this massive Soviet tank.

powders and tap water; after drying, they were polished with the graphite pencil and blending stick.

The roof looked too clean in comparison with the rest of the model, so I applied a few washes of Tamiya buff thinned with about 80 percent tap water and a few drops of window cleaner (to break the surface tension of the water so it flows more freely), **19**. I used the same mix to add subtle rain marks to the large, vertical sides of the turret, **20**, repeating vertical streaks with a small brush until I was satisfied.

I replaced the kit's machine gun barrels with stainless steel tubing, heating the metal over a candle flame to discolor it, **21**. I left the tow cables off, as the nylon cord provided in the kit was not very realistic and I had no suitable replacements.

The crew, from a separate Tamiya set, is a simple addition that expresses the scale of this massive tank. With the tank manned, I declared the model finished.

Fun and satisfying

This was a short-term, enjoyable and relaxing project that went off with no hitches. Painting and weathering took about a week, mostly to let layers of paint dry. In my first attempt at painting an all-green tank, weathering added interest to the broad, featureless surfaces of this World War II Soviet behemoth.

Anytime you find yourself in a modeling funk and you want to finish something quickly, try one of these quarter-scale tanks.

Why not? **FSM**

Charlie Pritchett

A LONGTIME master modeler and first-time *FineScale Modeler* author, Charlie Pritchett writes: "I'm 39 years old and come from St. Louis, Mo., home of McDonnell Douglas, Anheuser-Busch, and CRM Hobbies. I've enjoyed making models since my dad introduced me to the hobby when I was 10. Aside from about two years when I got married, I have never really taken any serious breaks from it (even with kids). As a teen in the '80s, I was inspired by the legendary modelers of that era to try my own hand at filling and sanding, airbrushing and weathering, and, ultimately, superdetailing and scratch-building. It opened new doors into the modeling world and, unintentionally, led me to an often frustrating, always challenging, and rewarding full-time career making master patterns for some of the big shots in the resin aftermarket. Along the way, I have been fortunate to meet and trade new ideas and techniques with many extremely talented and friendly modelers from around the world. I'm honored to participate in such a fantastic craft among such a distinguished group of people. I have my own favorite subjects, but I am always passionate about any masterfully executed historical model."

Cover Story

MODEL A war-weary KV-1

Trumpeter's 1/35 scale Soviet heavy gets a Stalingrad makeover mirroring a wartime photo

By Tom Foti

Photos by Jim Forbes and Tom Foti

I built my KV-1 diorama because of a photo I came across several years ago while reading *Soviet Heavy Tanks* by Steven Zaloga and James Grandsen. The picture showed a KV-1 with a simplified welded turret in a Stalingrad debris field. The caption on the apparent propaganda photo says the tank is "blasting German sniper positions." The release of Trumpeter's excellent KV-1 kits was all the impetus I needed to realize the photo as a diorama.

Modeled after a photo, Tom's KV-1 takes aim from the rubble of Stalingrad.

Heavy metal

Trumpeter's KV-1 model 1942 simplified turret tank (kit No. 00358) had the correct turret, **1**. For extra detail, I added engine screens from Eduard, an Aber turned-metal barrel, and Friulmodel metal tracks (ATL-10), **2**. Kagero's Camouflage & Decals book *Eastern Front Part 1* featured decals for the subject tank.

Urban renewal

Starting with an 8" x 11" piece of particleboard, I used styrene foam to build up the terrain around a central depression. Then, I covered the base with Durham's Rock Hard Water Putty, **3**. While the putty was still wet, I covered the area with 1/35 scale red and white brick debris from Tiger Productions. After the groundwork dried, I applied scenic cement from a spray bottle to hold the debris in place and seal the base.

I painted the groundwork with Floquil enamels, starting with a base coat of concrete (B-110082). Details were picked out with boxcar red (B-110074) and aged

1

Tom constructed his dioramic base around Trumpeter's kit of a KV-1 model 1942 with a simplified turret (No. 00358).

Metal add-ons: Tom used an Aber turned-metal barrel, photoetched-metal engine screens from Eduard, and metal tracks from Friulmodel to ready his model for Stalingrad.

Constructing destruction, Tom prepares to coat a base of particle board and styrene foam with Durham's Water Putty before adding scale bricks and other rubble.

The base was painted and weathered, then given a generous coat of dust with a mix of Testors Dullcote and Floquil grime.

concrete (B-110016). For weathering, I used an oil wash of burnt umber followed by an 80:20 mix of Testors Dullcote and Floquil grime (B-110086), **4**.

Animated suspension

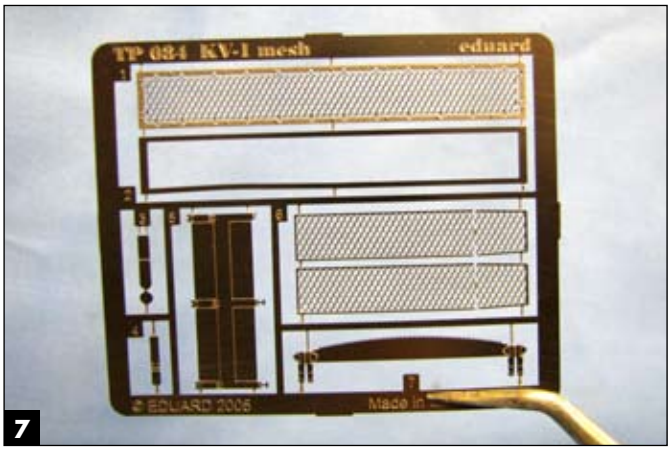
What I really like about Trumpeter's design of this kit is how easy it is to modify: The separate road wheel suspension arms can be repositioned with judicious sanding, and the separate fenders make it easy to modify them or leave them off.

I built the chassis according to the instructions, but didn't glue the suspension arms (part No. G3). Instead, I set the hull on my debris field base to determine the necessary deflection for each arm, then secured the arms in position.

The full-size tank being modeled was missing its starboard fender, so I filled the part's locating holes with scrap styrene and sanded them flush, **5**. The fender support brackets should be L-shaped rather than flat as supplied in the kit. To correct this, I glued pieces of .015" x .060" strip styrene from Evergreen (No. 113) cut to match

A fender was missing from the KV-1 in the photo, so Tom's tank didn't need the part's locating holes. He filled them with scrap styrene, then sanded the excess flush with the hull side.

Styrene strips provide a base for the fender support brackets on the sides of the tank. This feature was missing from the kit, so Tom installed bits of .015" x .060" Evergreen strip.



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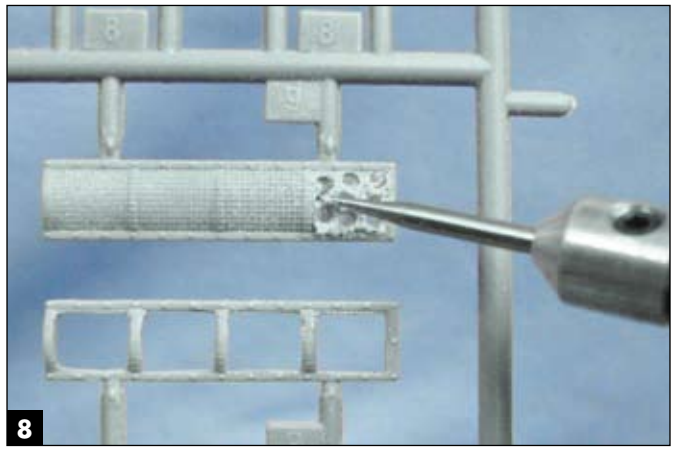
Eduard's photoetched-metal screens provide a simple way to add the perfect touch of realism to the engine deck of a KV-1, easily replacing the solid molded detail of the kit.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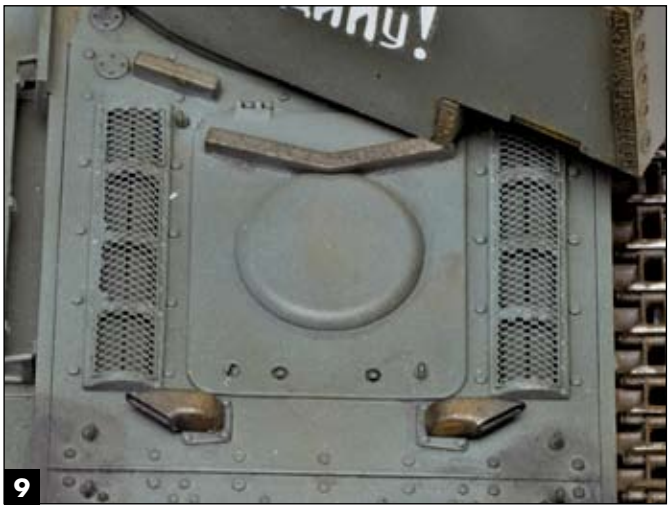
Tom uses a cutter bit in a motor tool to remove plastic and open up the screens for the engine intakes in preparation for installing photoetched-metal replacements.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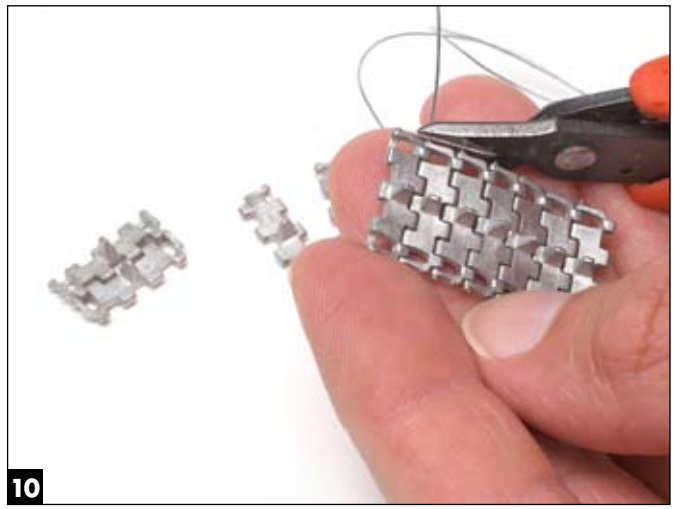
In place and painted, the Eduard screens become a convincing feature on Tom's 1/35 scale model.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Friulmodel's metal links, which perfectly replicate the action of full-size tracks, are easy to assemble with the provided wire and a pair of snips.

the height of the bracket at the attachment points on the hull sides, **6**.

Grilling out

If this kit has a weakness, it is the engine intake grilles (part No. D9) on the rear deck. Trumpeter molded them solid, so the nicely molded intake deflection louvers can't be seen. Eduard comes to the rescue with photoetched-metal screens, **7**.

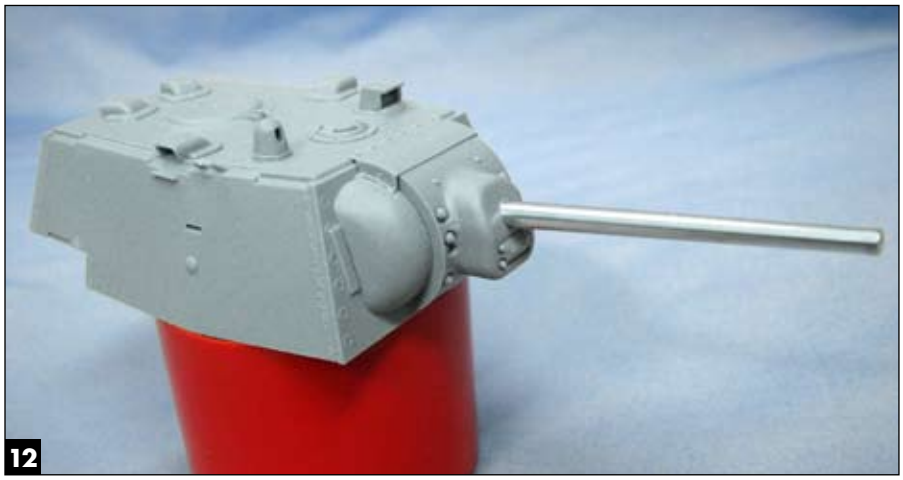
First, I removed the molded-on mesh with a round cutter bit in a battery-powered rotary tool, **8**. I thinned the resulting frame before super gluing the new mesh into position. After attaching them to the model, the see-through screens really look the part, **9**.

On track

I replaced the kit's tracks with a set from Friulmodel because the detail is nice and they look right. They act like the full-size tank's tracks, drooping and conforming to terrain, and sagging over return rollers. I


11

The metal tracks' flexibility and weight make them conform to the terrain and sag realistically between return rollers.



Tom built the kit's turret out of the box, but replaced the main gun barrel with a turned-metal offering from Aber. The new gun barrel even has rifling!

SOURCES

Photoetched-metal screens, Eduard (TP 084), 420-47-611-8259, www.eduard.cz
Metal gun barrel, Aber (35L-34), 48-32-203-24-05, www.aber.net.pl
Rock Hard Water Putty, Durham's, 515-243-0491, www.waterputty.com

REFERENCES

Soviet Heavy Tanks, Steven J. Zaloga and James Grandsen, Osprey Publishing, Oxford, United Kingdom
Camouflage & Decals: Eastern Front Part 1, Stanislaw Jabloński and Rafal Dudziński, Kagero, Lublin, Poland

assembled them by inserting a piece of the supplied wire into the hole, then nipping it off close to the link, **10**. I used 87 links per side, and the result looks great running over the terrain on the base, **11**.

I built the turret straight from the box, adding the Aber turned-metal barrel in place of the plastic kit part, **12**. I used the kit piece to establish the proper length for the barrel.

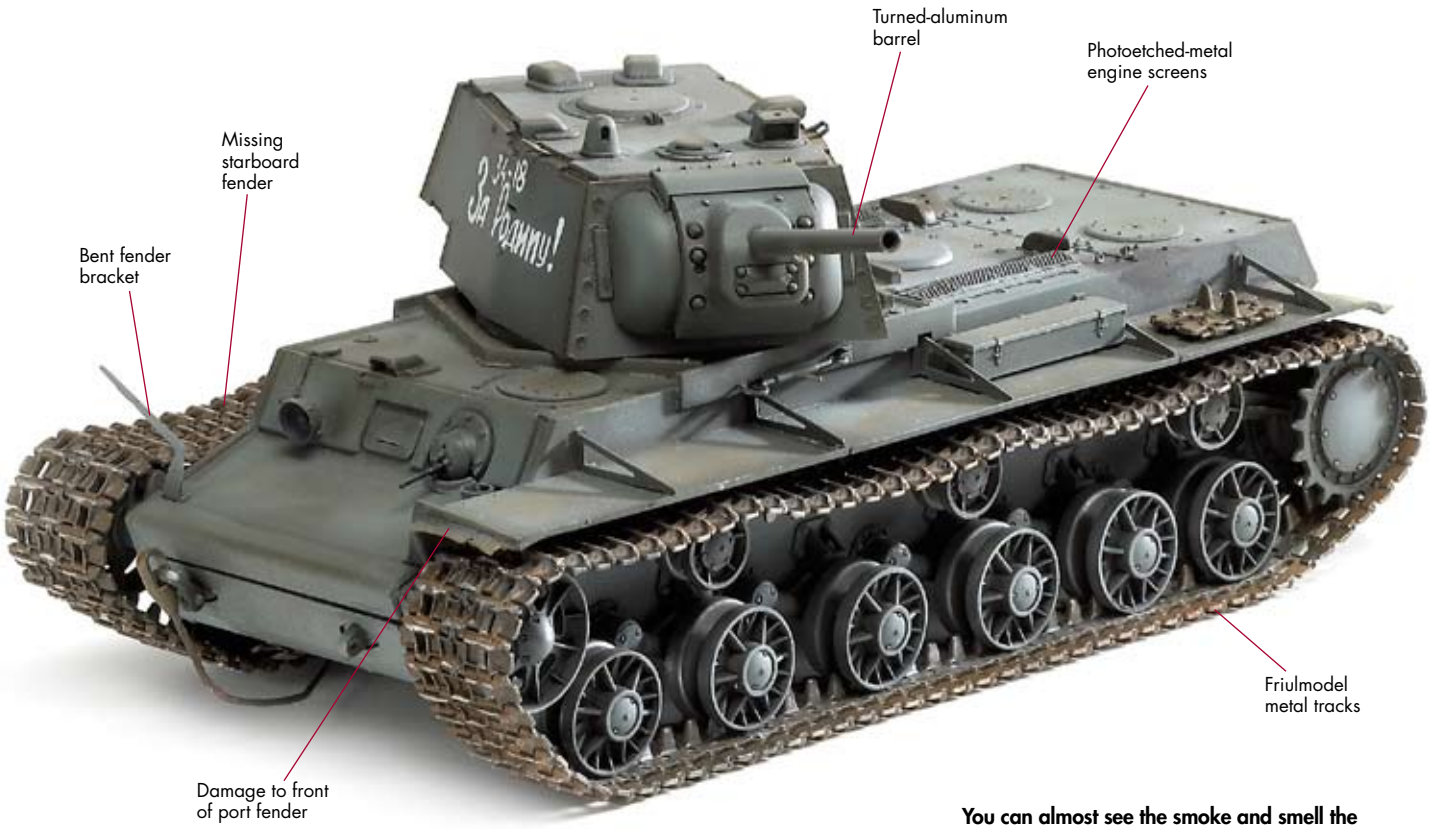
Color of war

I painted my KV-1 with Gunze Sangyo acrylics, which dry with a semigloss finish. The road wheels' rims were wiped with SnJ aluminum powder to simulate metal worn bare by operation.

I applied the decals to the turret's glossy surface, then weathered the tank with a wash of black and burnt umber artist's oils applied to the panel lines. I added rust, soot, and other stains with Tamiya weathering pastels.

To dull down the finish, I airbrushed an 80:20 mix of Testors Dullcote and Floquil grime, replicating the dusty conditions of a bombed-out city.

Now I had a battered, bent, and dirty KV-1 heavy tank on a debris field amid the ruins of Stalingrad, just like the photo that inspired my project. **FSM**



You can almost see the smoke and smell the cordite when you look at Tom's model; minor modifications give his KV-1 individuality.

Trumpeter's Model 1942 KV-1, dressed for winter warfare: Modeler Mike Kirchoff makes it look easy – and he says painting and weathering really *is* easy.

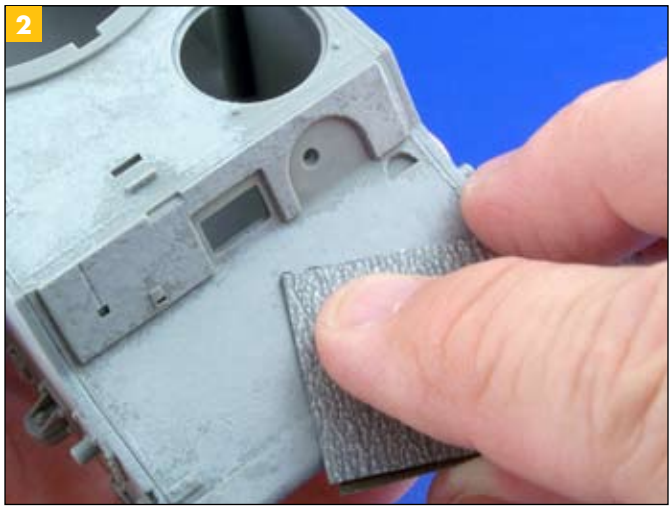
Painting & Weathering ARMOR

By Mike Kirchoff

Giving Trumpeter's Model 1942 KV-1 "the look"

Armored fighting vehicles evolved quickly in the terrible crucible of World War II. But in the first years of the war, the toughest bully on the block just might have been the Soviet Union's mammoth 45-ton KV-1 tank. Although it was prone to mechanical breakdowns, and was later eclipsed by other weapons, the KV-1's 76mm gun could dish out punishing firepower – and this massive tank's 90mm-thick armor could take a severe pounding, too.

Rolled armor is rough stuff. Mike achieves this texture by stippling these panels with Mr. Surfacer 500.



Light sanding slightly smoothes the stippled surfaces and keeps the texturing effect from looking exaggerated.

The makings of mud: Mix Woodland Scenics grass, Mr. Surfacer 500, Tauro powdered-pigment brown dirt, and lacquer thinner.

Mike uses an old brush to apply a thick build-up of mud and sod.

The big idea

Rather than an attempt to create a historically accurate and detailed model, this project could be more appropriately defined as a simple study of the trinity of armor-model finishing: texturing, painting, and weathering.

To demonstrate, I chose Trumpeter's excellent 1/35 scale Soviet KV-1 Model 1942 Heavy Cast Turret (No. 00359), an ideal subject for finishing. With its angular, slab-sided hull construction, and large, cast turret, the Model 1942 is a perfect "canvas" for a full battery of effects.

The two-tone winter camouflage scheme on the box art was simple yet intriguing. Bolstered by a photo of tanks from this very unit in action on the Kalinin front (page 25 of *Stalin's Heavy Tanks 1941-45: The KV & IS Heavy Tanks*, by Steven Zaloga), I decided to take a stab at this distinctive green-and-white scheme.

First steps

It's convenient to model basic effects, such as torch-cut edges as well as rolled and cast armor textures, before assembly.

For the rough-cut edges typically found on armor plates, I use the backside of a No. 11 hobby-knife blade. Drawing the blade perpendicular to the edge and allowing it to randomly skip and chatter will leave a series of neat "notches." Occasionally, I'll even use an abbreviated sawing motion to create deeper grooves. Follow photo references to keep this effect "to scale."

I wanted to add character to the KV-1 hull's wide expanses of armor plating. After assembling major hull components and road wheels, sprockets, and idlers, I textured plates with a thin coat of Gunze Sangyo Mr. Surfacer 500 applied with a short-bristled brush, **1**. Leaving off the fenders makes it easier to work on the hull sides. I avoided areas below the fender line (later, they would be slathered with mud). After drying, the flat surfaces were gently sanded with 600-grit paper to even out the effect, **2**.

The turret and mantlet received a similar but heavier treatment to replicate the heavy cast armor. Again, photos can tell you how far to take this technique.

Mud

In winter camouflage, this vehicle needed a thorough application of mud. I achieved this in two stages – a thick precoating applied before the hull assembly is completed, and a final layer that would be almost a straight application of liquefied pigment powder after the model had been painted and weathered.

For the thicker concoction of mud, I used a base of Mr.

This time, Mike applies a smooth coat of Mr. Surfacer 500 for primer.

Next comes a base of Russian green slightly lightened with yellow ochre.

White-metal tracks were primed, then airbrushed with a base coat of Vallejo Model Color black grey.

Mike fired up his Iwata HP-C airbrush to apply several thin, almost transparent layers of Vallejo Model Color foundation white.

Surfacer 500 reduced with lacquer thinner. By adding "soil" – in this case, Tauro brown dirt powdered-pigment (No. 70105) and clippings of Woodland Scenic grasses, **3** – I created a sod-like appearance. Using a disposable brush, I generously applied this mixture to the hull, concentrating on areas where mud would naturally build up (such as between the idler arms, both sides of the wheels, and, of course, the mud scraper located forward of each drive sprocket, **4**). Don't forget to add a thin layer to the underside of the fenders, as well.

Tracks

There's nothing wrong with the kit-supplied tracks, but I used a set of Friulmodel white-metal, pinned tracks (No. ATL-10). After assembly, I gave each link a thorough coat of Mr. Surfacer 500 from a spray can before adding them to the model.

(Important note, based on painful experience: *Pay attention to the direction of the track.* I reversed one side early on and didn't catch my mistake until late in the build. What a headache!)

Primer

Construction went quickly, and I soon found myself in the final stages of assembling the turret and hull. I installed the fenders and added tow cables, spare links, toolbox, etc. I left off the headlamp lens, taillight, and the fragile hull and turret machine guns until after painting and weathering.

I usually apply a primer before finish coats, especially painting with acrylics (as I planned to do). I primed with a 1:2 mix of Mr. Surfacer 500 and Mr. Color Leveling Thinner. Cranking the air regulator up to about 14psi, I shot a velvet-smooth coat of primer over the entire model using a Paasche VL airbrush with a medium tip, **5**. The solvent-based primer dries almost immediately, so the model was quickly ready for its first coat of color.

Color coats

My weathering process almost always darkens the overall color – and that's important to planning the paint. Using Vallejo Model Color acrylics, I airbrushed a base coat of Russian green (No. 894) slightly lightened with a few drops of yellow ochre (913), **6**.

Using a 3:2:1 mixture of paint, distilled water, and Vallejo thinner, I shot the entire hull, turret, and wheels with my Iwata HP-C airbrush at 12psi. Even though the model would be mostly covered with the white camouflage, I still wanted a bit of the green to show through in a few strategic spots.

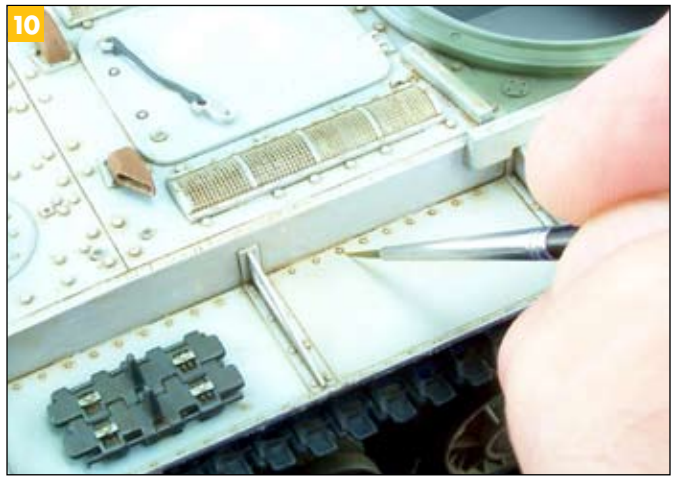
The tracks received an even coat of black grey (862) as a neutral dark base, **7**.

Trumpeter supplies a nice full-color profile sheet I followed for this kit. I airbrushed a thinned coat of foundation white (919), concentrating on the inner portions of each facet of the hull and turret and leaving a bit of the green around the peripheries for contrast, **8**. If this effect is too subtle it will disappear during weathering.

Markings

I intended to keep this model as close to stock as possible, including decals. The kit's small decal sheet included five pairs of single-color turret markings. I chose the yellow numerals 702 and applied the decals using nothing more than a layer of Micro Set and gravity to persuade them to conform to the irregular surfaces

On to weathering: First, an overall application of dark-sienna artist's oils reduced with enamel thinner, with emphasis on tracks and undercarriage.



Mike uses a thin wash of raw-umber oils and a fine brush to pick out bolt heads, allowing capillary action to draw the watery paint around each detail.

The first of several "tinting washes" slightly altering the basic coat and lending character and depth to the monochromatic finish.

A small brush and steady hand replicate the small chips and scratches found on a vehicle.

Use the side of the brush on sharp edges to model worn areas.

of turret armor. Just two treatments of solvent got the decals to settle down. When the decals were dry, I gently washed them with distilled water followed by a light dusting of Testors Dullcote to help hide what remained of the carrier film.

Weathering

Weathering allows armor builders the greatest freedom of artistic expression – and it's really a lot easier than you think.

I used artist's oils in this stage. I began by giving the entire model, including tracks, an extremely light wash of dark sienna oils reduced with Humbrol enamel thinner, **9**. This wash gives a multicolor scheme continuity and depth, and it brings all the colors a bit closer in terms of hue.

Next came a little thicker blend of raw umber oils to pick out bolt heads, recessed screws, welds, and other details. This "pin wash" is applied with a 5/0 or 10/0 brush for precise control, **10**. I methodically work my way around the model until each detail has been addressed.

After those washes had dried completely, I used a wash of Van Dyke brown thinned to the consistency of water, concentrating on all the nooks and crannies but also letting the paint tint the broad surfaces, **11**. I followed in the same fashion with a mixture of Van Dyke brown and raw umber. This step varies the tones while emphasizing the vehicle's natural lines.

Chips and scratches

A combination of Vallejo acrylic black grey and red leather (No. 818) provided the dark brown I used to create chips and scratches on the vehicle. Careful: This technique is easy to overdo.

I usually begin by randomly applying simple, irregular dots, **12**, following with a series of broken lines along almost every edge and concentrating on high-wear areas such as the sharp edges of armor plating, exposed bolt heads, and hatches. Thin sheet-metal details are particularly susceptible to this type of wear, so don't forget fenders, fittings, and toolbox lids, **13**.

Tint wash

Lately, it's popular to apply a series of translucent glazes, or filters, to alter the tonal value of a color scheme – but I've been doing this for years with carefully controlled washes of artist's oils. Using basic colors such as umber, sienna, and ochre, I stipple highly diluted combinations of these oils in very small amounts, **14**. This technique can yield striking results – but don't overdo it, especially with this winter scheme. Properly applied, these washes can lend interest and character to a monochromatic model while muting effects such as chipping and scratching to a more realistic value, **15**.

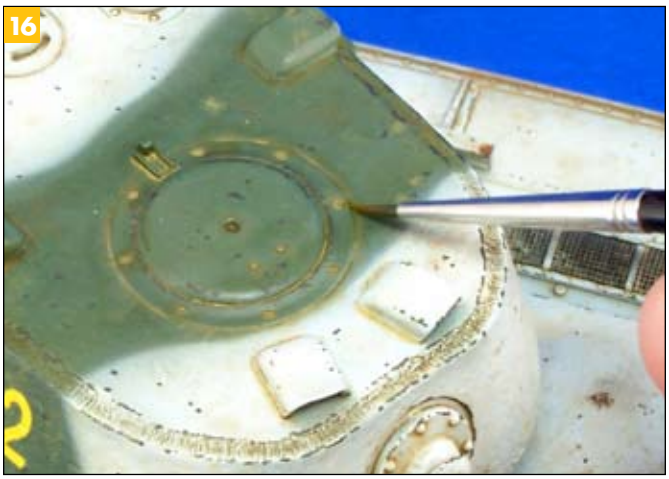
I wanted contrast for the Soviet green, especially on the turret. The darker color requires a more aggressive approach. You'll recall, I addressed this earlier by stippling the same shades of oils as I had used on the white portions of the hull. Here, I used a simple solution of diluted yellow-ochre oils applied with a pin-wash technique to the upper turret and rear deck, **16**.

Pigments

Being a cheapskate, I wouldn't use my MIG powdered pigments for thick mud. But having created mud with Mr. Surfacer 500, I could simply use pigments for a cosmetic coat.

Oil washes continue, this one to emphasize prominent structural details.

Several applications of oils yield good results, even on the vertical surfaces of the turret.



A thinned coat of yellow-ochre oils recreates the dusty look of the turret roof and calls out details around the hatch.

Getting good earth: Mike brushed enamel thinner on the running gear, then applied dry, powdered pigments.

The entire underside of the model, including hull, fenders, and running gear, was brushed with Humbrol enamel thinner followed while wet by an application of the MIG Europe dust (No. P028), **17**.

I thinned a bit of pigment and brushed the slurry on front and rear fenders and hull plates and gave the track a complete once-over, **18**. I also stippled and blended the same pigment mixtures on most horizontal surfaces, **19**.

Exhaust pipes were initially painted with the same dark-brown acrylic blend I used for chipping. While the acrylic paint was still wet, I stippled it with MIG Productions standard rust (P025) and light rust (P024). When this was completely dry I applied black smoke (P023) inside the throat of each pipe as well as on corresponding surfaces of the upper hull, **20**.

Details

Time for the final details: Machines guns were painted flat black acrylic, washed with phthalo blue oils and, when dry, lightly rubbed with graphite for a metallic sheen. I painted the headlight interior silver with a gloss-white bulb before installing the lens.

For a final touch, I gently sanded the cleats of the tracks that would contact the ground and applied a light raw-umber wash to those exposed areas. I also stippled a bit of semidry pigment into select links to depict clumps of mud, **21**.

Wrapping up

You can see the results are easily achieved, layer by layer – it just takes basic techniques and a bit of forethought and planning. From texturing to the basic color scheme to washes, pastels, and pigments, each effect has its own design and purpose.

But this is only a guide: Experiment with each technique and strive to make each model your personal work of art. **FSM**

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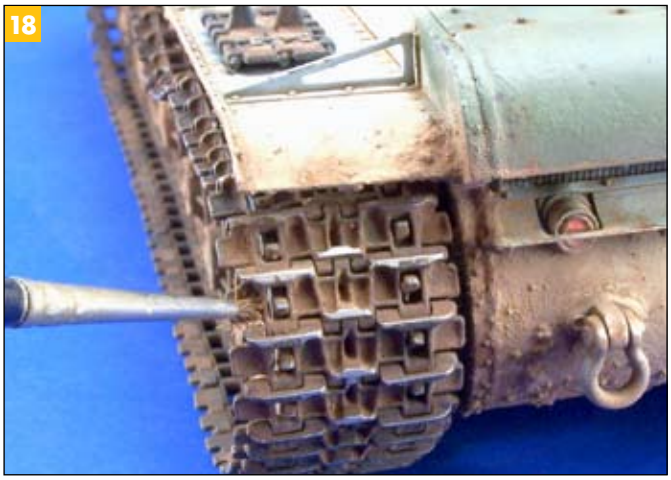

Mixing powdered pigments with thinner creates a slurry to apply to the lower parts of the vehicle.

Using the same mixture, Mike stippled pigment on fenders and other horizontal surfaces to replicate mud and grime.

A combination of acrylic paints and pigments finished the exhaust stacks. Mike blended in black pigment to show soot on the rear deck.

More pigment, more mud; a semidry mix makes good clods.

Meet Mike Kirchoff

An engineering technician from Independence, Kansas, Mike cites Sheperd Paine, Bob Steinbrunn, and Francois Verlinden as early inspirations. A self-professed student of the art of modeling, Mike enjoys picking up the newest methods and ideas but finds much more reward in sharing what he's learned with others. His main interests are World War II and modern armor and dioramas, as well as the occasional aircraft to keep his airbrushing skills honed.

Mike also has worked as a sportswriter, often covering his beloved Kansas City Chiefs, and is a recently retired professional drummer. Now he builds armor and aircraft-related master patterns, designs custom artwork, and still finds time to enjoy his latest endeavor – writing modeling articles. Mike and his wife, Linda ("my best friend and harshest critic," he writes), have been married 28 years.

The culmination of several efforts: Layers of washes, painted details, and powdered pigments add up to a lifelike model.