Building and Painting a TIGER I (early production) with Werkstatt Kubelwagen in 1/48 Scale

Armor Modeling Vol# 7

by Kevin Townsend

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Building and Painting a TIGER I (early production)

INTRODUCTION

The Tiger I tank is legendary. It is likely the most famous tank of WWII and possibly of all time. This was true even during the war. The influence of the tank on Allied morale was significant enough a name was coined for it—Tigerphobia. This was so powerful that during the Normandy Campaign, British General Montgomery banned reports mentioning its prowess in battle. "Tiger" is one of the most-recognized tank names of all time. In movies, such as "Kelly's Heroes", "Saving Private Ryan", and "Fury", the tank plays the role of a nearly indestructible fire-breathing dragon, bringing death or at least causing some serious consternation to the movies' heroes.

Being a legend, it is a popular vehicle with WWII historians, armor enthusiasts, and modelers. The number of kits released of this tank over the years is staggering. Even in 1/48th, there are several choices. Back in the 1970s, Bandai released a model of an early production tank. For their day, the Bandai models were quite advanced—with work they can still be built into passable models. When Tamiya entered the 1/48th scale market in the early 2000s, an early Tiger was one of their first kits. This was eventually followed by an initial production and a late production vehicle. Soon after, the Taiwanese firm of Skybow issued two outstanding Tiger models—an early and late production vehicle. These kits were subsequently rereleased (with the addition of photo-etch screens and better decals) by AFV Club. The Bandai kit is long out-of-production, but can still be found online. Likewise, AFV Club no longer markets their 1/48th scale kits. However, many shops still have stocks of their Tigers and all these kits are still easily found online. The Tamiya offerings are still in production and readily available. The aftermarket provides a plethora of options such as photo-etched upgrades, tracks, decals, gun barrels, and other features.

This booklet details my build of AFV Club's early production Tiger I kit. Although followers of my work will know that I am a proponent of Tamiya's quarter scale offerings, this kit is—in most respects— equal or superior to Tamiya's at a better price. While any of the kits on the market will give you a good Tiger (except maybe the Bandai), you simply can't do better in this scale than the Skybow/AFV Club kits.

Tiger 1 (Early Production)

A German tank commander says to a Soviet tank commander "One of my tanks can defeat ten of your tanks". The Soviet tank commander shrugs and says, "I have 11 tanks."

-Apocryphal

"The power of their guns and thickness of their armor meant little if they lacked battlefield mobility. For an army based around speed, these heavy beasts were a leap of tactical and technical faith"

-Guderian

" A significant factor in a Tiger's reliability was the training of the driver. An experienced driver can reduce technical issues. At first, thank god, I had experienced drivers. Then we had young drivers for Jagdtigers, and it was a catastrophe… They say that it was unreliable often. In my company, barely any Tigers were lost in battle due to technical reasons. They mostly broke down on marches… It depends on the driver. It's a 60 ton vehicle with 700-800 horse power. You cannot treat it lightly, you have to drive with feeling. Otherwise something breaks."

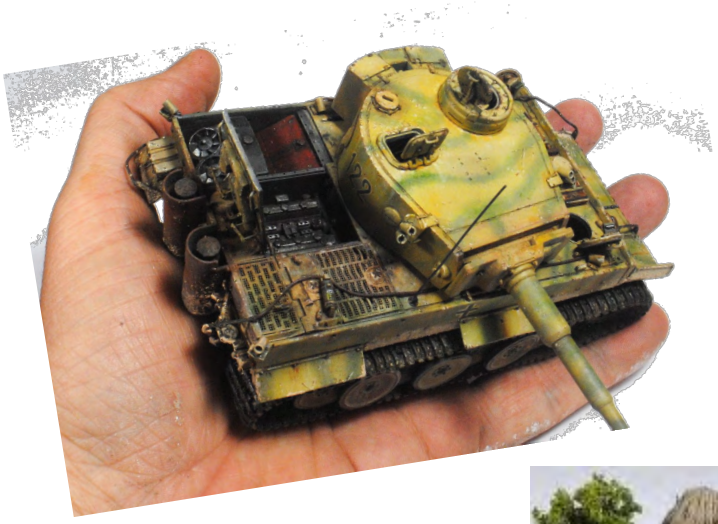
-Excerpts from an interview with Tiger Commander Otto Carius

"Mechanical problems were not uncommon, particularly in the Panthers and Tigers. The Panthers had numerous faults which were not difficult to fix, but sometimes we lacked the spare parts. Problems with Tigers occurred mainly when the crews had not had a chance to undertake their own daily maintenance routines on their machine because of the intensity of battle."

-German mechanic Karl Stumpp

"I had an encounter with just such a tank (Tiger). He fired at us from literally one kilometer away. His first shot blow a hole in the side of my tank, his second hit my axle. At a range of half a kilometer, I fired at him with a special calibre shell, but it bounced off him like a candle; I mean it didn't penetrate his armor. At literally 300 meters I fired my second shell - same result. Then he started looking for me, turning his turret to see where I was. I told my driver to reverse fast and we hid behind some trees"

-Soviet tanker Ivan Sagun



The obligatory shot of the model held in the palm of the hand shows how small these quarter scale kits are—even a model of a tank as large as a Tiger. Despite the small size and simplicity of the kits compared to their more bloated and complex 1/35th scale brethren, one can still pack a tremendous amount of detail into these tiny canvases.

While the model itself is certainly the "main point" in this little creation, notice how the addition of figures and groundwork transforms a plain armored vehicle model into a piece that tells a simple story.

My model and the vehicle it depicts.

Despite the paucity of some subjects in quarter scale, the 1/48th scale modeler is stupid-rich when it comes to Tiger options. This clearly shows the popularity of this vehicle. Tamiya markets three kits—initial, early, and late production vehicles. These feature typical Tamiya quality—although the late production model does not include Zimmerit: a feature that would have been present on all such vehicles. Tamiya does market separate Zimmerit stickers for the model, or the modeler can turn to aftermarket or make it him/herself. AFV Club included both early and final (with molded Zimmerit) production vehicles in their line. Although now out-of-production, they are still readily available, with many shops still having stocks on their shelves. In my opinion, they are the best of the available Tiger offerings. These kits are essentially the old Skybow models (which can still be found online) with different decals and the inclusion of photo-etched screens. Also still to be found online is the old Bandai kit from the 70s. Despite many inaccuracies and bad tracks, this includes rudiments of an interior. All these include slightly different features representing vehicles made during different months of the production run, and can be kit-bashed to create any Tiger that rolled off the assembly line! The aftermarket also includes a plethora of Tiger including tracks, metal gun barrels, photo-etched detail sets, and decals. For this project, AFV Club's outstanding early version (middle right above) was the kit used.

Tiger I

Length: 6.316m (8.45m with gun forward)
Width: 3.56m
Height: 3.0m
Combat Weight: 56.9 tons max

Max Speed: 45 km/hr
Avg. Road Speed: 40 km/hr
Cross Country: 20-25 Km/hr
Fuel Capacity: 540 Liters
Range: 195 km road/110 km cross country
Ground Clearance: .47m
Grade Climbing: 35^0
Trench Crossing: 2.5m
Step Climbing: .8m
Fording Depth: 1.6m
Ground Pressure (Combat Tracks): 1.04 kg/cm^2

Powerplant: Mayback HL 210 P45 (21 Liters/650 HP) / Maybach HL 230 P45 (23 liters/700 HP)
Drive: Front Sprocket
Suspension: Torsion Bar
Track: Dry Pin, 96 links per side

Armor: 25-120mm

Main Armament: 8.8cm KwK 36 L/56 (92 rounds)
-Effective Range 3000m Armor Piercing/5000m High Explosive
-Turret Traverse, 360 degrees/about one minute
Secondary (early model): 2 x 7.92mm MG 34 (4,500 rounds)

References:

-Germany's Tiger Tanks Vol 1: Thomas L. Jentz & Hilary Louis Doyle
-Tiger I Heavy Tanks 1942-45: Jentz/ Doyle (Osprey New Vanguard
-Tigers in Combat Vol I & II: Wolfgang Schneider
-Tiger: Bruce Culver, illustrated by Don Greer and Penny Manley (Squadron/ Signal "In Action")
-Tiger I Information Center (website)
-Wikipedia (website)
-Tank Encyclopedia (website)
-Tiger in Focus (website)
-Tiger I Info (website)

THE REAL THING

An overhead shot showing an early Tiger with features similar to the AFV Club Early Production Tiger kit used in this project. Its angular design—similar to a super-sized Panzer IV—is clearly evident. On the turret, the tank features the escape hatch on the right side which replaced the earlier pistol port, smoke candle dischargers, and the standard Tiger stowage bin. The vehicle was twin headlights and the early style Feifel air cleaners mounted. It lacks only the kit's S-Mine dischargers on the upper hull. However these were never universal.

When introduced, the Tiger was without doubt the most powerful tank in the world. It embodied the very conception of a heavy tank: heavy armor made it nearly invulnerable and its powerful 88mm gun could easily defeat its adversaries at ranges well beyond their ability to answer. The fear it inspired in its enemies was to grow to almost mythical proportions – even in light of the fact that only about 1,350 were produced compared to a combined total of over 120,000 T-34s and Shermans. It pushed the boundaries of armored warfare and forced the Allies to rush to answer it. It gave rise to famous tank aces – something almost unheard of before in armored warfare where the life expectancy of a tank crew was usually quite short. But all of this came at a cost. It was over-engineered, used expensive materials, and required time-consuming, labor-intensive production methods. If well-maintained, it was generally reliable, but it was difficult and expensive to maintain. The Tiger was prone to certain types of track failures, and suffered from high fuel consumption in an army that faced increasing fuel shortages. Its weight caused difficulty in bridging obstacles, it was hard to transport, and was vulnerable to immobilization if mud or snow froze between its overlapping and interleaved road wheels. In the final analysis, despite the potential the vehicle may have had, its low numbers meant that potential would never be realized. By the time it was fielded, Nazi Germany was already in decline, and the Tiger was not able to alter the balance to any appreciable degree.

Tiger 1 (Early Production)

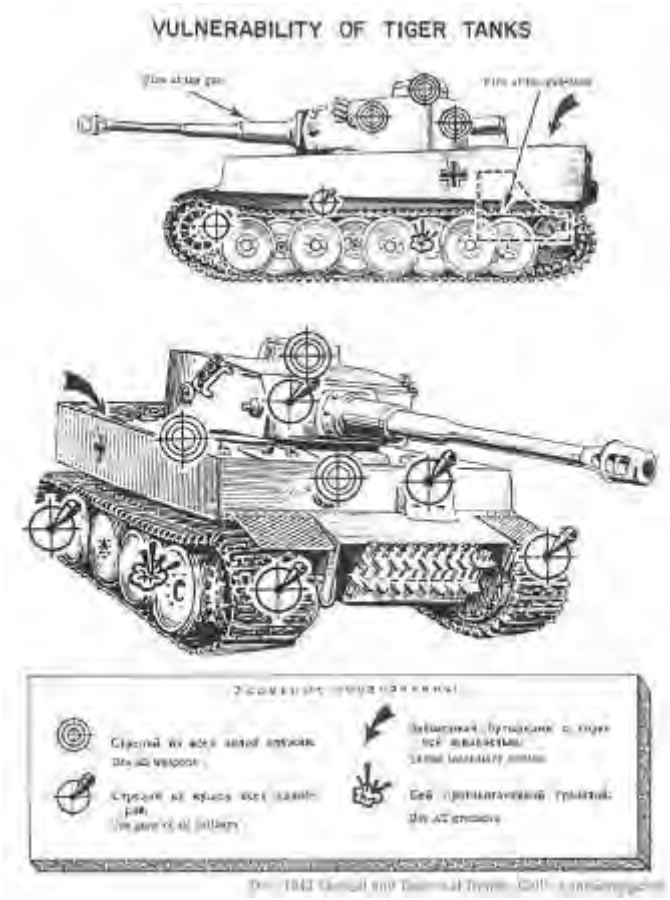
"Doing research for a book on the Tiger I did eons ago, I read a comment from a foreman who had worked at the Henschel plant where all the Tigers were assembled. He said that there were so many changes made to the design and detail fittings that no Tigers were ever built to final approved blueprints - they were all assembled using red-lined drawings that had not been through the complete approval cycle.....and later changes came after those drawings had been approved, so it was a continuous process and the blueprints never caught up".

-Bruce Culver (from a post on the Track48 Discussion Forum)

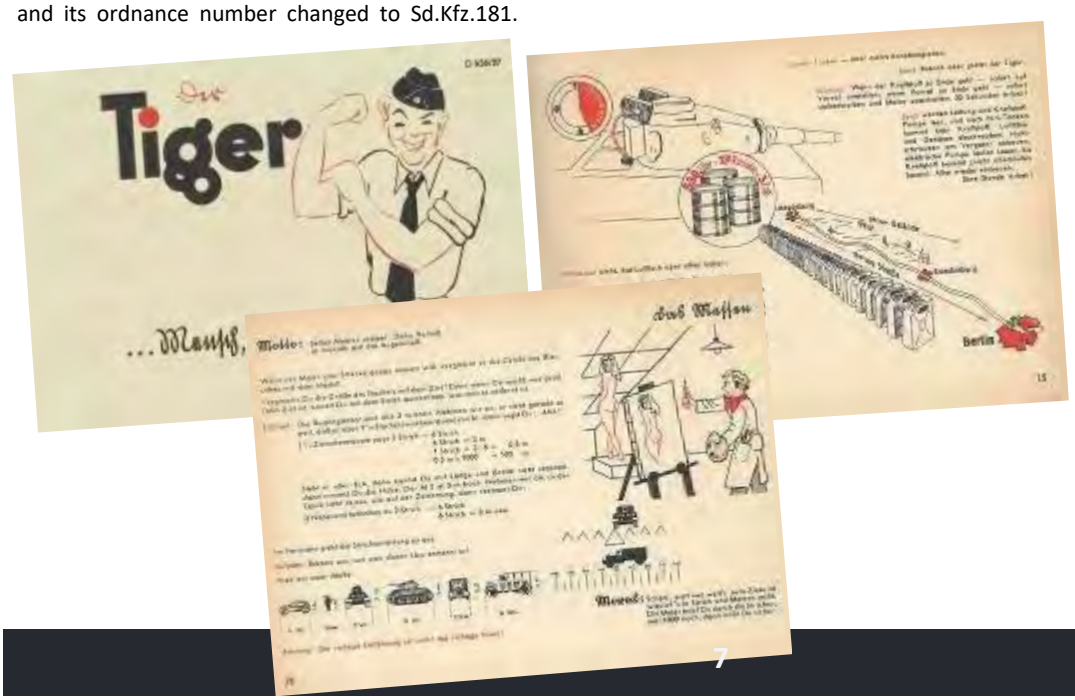
Although Germany believed in the years leading up to WWII that the Panzer III and IV would be adequate for the upcoming campaigns, they recognized a heavier tank would one day be needed. Design work began as early as 1937. Soon after the start of war, however, after encountered heavily-armored Allied tanks such as the Matilda and Char B – and most especially after the shock of encountering Soviet T-34s and KV-1s - it became a matter of urgency to field a heavy tank. This resulted in a specification for a 45-ton tank with an 88mm gun and heavy armor that still had acceptable speed and maneuverability. Porsche and Henschel both designed prototypes which were inspected by Hitler on his birthday, April 20th, 1942. In spite of Dr. Ferdinand Porsche's friendship with Hitler, the Henschel tank was the clear winner, in large part due to its superior maneuverability and adaptability for production. Another reason was the complexity of the Porsche's material-hungry petro-electric drive system (Porsche's entry was converted into an assault gun and fielded as the "Ferdinand", later "Elefant").

Production of the new tank started in August 1942 at a low rate, peaking in April 1944 at 104 per month. Production ceased in favor of the Tiger II in August of 1944 after nearly 1,350 had been built—a small amount for a two year production run, indicative of its complexity. The complex vehicle required 300,000 man hours to build - almost twice as much time as a Panther. The Tiger cost more than two Panzer IVs or four Sturmgeschutz IIIs. Changes, both large and small were made during the production run. For details, see the sidebar on page 9.

The Tiger went through a number of names in its life. It was originally designated Panzerkampfwagen VI H (for Henschel), with the ordnance inventory number of Sd.Kfz.182. "Tiger" was adopted in in October, 1942, followed Pz.Kpfw.VI H1 or Tiger Ausf.H1 in December. Finally, in March, 1943, it became the Pz.Kpfw. Tiger Ausf.E, and its ordnance number changed to Sd.Kfz.181.



Above: A translated Russian document from a 1943 intelligence summary showing the Tiger's weak points. It shows using all weapons to target view slits and blocks. It also recommends using incendiary devices against fuel cells and anti-tank grenades against the tracks and running gear.



Left: Sample pages from the "Tigerfibel" or guide for Tiger crews. Instead of dry technical language, this sometimes humorous guide used such things as rhymes, mottos, and cartoons to educate every crewmember on their duties and to present regulations, tricks of the trade, tactics, and best practices.

Tiger 1 (Early Production)

The Roman numeral "I" was added only the introduction of the Tiger II.

The Tiger's two greatest strengths were its main gun and its heavy armor. The 88mm KwK 36 L/56 main gun was the most powerful anti-tank gun then in use by any army, capable of penetrating any enemy tank at ranges beyond which they could answer. Thick, good-quality armor rendered the tank very hard to kill and gave its crew great confidence. Frontal armor was 100mm thick—120mm on the gun mantlet. Even the sides and rear featured armor 60-80mm thick. The combination of this massive armor and powerful gun made for an almost unbeatable tank. Enemy crews often watched helplessly as their shots bounced off the Tiger and their own vehicles were quickly destroyed...often from great distances. The Tiger I was very maneuverable for its weight and size, and it was only 2km/h slower than the Panzer III and Panzer IV.

Although the general design and layout were broadly similar to the Panzer IV, the Tiger weighed more than twice as much. This was due to its substantially thicker armour, the larger main gun, greater volume of fuel and ammunition storage, larger engine, and a more solidly built transmission and suspension. Also like the Panzer IV, the Tiger carried a five-man crew. In the front compartment sat the driver and radio operator/bow machine gunner separated by the transmission/gearbox on top of which were mounted the radios. Behind them in the turret, which featured a turret basket floor, were the gunner and commander on the left side and the loader on the right. The engine compartment was in the rear.

The engine was flanked by fuel tanks and a radiator on each side. Initially, the Maybach HL 210 P45 powerplant was used. While this was a good engine, it proved to be underpowered for a vehicle so large and heavy. Starting with the 251st Tiger, it was replaced with a more powerful Maybach HL 230 P45. The engine drove the front drive sprockets through a drivetrain connected to the transmission in the front portion of the lower hull. The turret had a hydraulic motor whose pump was powered from the engine. A full rotation took about a minute. Another new feature was the Maybach-Olvar hydraulically controlled semi-automatic pre-selector gearbox. The extreme weight of the tank also required a new power-steering system using a steering wheel rather than levers. The vehicle had an eight-speed gearbox, and the steering offered two fixed radii of turns on each gear, thus the Tiger had sixteen different radii of turn. In first gear, at a speed of a few km/h, the minimal turning radius was 3.44 m (11 ft 3 in). In neutral gear, the tracks could be turned in opposite directions, so the Tiger I pivoted in place.

The suspension used sixteen torsion bars, with eight suspension arms per side. Swing arms were leading on one side and trailing on the other, thus the wheels were not offset as was seen on many vehicles with torsion bar suspension. There were three road wheels (one of them double, closest to the track's center) on each arm, overlapping and interleaved. Combined with the large-diameter wheels, this provided a

This photo of a tank taking on ammunition gives us a good view of the front of an early-production Tiger. Note the shovel mounted on the glacis, the hinged front mudguards (with hinged side flap), side mudguards with triangular ends, smoke candles on the turret, and S-Mine dischargers on the hull. The photo also gives a clear view of the crew hatches and shows the interleaved wheels. This vehicle also features the loader's periscope and spare track links on the turret fitted beginning in March, 1943.

Right: Based on features present, the AFV Club "Early" Tiger kit matches all details for a February, 1943 tank. Due time needed to implement changes, the tank can likely be dated between late February and late March . For example, some of the prominent features the model exhibits are style Feifel air cleaners 9Nov 42), shovel on the glacis 9Oct 42), S-Mine launchers (Dec 42) smoke candle dischargers (Aug 42), the Tiger turret stowage bin (Dec 42), guards on the exhaust mufflers (Jan 43), triangular ends on the track guards (Jan 43), six gun-cleaning rods (Feb 43), and 18 bolt road wheel rims (Feb 43). All this places the vehicle certainly no earlier than February 1943, unless we consider that newer parts could have been retrofitted to existing Tigers. Some details, such as the 18 bolts on the inside of the road wheel rims, will likely not be visible on the finished model. Thus, with minor modification, the kit can represent a vehicle as early as December of 1942. The original designers of the AFV Club kit (Skybow) certainly did an excellent job with their research. For what it's worth, the Tamiya kit, with the later style Feifel air filters, is dated about a month later than the AFV Club offering (although the kit is missing such things as S-Mine dischargers and bolts on the road wheel rims).

TIGER 1 PRODUCTION CHANGES MONTH BY MONTH

Changes were evolutionary rather than revolutionary, being incorporated month by month (and at times tank by tank). The dates listed here are the earliest the changes appeared on factory Tigers, but would have taken time for them to be incorporated on all vehicles. Older vehicles could be retrofitted with new parts, and deleted items could remain in service on existing tanks until the next major overhaul or even for the life of the vehicle. Still, these dates can be used as a basic guide for dating individual tanks features. Green represents "Early", yellow "Mid", and red "Late" production vehicles. These are not distinct variants. I consider early-production to be the first 250 tanks made before the more powerful engine was installed. Late production commences with the introduction of resilient steel road wheels with about vehicle 820. This information was extracted from the Jentz/Doyle works on the Tiger and from the "Tiger I Information Center" website. Data is not all-inclusive. For the most part, only changes that would be externally visible in 1/48 scale are listed. Refer to Jentz/Doyle for a complete detailed listing. Please note sources sometimes vary in their dates (even in the many works by Jentz/Doyle). Still this should serve as a rough guide.

	1942	1943	1944
JAN		-Deleted driver's binocular periscope -Added guards to exhaust mufflers -Added triangular ends to track guard	-Added 20-Ton jack -Deleted shovel on glacis -Cut out hull extensions for free movement of tow shackle
FEB		-Added vent cover to engine compartment -Road wheel rim changed to 18 bolt -Starter shaft placed on lower rear -6 Gun cleaning rods replaced earlier 5	-Steel road wheels installed, wheels reduced from 3 to 2 per axle -Added turret ring guard -Relocated tools -Deleted external travel lock -Replaced 700mm diameter idler wheel with 600mm
MAR		-Larger Feifel air filters introduced -Added loader's periscope -Added spare track holders to turret	-Changed loader's hatch to short-hinged version -Increased turret roof armor to 40mm -Added close defense weapon to turret roof
APR		-Road wheel rim changed to 12 bolts -Drive sprocket hub changed to star pattern -Introduced same rear louver casting each side	-Introduced lighter muzzle brake with insert -Added wooden deck over fuel tanks -Replaced gunner's binocular sight with monocular sight
MAY	-Added bent narrow front track guard	-Changed engine -Added second hole in crank start alignment plate -Delete frames on rear track guard	-Widened/angled track pin return plate -Introduced 2-piece 40mm roof
JUN		-Deleted smoke candle dischargers -Deleted deep wading cover bolt on bow MG mount -Redesigned turret escape hatch	-Introduced 2-bolt escape hatch hinge -Added three sockets to turret roof for 2 ton jib boom
JUL		-Redesigned turret: new cupola, exhaust fan relocated forward, Left side MP port replaced with pistol port plug -Repositioned track replacement cable fasteners -Dual lights replaced with single light top left corner	-Added poison gas detection panels
AUG	-Added smoke Candle dischargers -Mounted Pz III baggage bin	-Deleted Feifel air filters -Deleted Deep Fording components -Widened slit in turret vision ports	
SEP	-Added track cable to hull side -Added track tool box on rear hull -Added toggle bolts to bow MG for deep wading cover	-Added C-Clamps top and rear for two cables -Added Zimmerit	
OCT	-Added convoy tail light -Mounted shovel and glacis -Replaced mirrored track with Identical track each side -Reversed tow cables -Deleted rear antenna base	-Delete pistol port plug -Headlight centered middle of driver front plate	
NOV	-Early style Feifel air cleaner mounted -Added track guards to hull sides and hinged guards to front and rear	-Added external travel lock for main gun -Deleted S-Mine dischargers -Deleted track tool box rear hull	
DEC	-Replaced right side turret pistol port with escape hatch -Gun mantlet armor reinforced -Added S-Mine Dischargers -Added Tiger stowage bin -Changed cable and antenna stowage -Extended front hull sides	-Added 6 chevrons to each track link -Delete mounts for Feifel filters	

Numbers Accepted into Service by Month

	42	43	44
Jan		35	93
Feb		32	93
Mar		41	86
Apr		46	104
May		50	100
Jun	1	60	75
Jul		65	64
Aug	8	60	6
Sep	3	85	
Oct	10	50	
Nov	17	43	
Dec	37	67	

Top: The thick armor of the Tiger gave its crews great confidence. In this photo, note the gouges caused by non-penetrating hits on the turret. Middle: It took two (sometimes three) of the scarce Famo recovery vehicles to tow a disabled Tiger. Bottom: A bogged Tiger waiting for a two. This vehicle belongs to Schwere Panzer Abteilung (heavy panzer battalion) 503 as indicated by the two Balkankreuze on the turret bin (on each side of the tactical number). For a time, this unit also carried the crosses on each side of the hull and each side of the turret. Tiger units can often be distinguished by the location of the crosses and/or the style, size, and location of their tactical numbers. Despite the German Army's regulations on camouflage and markings, many Tiger units maintained their own unique marking and coloring practices—in many cases until the end of the war.

good distribution of the load onto the wide track giving good off-road performance, increased mobility with missing or damaged wheels, and longer track and wheel life. This came at the cost of increased maintenance. Removing an inner wheel that had lost its solid rubber tire (a common occurrence) required the removal of up to nine other wheels first. During the rainy period that brought on the autumn *rasputitsa* mud season and onwards into the winter conditions on the Eastern front, the road wheels could also become packed with mud or snow that could then freeze.

This approach was carried on, in various forms, to the Panther and the non-interleaved (but overlapping) wheel design for the Tiger II. Beginning in February, 1944, steels wheels replaced the rubber-rimmed wheels on the Tiger I which, like the Tiger II, were only overlapped and not interleaved. As these wheels could support more weight, it resulted in the reduction of the number of wheels per side from 24 (three per axle) to 16 (two per axle).

To support the considerable weight of the Tiger, the tracks were 725 mm (2 ft 4.5 in) wide. The wide tracks gave it lower ground pressure than many smaller tanks and allowed it to maintain mobity over soft ground.

Many bridges could not support its weight and any routes it took had to be scouted out to ensure the roads were wide enough. Special rail cars had to be used to transport it. Special narrower transport tracks were fitted for rail travel and the outer row of wheels removed. It took a trained crew about 30 minutes to accomplish this, a job which was not relished by the crews. Although a forbidden practice, Tigers were frequently transported by rail with their combat tracks fitted, as long as the train crew knew there were no narrow tunnels or other obstructions on the route that would prevent an oversized load from passing.

Being too heavy for many bridges, Tiger Is initially were designed to ford rivers up to 4 meters deep after a 30-minute set-up time. This feature was rarely (if ever) used and was deleted after the first 495 Tigers were built.

While the Tiger's strengths were its superior gun and thick armor, this resulted in a very large and heavy vehicle—its greatest weaknesses.

Without regular preventive maintenance, the transmission would fail due to the great weight of the machine. A number of Tigers were abandoned or destroyed by their crews after mechanical breakdown or, late in the war, after running out of fuel. Recovery was a constant problem as it required two, and sometimes three, of the valuable Famo recovery halftracks to tow it. Even though it was forbidden by regulations due to the risk of overheating and engine breakdown, Tigers were often used to tow other Tigers. The tracks also had a tendency to override the rear

sprocket, resulting in immobilization. If a track overrode and jammed, two Tigers were normally needed to tow the tank. The jammed track was also a big problem itself, since due to high tension, it was often impossible to split the track by removing the track pins. The track sometimes had to be blown apart with a small explosive charge. The interleaved/overlapping road wheels could also be clogged with mud, ice, or debris causing the vehicle to throw a track or be frozen in place.

Organizationally, Tigers were usually employed in separate heavy tank battalions under army command. These battalions would be deployed to critical sectors, either for breakthrough operations or, more typically, counter-attacks. There were ten such battalions fielded. Initially, each had only 20 Tigers. Later this was increased to 45. The *Grossdeutschland* Division also had its own Tiger Company which was increased to a complete Battalion in the summer of 1943. Other favored divisions, such as the 1st SS *Leibstandarte* Adolf Hitler, 2nd SS *Das Reich*, and 3rd SS *Totenkopf* Panzergrenadier Divisions had a Tiger company in their tank regiments. *Totenkopf* retained its Tiger I company through the entire war but the 1st and 2nd SS had their Tiger companies incorporated into the 101st SS Tiger Battalion, which was part of 1st SS Panzer Corps.

The Tiger was originally designed to be an offensive breakthrough weapon, but by the time it went into action, the military situation had changed dramatically, and its main use was on the defensive, as a mobile anti-tank and infantry gun support weapon. Tactically, this also meant moving the Tiger units constantly to parry breakthroughs, causing excessive mechanical wear. As a result, there were few instances where a Tiger battalion went into combat at full strength.

As with many new weapons systems, there were some initial teething troubles. But these were soon worked out, crews learned how to operate the vehicles effectively, and Tiger tactics were developed. By the end of 1942, Tiger formations had been deployed to Russia, Africa, and Italy where they built an impressive combat record and inspired fear in their enemies. But by the summer of 1944, Tiger I was nearing its swansong, and the defensive battles of that period were the last time it was used in significant numbers as it was increasingly replaced by the even more complex Tiger II. Still, it soldiered on to the end of the war—maybe about 30 survived to surrender in May, 1945. In the final analysis, despite the disproportionate damage done by the Tiger to enemy armor, Russian and Allied numerical superiority, offensive determination, and improved tanks such as Firefly, the IS tanks, and eventually the Pershing, wore down Germany's ability to resist. For an excellent combat history of the Tiger tank, I recommend Wolfgang Schneider's "Tigers in Combat", volumes I and II. This work also details when tanks were received, marking used by the units, and tactical numbers assigned to the tanks. The "Tiger I Information Center" website also has brief operational histories of each unit.

The Tiger had two sets of tracks—wide combat tracks and narrower transport tracks. Mounting the transport tracks also required removing the outer wheels. A trained crew could complete the process in about 30 minutes. Here Tigers are being transported on specially-designed flatcars that could bear their weight. Note the transport tracks are mounted and the removed wheels are stacked behind the tanks.

Contrary to regulations, tanks were sometimes transported with their combat tracks in place. Note how the tanks overhand the sides of the flatcar. This was only done if the train would have sufficient clearance throughout its route.

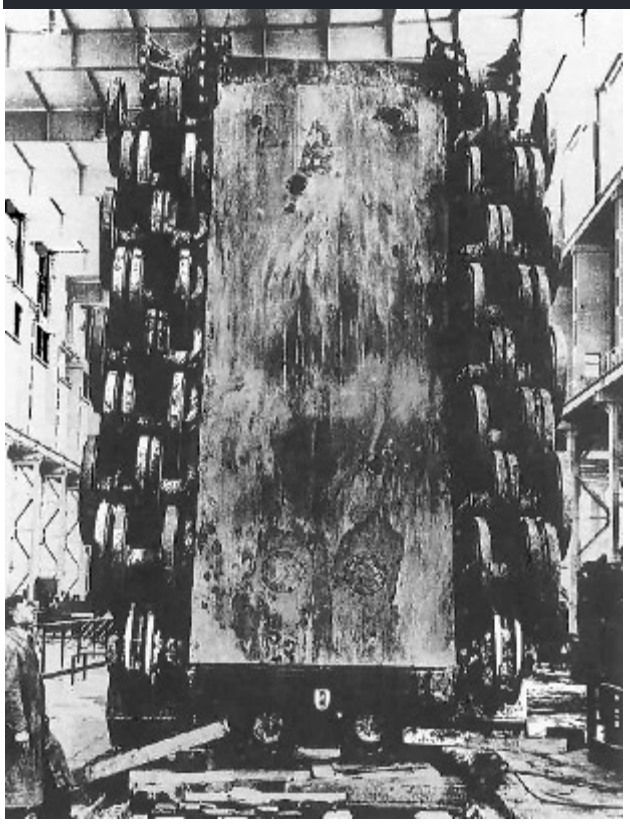
Tiger 1 (Early Production)

Tiger 312 from Schwere Tiger Abteilung (s.Pz.Abt.) 502 identified by the size and location of the tactical numbers on both the turret and hull. The number was also carried on the rear of the turret bin. Also indicative of this unit is the size and location of the Balkankreuz.

By the way, this photo illustrates the proper track tension—the track just touching the second road wheel.

Of note here are the covers over the exhaust. The top portion is rusted from the heat. The same thing can be seen, in color, by searching for videos of the Bovington Tank Museum's Tiger 131. The Feifel air filters have been removed. The vehicle carries the smoke candles on the turret (the mount is there in this instance, the launchers are not) and the S-Mine dischargers on the hull. These were deleted in October of 1943 after a new turret with revised cupola and Nahverteidigungswaffe *(close defense system) was adopted. The presence of the close defense system rendered the S-Mine dischargers superfluous. We also see a good bit of shrapnel and/or small arms damage on the exhaust guards and near Feifel air cleaner. These are the later canister type introduced in March, 1943. It appears the damage has stripped away the upper run of pipes to the air cleaners. These were prone to damage and were often removed.*

Tiger 211 of s.Pz.Abt. 503. This vehicle is missing its side mudguards. It carries the later style Feifel filters and lacks the S-Mine dischargers. Otherwise, it appears to be configured as the Tiger in the kit.



Top: A view of the underside of a early or mid production Tiger hull at the assembly factory. The arrangement of the road wheels—24 per side—is clearly visible. Bottom. A Tiger of s.Pz.Abt. 503 in winter whitewash. This was applied in the field and often had a very rough appearance. The markings have not been covered. The vehicle also has a Panzer III stowage bin mounted on the turret and hinged front track guards, indicating it was probably manufactured in November or December of 1942. Thus, the base color under the winter white is probably grey.

Right: The front outer road wheel on this vehicle has been removed. One source states this was sometimes done to prevent this area from becoming a mud or ice trap.

A Tiger of s.Pz.Abt 505 carries the unit's "charging bull" insignia on the driver's front plate. Also clearly visible are the two holes for the gunner's binocular sight in the gun mantlet. The binocular sight was replaced with a monocular sight in March, 1944. The vehicle also has barbed wire strung on the hull sides (and rear as confirmed by other photos of this vehicle) presumably as a deterrent to prevent attacking infantry from mounting the vehicle. For a good study of Tiger unit camouflage and markings, refer to Wolfgang Schneider's excellent study "Tigers in Combat" volumes I and II.

near tank is an initial production tank possibly from about December of 1942. It appears to be painted dark grey. It features the turret stowage bin unique to the early Tigers assigned to s.Pz.Abt 503. The side track guards are missing. The tank in front features the later style air filters so was probably made after March, 1943. As is often seen all vehicles have their tow cables already attached to the clevises to save time in the event of breakdowns.

This tank is missing two of the outer road wheels—the first and third. The front outer road wheel was sometimes removed to prevent this area from becoming a mud or snow trap.

On this Tiger the side mudguards are missing and the Feifel air filters have been removed. This was fairly common as these were prone to damage. They were discontinued in October, 1943. note the unusual painted camouflage on this vehicle and the fact it does not extend below where the missing mud guards would be. This Tiger is a hybrid—showing the futility of being dogmatic about what features a tank should have. It features the spare track links on the turret, but not the loader's periscope that was adopted about the same time. It also ha s the later, flat, hubs on the drive sprocket

Top: This Tiger, belonging to s.Pz.Abt 503 and commanded by Leutnant Zebel was supposedly hit 252 times by guns or various caliber near Ssemernikovo than then driven for another 60 km!

Middle: A Tiger in winter whitewash. Apparently all the markings have been painted over. The log carried along the side to assist with getting the vehicle unbogged if it gets stuck in soft ground.

Bottom: A late-production Tiger (note the steel-rimmed road wheels) from s.Pz.Abt 505. During the winter of 1943/44 the unit changed its insignia to a large and detailed charging knight on horseback, visible here on the forward portion of the turret side. Due to the size of this marking, the tactical number was moved to the gun barrel mantlet tube in black with a white outline (although this example appears to be just black). While it is a modeling fad to paint gun barrels black, this one appears to actually be black. At the factory, gun tubes were painted in a heat-resistant black lacquer. They were usually repainted to match the tank. Note that gun barrels were not painted in red oxide primer as is sometimes depicted on models.

Tiger 1 (Early Production)

A mid-production machine. Note the lower commander's cupola with pivoting hatch and the Zimmerit anti-magnetic mine coating.

As indicated by the blur of the tracks and apparent dust behind, this vehicle is in motion. Note the commander and loader are in their hatches. The driver is not. Regardless of what modelers often do, the driver could not drive with his head out of the hatch—the seat and the hatch are not in line with each other. As can be seen, the hatch is over the track sponson. The driver sat behind the visor. Note the radio operator is sitting sideways in his hatch—he is sitting on the edge of the sponson and not on his seat

A late production vehicle as clearly indicated by both the Zimmerit and the resilient steel road wheels. As these wheels could bear more weight, the number of wheels per axle was reduced from three to two. The vehicle still has the Zimmerit coating—production of the Tiger ceased before Zimmerit was discontinued.

Another late production vehicle. Note the missing side mudguards.

Most of the photos we've seen in this section represent initial or early-production machines. Based on production numbers, these are certainly in the minority. If you are researching mid or late production vehicles, in addition to the sources I've mentioned, image searches on the net can yield hundreds of photos.

The Kit

The boxart for AFV Club's #48002 Tiger I Early Version. Inside the box are four sprues of high-quality green plastic, a photo-etched fret containing screens for the engine deck, a decal sheet, two glue-able vinyl tracks, and an instruction sheet. Although not perfect, it is, without doubt, the finest 1/48th scale kit I have the pleasure to build to date

WHAT IS *NOT* IN THIS REVIEW

What I did not do in my review of this kit was to take detailed measurements of the model's dimensions and angles. While the matter of a millimeter or a degree here or there may be critical to some modelers, I'm quite happy if a model looks correct by simply visually comparing it to good plans. If I have to take minute measurements to find an error, then it's an error not worthy of bothering with. As the old saying goes, "if it looks like a duck, walks like a duck, and quacks like a duck…then it's a duck".

I do not examine references for the purpose of finding flaws in models, but rather to find opportunities for enhanced detailing or missing features that should be present.

Might this model be slightly wrong dimensionally in one place or another? Certainly. Or it may be perfect. I haven't checked. It looks like a Tiger. I cannot spot, with the unaided naked eye, anything that would make me question it.

Also, those who follow my work have likely noticed that I rarely use aftermarket photo-etch. There is plenty available for this kit, but I used only those parts included with the model. It is my belief that, generally, photo-etch looks great on an unpainted model, but once a kit is painted and weathered it offers little—if any— improvement over the kit's plastic parts. There are exceptions (screens, for example, and RB's barrel and Hauler's photo-etch transform Tamiya's .50 caliber machinegun from an almost shapeless lump-o-plastic to a finely detailed masterpiece).

The AFV Club 1/48th scale Tigers were initially issued by the Taiwanese company "Skybow". The plastic parts are identical, but AFV Club's kits include photo-etched engine deck screen and different decals. Out-of-production, AFV Club kits are still readily available, with many shops still having stocks for about $29.

The standard of molding, engineering, fit, and detail is superb. Clean-up of parts is easy. There is no flash and minimal mold seams and ejector pin marks. Attention to detail throughout, including weld seams, bolt heads, and the texture on the rolled steel armor is outstanding – the designers did their research well (the armor texture is exquisite!). Details are complete and correct for an early-production Tiger.

The plastic hull tub has fixed axles, and the road wheels attach via small screws. Don't tighten these too much as you can easily strip the tread in the soft plastic axle. The purpose of the screws is to allow the wheels to turn. They can be glued in place and the screws not used. That is the route I will likely take. Tracks are 'rubber band' type. They are good, but to my eye don't match the level of detail elsewhere in the kit. AFV Club provides individual link tracks separately. Fruilmodel also markets metal individual link tracks and resin tracks can be had from OKB.

Upper hull details are also superb. The headlight mounts even include the wiring. S-Mine dischargers are included. Crew hatches are separate parts and feature excellent internal details with only a few shallow ejector pin marks to deal with. Periscope mounts are present, but open - you will have to add the periscopes yourself. (Why is it that 1/48th scale model companies seem to be unable to provide periscopes!?) All the tools are molded separately with fine tool clips included. The tow cables on the hull top and side are extremely finely molded and well detailed, but they are fine, so care is needed removing them from the sprues and when handling them. The side mudguards are in one piece for each side with fine bolt head details along the hull join. Front and rear mudguards are molded as part of the upper hull.

The single piece turret is correctly asymmetrical with excellent weld beads and very subtle casting texture on the side walls. Again, detail is correct and well rendered. The barrel is molded in one single piece to eliminate the join seam but still manages to represent the large muzzle brake very well.

Grab handles are included as separate, very fine parts, rather than just molded nubs as we usually see in Tamiya kits. The side mounted smoke grenade launchers are also molded have the ends slightly hollowed out.

There is no interior detail, so if hatches are open, the modeler should take care that the viewer can't see into the inside. The screens on the engine deck should minimize this, but adding a "firewall" and painting the interior black will help. The

The Kit

hatches should probably only be open if blocked by figures or if an interior – even a rudimentary one – is added.

The original Skybow kit decals had reversed markings. These were different from normal water slide decals in that after they were wet, the were pressed onto the model face down before carefully removing the backing sheet. The AFV Club kit (thankfully) includes normal decals.

Instructions are adequate but not up to Tamiya's standard. There are issues in translating the instruction sheet into English – the grammar in the historical information section is quite bad. However, despite any shortcomings it may have, I think I can say with confidence that this AFV Club Tiger is the finest 1/48th scale kit I have ever seen.

Top: The main turret casting. Take note of the fine surface texture depicting the rolled armor.

Bottom: The rubber band track. This actually has good detail, and the joint is engineered in such a way as to be invisible. The tracks are also glueable. If you like rubber band tracks, you will like these. If you don't like rubber band tracks, you won't.

I had an opportunity to examine both the AFV Club and Tamiya Early Production Tiger kits. Both are good models. Those familiar with my work know that I am unashamedly a fan of Tamiya. However, when you pick nits, it soon becomes apparent that the AFV Club kit is better. In fact, there are enough of these nits that the AFV Club kit is noticeably better in most regards—and at a cheaper price: $29 for AFV Club vs. $37 for Tamiya! (at least cheaper until you factor in aftermarket tracks for the AFV Club). Although both kits depict early Tigers, some features (such as the Feifel air filters) place the Tamiya kit a month or two later in production than the AFV Club offering.

Kit engineering is similar as one would expect for models of the same vehicle in the same scale. Still, there are differences, but both kits build easily and feature good fit. Call this one a tie.

Tamiya has a die-cast lower hull that is devoid of most details. Detail on the plastic AFV Club parts is complete. Tamiya wheels and sprockets are detailed only on their outer faces, while the AFV Club offerings are well detailed all around. I like the weight of the Tamiya hull, and, in fairness, most of these details won't be seen, but from a modeling/detail/versatility perspective, the AFV Club kit wins handily here.

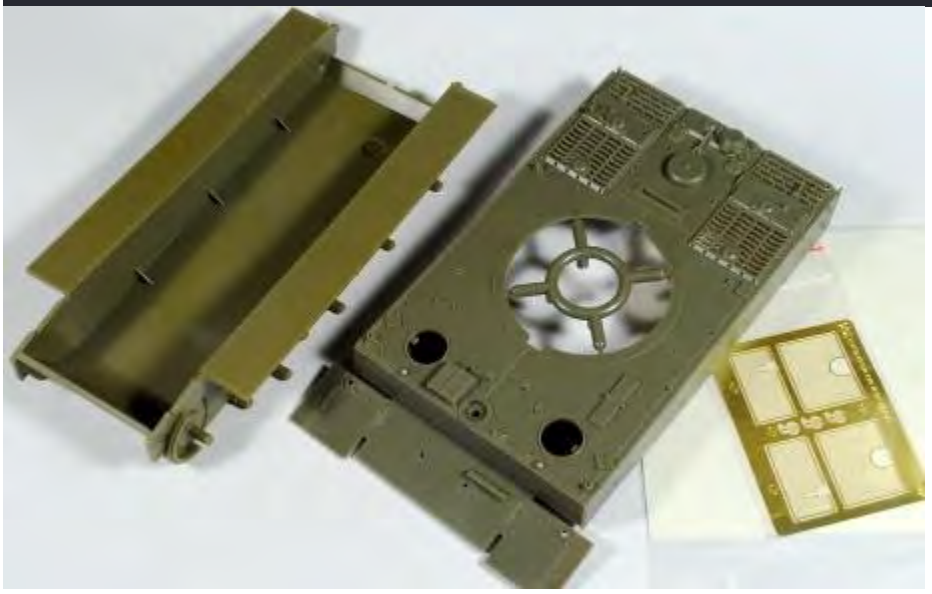
Many smaller details throughout the model are rendered better on the Skybow/AFV Club kit. Some (such as the wiring on the headlight mounts and the S-Mine dischargers) are lacking entirely on the Tamiya kit. This extra detail comes at the cost of a bit more complexity and a somewhat higher parts count in applicable areas. Still, this extra "cost" is not significant and the clear winner in the fine detail department is AFV Club.

The Tamiya armor is smooth while the AFV Club kit features amazing surface texture. AFV Club's kit also features finely rendered weld seams. Two points for AFV Club!

The AFV Club kit features separately molded tools with nice tool clips. Most of these parts on the Tamiya kit are molded in place. Sorry, this is no longer the 1970s. Win for AFV Club.

The wheels on the AFV Club kit are attached with small screws while those on the Tamiya kit are simply glued in place. Both work, just make sure you don't strip the threads on the AFV Club kit and end up gluing them anyway. The Tamiya drive sprockets and idlers are held in place by poly caps while they are glued in place on the AFV Club kit - not much difference, but I recommend not gluing the AFV Club drive sprockets until after fitting the track. I give Tamiya the nod here, but it's really a matter of personal preference.

The AFV Club tracks are 'rubber band' type that are well detailed, glue-able, and are quite easy to work with. Still, in my opinion the injection molded link and length track on the Tamiya kits are better and still quite easy to install. AFV Club offers individual link tracks separately and aftermarket alternatives are available, but these serve to make the AFV Club kit more expensive than the Tamiya. AFV Club's tracks are about $23, Fruilmodel tracks retail at nearly $40 a set with the OKB resin offerings are about $16. While I didn't



Left: The two-piece upper hull. Photo-etch is provided for the louver screens. Below left: Some extra parts of included. Here, we see sprue B for both the late model (attached to the other sprue) and early model (added to the kit) Tigers. This allows you to add the gunner's periscope to the turret roof to depict a slightly later vehicle.

Top right: The wheels attach with small screws. The wheels are also well detailed both front and rear. Bottom right: A close-up showing detail on the inside of the hatches.

test it, you may be able to fit the Tamiya link/length track on the AFV Club kit – the drive sprockets looked very similar if not identical in terms of size and shape. Tamiya wins the track battle unless you prefer rubber band type tracks.

AFV Club's kit includes photo-etched screens for the engine deck (Skybow kits did not). Tamiya does NOT include these and the modeler will have to either ignore it, make their own, or turn to the aftermarket. This would probably serve to even things out, cost wise, to the aftermarket tracks for the AFV Club kit. No competition here – the win belongs to AFV Club as the only game in town.

Tamiya has far better, clearer, and well laid-out instructions. Hands-down Tamiya wins this category.

In the final analysis, "you pays your money, and you takes your choice". You will get a somewhat better detailed, slightly more accurate kit from AFV Club. You will get an adequate, though perhaps simpler, kit from Tamiya. Skybow/AFV Club really upped the game with this release!

The good news about all the choice (Tamiya has three Tigers—initial, early, and late while Skybow/AFV Club have two—early and late) is...all the choice! With a little kitbashing—mixing and matching features of the various models—supported by assistance from the aftermarket, you can quite literally model any Tiger tank to ever roll off the assembly line!

SELECTING A TANK TO MODEL

I often model vehicles representative of the type rather than recreate a specific vehicle. In instances where thousands were used in large numbers of units this works without affecting accuracy as most specimens aren't well documented. There is nothing wrong with taking this approach with a Tiger—it's your model, do what you want. However, due to the relatively small numbers produced and the few units equipped with them, there is really no such thing as a "generic" Tiger. Photos of many of the vehicles exist. A tank's features make it fairly easy to determine when it was produced. We have histories of Tiger units including their colors, emblems, and markings (including what tactical numbers their tanks carried). We also know when they received their tanks—initial and replacement—and can compare this with production data to determine what production features the tanks likely had. In short, we can determine for any tanks the features it carried, colors it wore, the tactical numbers along with their color and location, and other markings present. This information is readily available online and in books such as Schneider's "Tigers in Combat".

But there is room for personal preference, and it is still possible to model a somewhat generic vehicle as long as we stay within the parameters set forth in the above paragraph. Evidence for a particular tank is not always conclusive as to the exact features it had. And while we have photos of many Tigers, we don't have photos of all—and no complete photographic record of any single Tiger exists. Photos are a snapshot of the vehicle at a particular time and they usually only show one or two angles of the vehicle. They may not accurately depict how the vehicle looked earlier or later. Early tanks were often upgraded with newer parts—especially during maintenance (field or depot). An individual tank did not necessarily carry the same tactical number through its entire existence—and (due to replacement, etc.) more than one tank in a unit may have carried any particular tactical number even though only one at a time would have worn it. This means photos of the same tactical number at different periods are not necessarily the same tank. Vehicles could have been repainted several times during their lifespan, and colors can be difficult to interpret in black and white photos. Still, photos are our best reference.

When it comes to selecting a vehicle to depict (units, colors, marking options etc.), the AFV Club kit—as is without modification—represents a vehicle likely built from sometime in February until early-mid March of 1943. To determine Tiger units with which this vehicle may have served, we can research which units received Tigers from the end of February to, say, late March or even April of 1943. This rules out those units formed later in the year or in 1944. In other words, s.Pz.Abt 506-511 were formed too late to likely be equipped with such a vehicle. We can also rule out s.Pz.Abt 501. All of the Tigers it took to Tunisia were likely built in December 1942 or earlier. The other battalions, 502-505, could conceivably have had this tank. So too could the heavy Panzer companies of SS Panzer Divisions 1, 2, 3, and the Gross Deutschland's Tiger company. Of course, with only a minimal bit of modification, this kit can be built to depict a vehicle as early as December 1942 and as late as March/April 1943. With kitbashing or more in-depth conversion, nearly anything goes… Keep in mind that changes were introduced on the Tiger month by month and sometimes tank by tank, so the number of tanks with all the features in the kit are probably quite few.

If modeling a well documented vehicle, it is fairly easy to get most of the details correct. If building a vehicle not so well documented or for which no photos exist, we have a bit more freedom, but we can still remain within the known parameters of the assigned tanks' production features and the style and colors of the unit's camouflage, tactical numbers, and other markings.

Here we see Tiger #334 of s.Pz.Abt 503. Many photos of this vehicle can be found. The tank has damage to the front and side mudguards, is missing the front outer road wheel on the visible side, carries stowage on the outside of the turret bin, and has one tow cable already hooked to the tow clevis. With suitable decals, the AFV Club Early Tiger kit can be used to model this tank with minimal (if any) changes. Suitable tactical numbers for this unit during the Kursk Offensive would be:

***HQ**: I,II, and III*

1st Company: *(HQ) 100, 101*
(1st Platoon) 111, 112, 113, 114
(2nd Platoon) 121, 122, 123, 124
(3rd Platoon): 131, 132, 133, 134

2nd Company: *200, 201, 211, 212, 213, 214, 221, 222, 223, 224, 231, 232, 233, 234*

3rd Company: *As above, replace the initial "2" with a "3"*

Photos of several of these vehicles exist. Not all have features matching the model (several featured a turret stowage bin unique to early tanks of this unit). Tiger "122" - which also is a close match to the kit—is one of the decal options included.

Also perhaps of interest to some is that fact that this kit is very good match for the features present on the Bovington Tank Museum's "Tiger 131".

COMPARING KIT DECAL OPTIONS WITH THE TANKS THEY REPRESENT

Given the information presented thus far, let's compare the decal options included in the AFV Club kit with the actual tanks they represent.

OPTION A: TIGER "S33", 2 SS PZ DIV., AUTUMN 1943: It seems there were two Tigers assigned to this unit that carried that tactical number, and the kit represents the earlier vehicle (which makes the "Autumn 43" date too late). The kit is close to being correct for this vehicle. This unit cut off the smoke grenade launchers in May, leaving only tabs remaining on the vehicle. Some online sources state the kit's turret stowage bin and gun mantlet are the wrong style for this tank, but I find the evidence inconclusive. It appears to me to be a fairly good match.

OPTION B: TIGER "143", S.PZ.ABT. 505, KURSK, JULY 1943: This unit did have tanks that potentially matched kit features well. Based on the few available photos, this tank is likely one of them. It is possible this tank carried the type of gun mantlet with reinforcement around the gunsight holes. The kit's mantlet is the flat type. Still, this marking option is a very close match.

OPTION C: TIGER "122", S.PZ.ABT. 503, JULY 1943: Photos of this vehicle can be seen on the next page. All visible details in these photos appear correct. It did have the reinforced gun mantlet. Still, it is a very close match to the kit.

OPTON D: TIGER "724", 10TH PZ DIV, TUNISIA: Several photos of this vehicle can be found, and, to my eye, it's a poor fit for the kit. It would better match Tamiya's "Initial Production" model. Several details appear different, such as the front and side mudguards, front towing shackles, exhaust guards among others. It originally served with s.Pz.Abt. 501 and carried the tactical number "112".

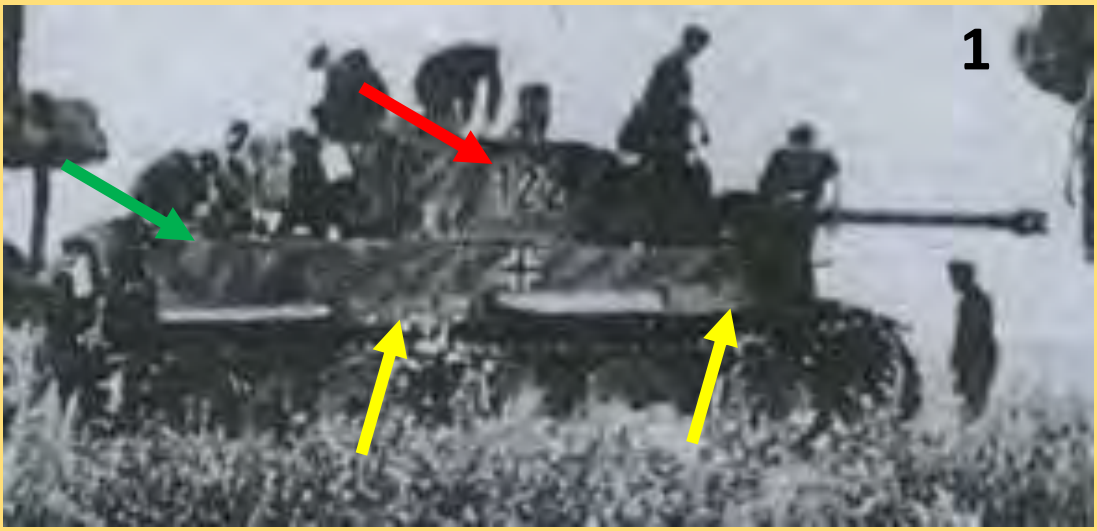
OPTION E: TIGER "I", S.PZ.ABT 503, KURSK: (Right) Over time, this unit had at least two tanks that carried this number. The first was made in December, 1942, and does not match the kit details. The other one is known only from this photo and appears to be a match (although so little of the tank is visible, it's inconclusive). It is clear that the tank carries the unit's two crosses on the rear of the turret stowage bin which is not so depicted in the kit. Of note is the fact this is a command vehicle and as such carries additional radios, three antennas and some other minor detail changes. The kit does not include parts for a command vehicle.

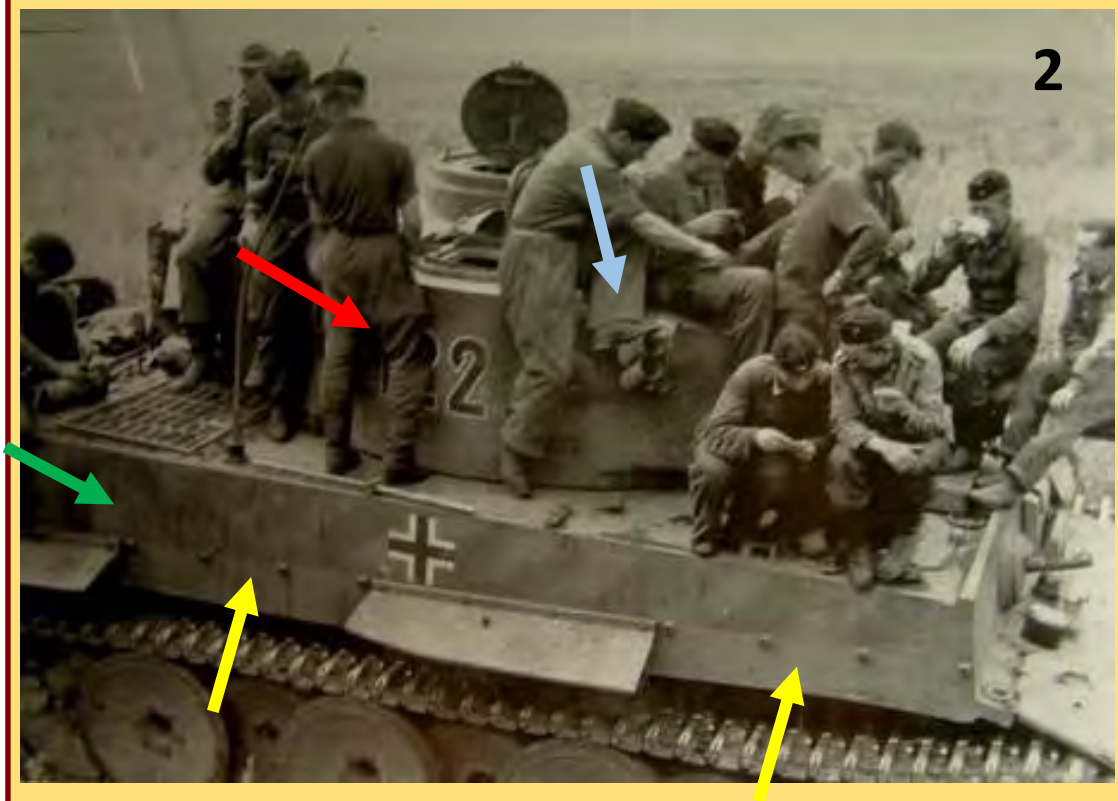
So, in short, not all marking options are correct, and none may be exactly correct. And the kit can be used for some vehicles assigned to s.Pz.Abt 502-505, possibly some of the SS units, and Grossdeutchland if appropriate decals can be sourced.

Tiger 1 (Early Production)

TIGER 122, s.Pz.Abt. 503, OPERATION CITADELLE

This is one of the marking options included in the kit, and, in most respects, is quite close to the kit's features. Several purported photos of this vehicle exist and can be found on the "Tiger in Focus" web forum found at ***www.tiif.de/*** Although a German forum, most of the posts are in English. The site houses an amazing collection of photos of Tiger tanks. Many Tigers of this battalion (at least 9) featured a style of turret stowage unique to the unit (a photo can be seen on page 14). This tank does not appear to be one of them. According to Schneider, the tanks in this unit were repainted in the Spring of 1943 in a "strange mixture of dark yellow-olive-green". Many of the tanks had been grey prior. I may be wrong, but I chose to interpret this as olive green camouflage over a dark yellow base color—although there is nothing "strange" about this. Newer replacements, of which this tank is likely one, would have arrived in factory dark yellow with camouflage painting done by unit maintenance of by the crew. Tactical numbers were black with white outlines (which often had another thin black outline around the white outline). For several months, the battalion had six Balkenkreuze on each tank—each turret side, each hull side, and one on each side of the tactical number on the rear stowage bin (this vehicle does not seem to carry those). There was some variation, so photos are the best reference when modeling a specific tank.





These photos are all identified on the "Tiger in Focus" forum as Tiger 122 of the 503 s.Pz.Abt. (They have other photos of this vehicle as well, but these shown here are representative). I agree they are the same vehicle. Let's try to confirm by comparing areas shown in multiple photos.

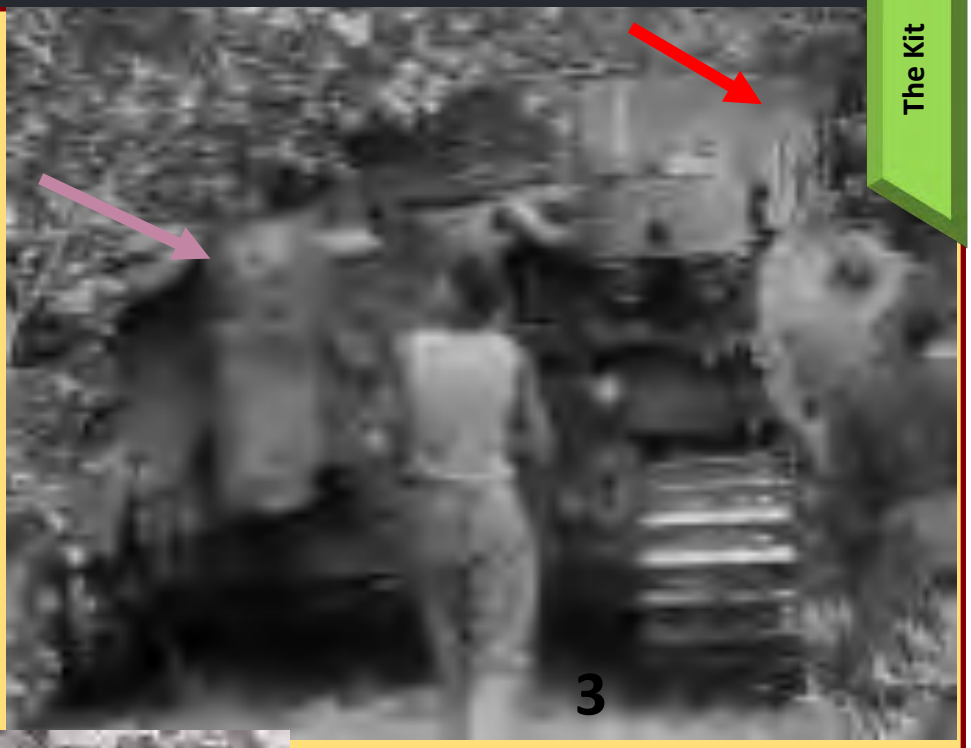
The biggest feature, of course, is the tactical number which can be seen in several of the photos (red arrows). Other visible markings are consistent throughout as well.

Backing this up are similarities in the camouflage (green arrows). At this stage in the war, camouflage was applied in the field and was usually unique to specific vehicles.

We can also compare visible damage, and this vehicle gives us plenty of opportunity. Missing and damaged mudguards (yellow arrows) seem consistent, even though this is something that can easily change over time as more damage is done or repairs are made. Where the right side smoke candle dischargers are visible (blue arrows), we can see that the top one is missing. In two of the photos (3 and 4), we can see the exhaust guards. Damage on

these in the form of shrapnel holes and dents/creases, appear identical (lavender arrows). Note that in photo 5, the exhaust guards are missing altogether. The rear mudguards are also identical on photos 4 and 5.

These photos (combined with the others available) show us many aspects and most features of the vehicle. The vehicle is a close match to the parts in the kit with two exceptions. From what I can tell, the vehicle has the reinforced mantlet. The kit features the earlier one, but this is a very easy fix. Or you could replace the part with one from another kit or, as it's a fairly small detail, simply ignore it. As seen in the photo above, the vehicle features the later style Feifel air filters. However, these were often removed and as seen in photos 4 and 5, they were not always present on this



tank. And it is always possible these later filters replaced earlier one that had been damaged or removed!

We can also see in photo 5 that the middle S-Mine discharger on the left side of the vehicle is missing (there were usually three on the left side—front, back, and center, and normally two—front and back—on the right side). In that photo, the 2nd outer road wheel is also gone. Photo 2 clearly shows that the camouflage paint was applied before the mudguards went missing—notice it does not extend underneath where they would be.

I chose to model this vehicle for several reasons. One is that it is compatible with the kit—after a minor change to the mantlet and removing the air filters. I also like the fact it is camouflaged rather than plain dark yellow, and I like the yellow/green combination. I am also attracted by the fact this tank has seen hard action as evidenced by missing/damaged mudguards, damaged exhaust guards, a missing smoke candle launcher, and a missing road wheel. I usually prefer more, rather than less, weathering.

So, for all these reasons, this tank is thus a good canvas for my preferences and methods, and will make an attractive mode when complete—a model both representative of the type and an accurate representation of an actual vehicle.

The Kit

VERLINDEN 1/48 TIGER I REAR COMPARTMENT (#2267)

There are few options for creating the interior of our Tiger I. For the fighting compartment there is, sadly, really no option other than scratch-building. The old Bandai kit included rudiments of an interior, but it's very spare and the parts are poorly detailed. The good new is that unless you open up the hull or do a cutaway model, not much can be seen through the hatches.

The AFV Club Tigers include no detail inside the hull and all engine access hatches are molded closed. If the inside is painted black (especially if a "firewall" is added at the rear of the fighting compartment) with the louvers and screens on the rear deck, nothing will be visible in the rear hull. If, however, you chose to open any of these panels, or if any of the screens are left off, then at least portions of the rear compartments need to be modeled. Here the aftermarket helps us out.

There are several options for modeling the engine compartment. Both Verlinden (now out of production) and CMK issued engines for the Tiger. The CMK engine is the early engine (HL210 P45) while Verlinden's is the later engine (HL230 P45). Verlinden also makes a set that includes the engine, fuel tanks, radiators, and cooling fans (part #2267). This is the set I selected. While it has the later engine, the main *visible* difference is the number of air cleaners, something fairly easy to modify. There are some other differences, but most of these will not be visible inside the engine compartment.

The kit is well molded in cream colored resin. Detail is quite good, and removal of parts from the mold casting blocks is quite easy. No instructions are included, so assembly can be very confusing and tricky. Good CAD drawings of the engine can be found on the "Tiger I Information Center" website which proved very helpful.

The model is clearly designed to be used in a Tiger with the rear compartment completely opened up and the engine removed. If displayed in this manner, fit is excellent. However, it is not simply a drop-in fit as the modeler has to cut the AFV Club upper hull apart to open it up—the conversion kit does not contain a new upper hull. Nor does the kit include the various engine deck hatches and grates; these must be salvaged from the AFV Club kit.

The various sub-assemblies fit well within themselves—the engine fits well together, as do the fan/radiator assemblies and the various compartment wall and floor parts. However, when these sub-assemblies are fitted together inside the hull there are some issues. For example, many of the engine components below the level of the exhaust manifolds foul the engine compartment walls. In reality, as nothing below the manifolds is visible with the engine in place, all these parts could be left off. Also, if the tank's rear deck is installed the upper hull doesn't mate properly with the lower hull.

We will further examine these challenges, and how I dealt with them, in the section on construction.

The Verlinden kit includes relatively few pieces. The kit was designed for the Skybow Tigers, but as the plastic is the same in both Skybow and AFV Club there are no issues with design. The parts are detailed enough to allow for display with the engine deck opened up or removed. They would also be more that suitable to provide any shapes visible through closed grills and screens. If the parts are installed in a closed hull, some manipulation is needed to get a good fit.

Although Verlinden is now history (I understand the molds were destroyed and the masters were not sold to any other company) many of their outstanding products are still readily available online—but if there are any you want, buying sooner rather than later would be prudent.

Construction and Detailing

This model can make an excellent kit straight from the box—one that should satisfy most rivet counters (although those suffering from "AMS" - or "Advanced Modeling Syndrome" will still remain hopeless cases…). Most of my alterations to the kit were done to recreate the features and damage of the tank I was depicting, add an interior, and to create a weathered, "lived-in" look.

For all the reasons we've discussed it is quite possible that no two Tiger tanks were ever exactly alike. This presents us with two roads to chose from when modeling the Tiger. It's up to you which you go down. The first road leads us to happiness with the kit and decal options as is and to accept any minor (or major!) errors and build a model that looks like a Tiger tank. For this, the AFV Club Tiger is a very nice kit indeed. Even taking this road, you won't be far off the mark. Be happy with your choice and ignore the "haters". The other road has us strive to create a model representing an actual vehicle. This can require a great deal of research and usually even some guesswork. And you still may not be 100% correct. Since I love research and guesswork (and have an immunity to the "haters"), I chose the latter road with my selection of Tiger "122". The most important thing is to have fun.

Even if "locked-in" to an actual tank, there are still plenty of options. One-Two-Two certainly didn't come pre-battered from the factory, so we can model a new machine with no battle damage if we wish. We can glean from photos that the mudguards were likely damaged and lost before the exhaust guards. The Feifel air cleaners were removed at some point between these occurrences. So we can model any of the "stages of damage" seen in the photos or any reasonable intermediate stages. The only necessary change is converting the early gun mantlet to the style with reinforcement around the gunsight apertures. This change was adopted in December 1942 and at least one photo of Tiger "122" clearly shows it has this type.

Another alteration I made to the kit was the replacement of the adequate rubber-band style tracks with different tracks. There are options here—AFV Club sells an individual link set in plastic, Fruilmodel markets one in metal, and OKB makes resin tracks. There may be other options I am not aware of. The Tamiya tracks can be used. These were designed specifically for the Tamiya vehicle so I do not know if there would be any fit issues, but from what I can tell, the Tamiya tracks at least seem to fit well on the AFV Club drive sprockets.

For the rear compartment, I used the Verlinden kit, suitably modified. The remainder of the interior was largely scratch-built. This focus primarily on basic shapes and forms. Details were only added to these areas visible through open hatches.

Most of the methods used to make the changes and model the damage has been detailed in other builds in my series. This chapter will look how these previously detailed techniques were used for this build.

In order for the Verlinden resin engine compartment floor to fit properly in the hull, the internal brace on each side (marked by the arrow) must be trimmed away.

Working with Resin Parts:

Most kits are made from injection molded plastic. Therefore, many modelers are unsure how to proceed when dealing with resin parts. In this build, I used resin pieces for the figure heads and some of the stowage. Resin offers outstanding detail, but requires different methods. Resin can be cut, sawed, sanded, and drilled. Take care and be safe—and don't breath the dust, it is bad for the lungs.

Parts do not come on parts trees—they are often attached to a large resin casting block that needs removed. Depending on size this can be done by sanding, with a hobby knife, or razor saw. You can also use a motor tool, but take care not to remove too much. Resin is also brittle and can break if handled roughly. Also, the casting block can sometimes cover detail that must be re-sculpted after the block is removed. If small details are nearby, it can be better to cut away the bulk of the casting block with a razor saw, leaving a small amount near the details and then carefully removing this with a hobby knife.

Don't store resin parts in lofts, direct sunlight, or above fireplaces or heating radiators. These areas can become very hot and the resin can warp. The same rule applies to the finished model. If a part is warped, it can often be straightened by applying a bit of heat (dunk it in hot water or use a hair-dryer). Carefully reshape by hand and "fix" the new shape with a dunk in cold water.

Examine the part. In addition to the casting blocks, there may be mold seams lines that must be removed. There may also be tiny pinholes (or larger craters) made by air trapped in the mold. Usually a bit of filler will take care of these.

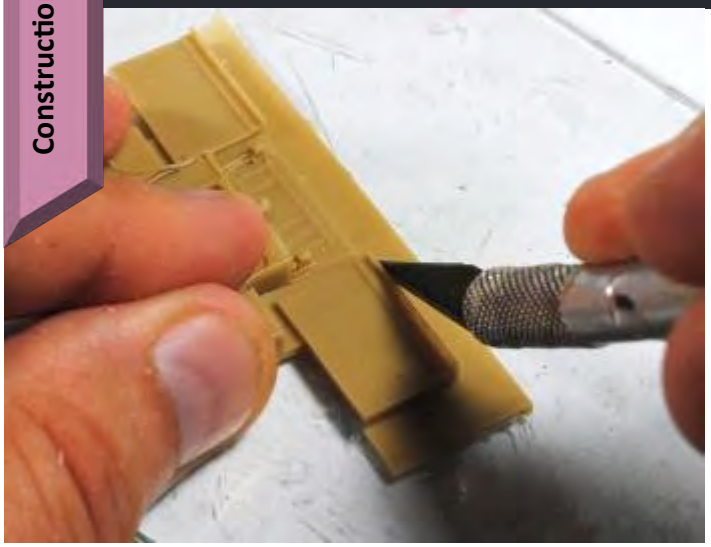
Clean the parts—paint will not adhere well to the mold release agent.

Standard model glue is designed to weld plastic parts together by dissolving the plastic at the mating surface. It is absolutely worthless for resin which it will not dissolve. For resins, use either super glues or, if you need a strong joint (weight bearing/etc.) then use a two-part epoxy. Both of these glues will glue resin to resin, plastic, or metal.

Resin is very versatile and will any accept just about type of paint topcoat. Many paints, however, will not adhere well to bare resin, so use a good primer.

Also be aware that some of the chemicals and solvents we use may attack the resin—if in doubt, do a test on an unneeded piece (the casting blocks are good for this).

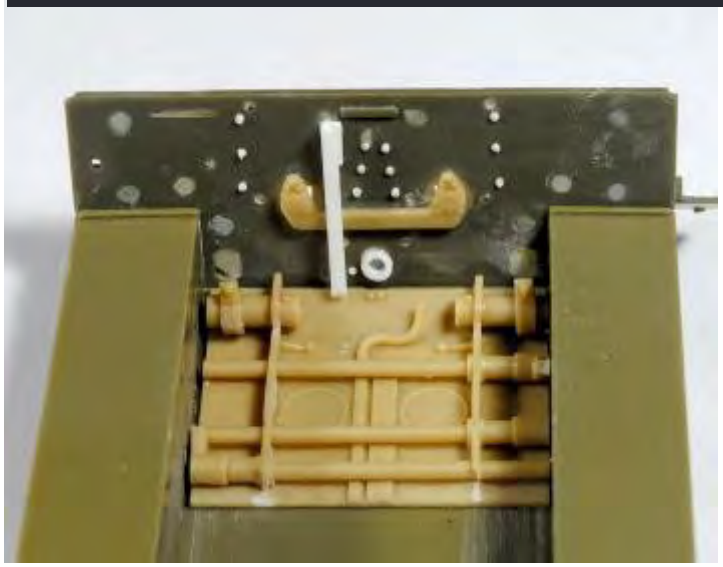
As with any modeling medium, use caution and be safe when working with tools and chemicals.



Top left: Many parts of the Verlinden engine come attached to sheets of resin. These are mostly quite thin, and it's easy to simply cut the parts free with a hobby knife. Top right: Often, the parts have thicker resin mold gates. These can still be cut with a hobby knife, but it takes more work. It is usually sufficient to deeply scribe each side, then snap the excess resin off. Bottom left: The parts can also be cut free with a cutting disk in a Dremel Motor Tool, but this produces a large amount of resin dust which is a harmful irritant. While easy, it makes a dusty mess and you should take precautions not to breath in the dust. Bottom right: Use great care when removing small fragile parts from their resin carriers. They are quite easy break if you are too heavy-handed.

Far left: The inside of the back hull piece of the AFV Club kit has several ejector pin marks, hollow areas, and other molded projections which must be cut and sanded away.

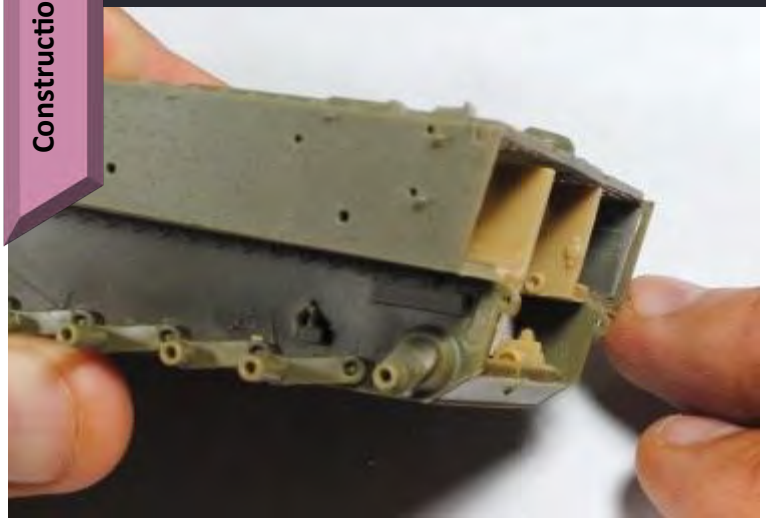
Left: Once these are dealt with, a resin part from the Verlinden kit can be attached. Ensure it lines up with both exhausts—the exhaust manifolds from the engine will connect to these areas.



The Verlinden floor is glued into place. Note that for resin parts, model cement will not work. I use super glue for most parts. If I need a longer working time to adjust fit, then I use five-minute epoxy. Some extra detailing was added using plastic rod and tubing. Little of this will likely be visible on the finished model. Still, I prefer to add detail that may not be seen than to skip detail that turns out to be visible.

Right: The walls of the rear compartment offer good, positive fit. These were glued together next. Constantly test fit the parts with both the hull and each other to ensure correct fit and alignment. In some cases, slight trimming of parts was necessary to ensure a proper fit.

As was needed on the rear hull, the interior of the upper hull had to be somewhat thinned to allow a proper fit over the engine components. To speed this process, I glued a disc of coarse sandpaper to the face of a flat Dremel grinding bit.



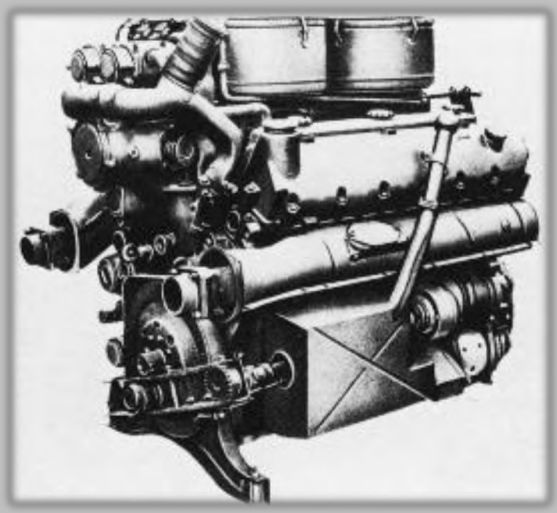
Left: A test fit to make sure the engine compartment bulkheads fit inside the hull.

Below left: The basic engine (minus the air cleaners which must be altered) is made up of only a few parts and goes together quickly and easily. Note the manifolds are different on each side. It would be very easy to get them mixed up. Without instructions, it is vital to study the box art photo to make sure these are attached properly. It helps to test-fit the engine into the hull to make sure the ends of the manifolds join up with the piece installed on the rear of the hull.

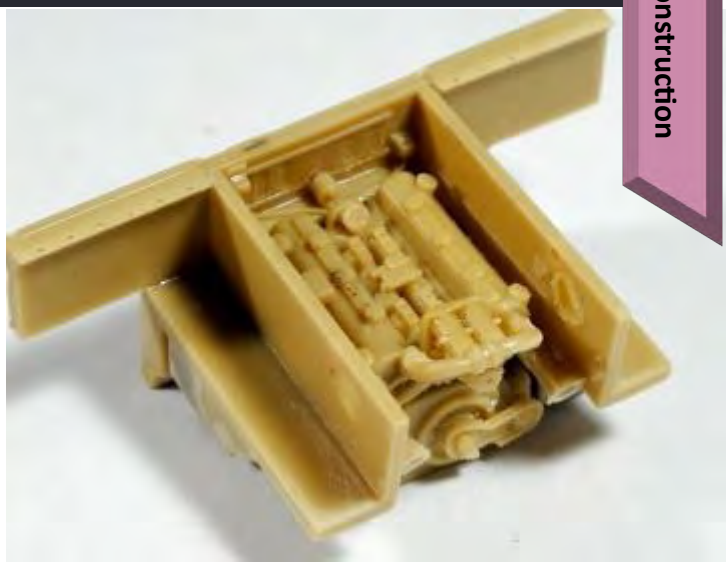
Below: Some of the pieces below the manifolds interfere with fit into the compartment and must be trimmed/sanded. This is no issue as, if the engine is placed in the engine compartment, nothing below the manifolds will be visible anyway.

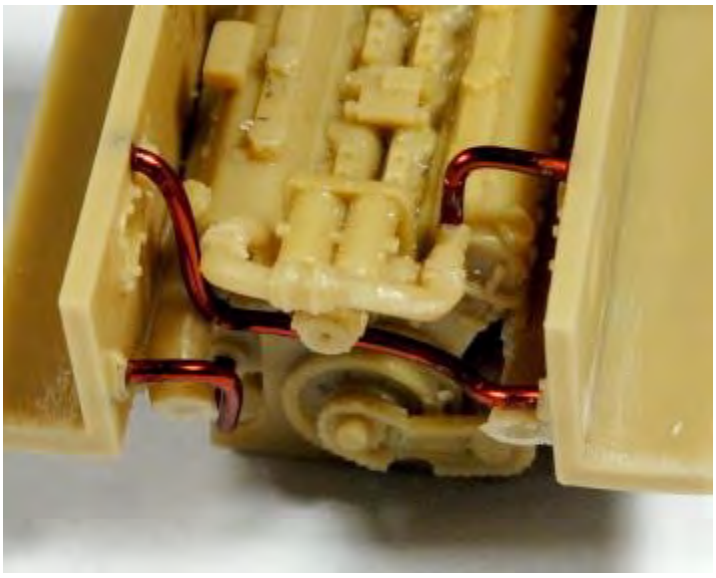
Left: The radiator/fan assemblies go together very easily. In addition to the plumbing attached in the photo, each radiator has a second pipe on the bottom. As these will be completely invisible with the assemblies installed (and would actually interfere with fit) I left them off. However, if you choose to model the piece removed from the vehicle, you would want to attach them. Above: Make sure you have two mirror-image assemblies. It would be very easy to install the piping backwards on one (or both) of the assemblies. Noe the radiators have slightly different caps. Use the box art photo as a guide to get them on the correct sides.

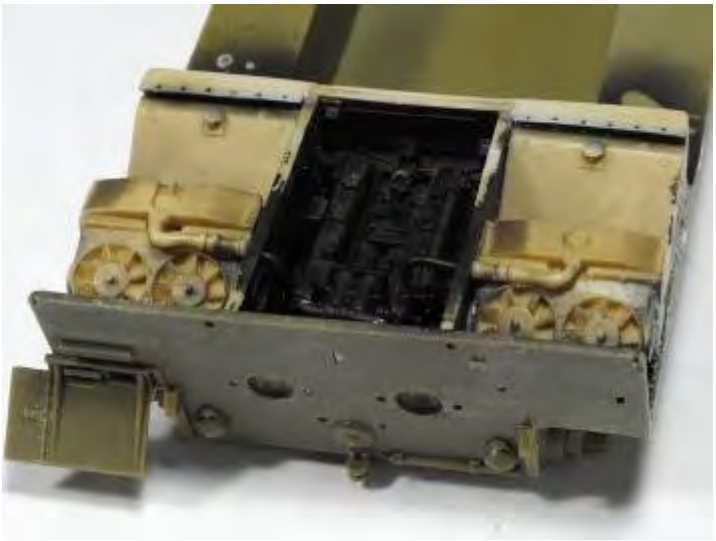
THE REAL THING



The top photo shows the HL210 P45, the engine that equipped the first 250 Tigers made. This would include our cat. The bottom photo is the later HL230 P45 which the tanks made from #251 on where fitted with. The main visible difference is the number of air cleaners on top of the engine—three for the early model and only two for the later.







The engine was glued to the bulkheads. Using the kit-supplied length of wire the additional plumbing connecting the engine to the radiators, was added. This is not shown in the box art picture and there are no included diagrams or instructions. So, you'll either need reference material, or you'll have to make a good guess. The various assemblies were then sprayed from underneath with Black primer to make sure any areas that might be visible but that can't be reached with a brush were in a suitable black deep shadow color. The bits were glued into the lower hull. The only remaining work needed on the engine are the air cleaners which will be addressed later.

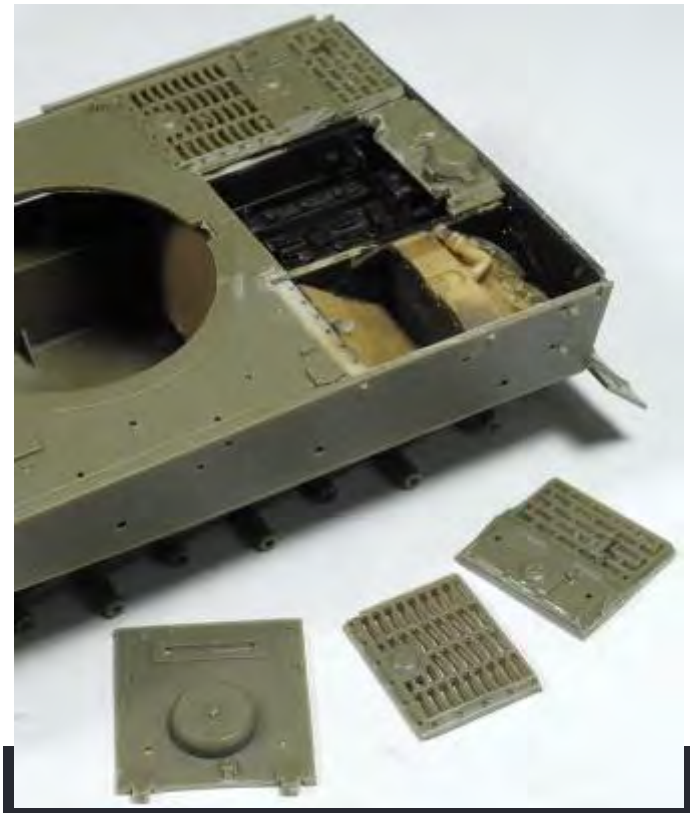
With the engine compartment in place, I turned my attention to those parts of the rear deck that will be open or removed. I started with latch to hold the engine hatch in the open position. This, in reality, is a simple dog latch. It is marked here by an arrow. It was carefully cut away and saved for later use. To avoid losing tiny parts such as this, I usually put them in small zip lock bags and store them with the other kit parts. If lost, no big deal—a new one could be quite easily made.

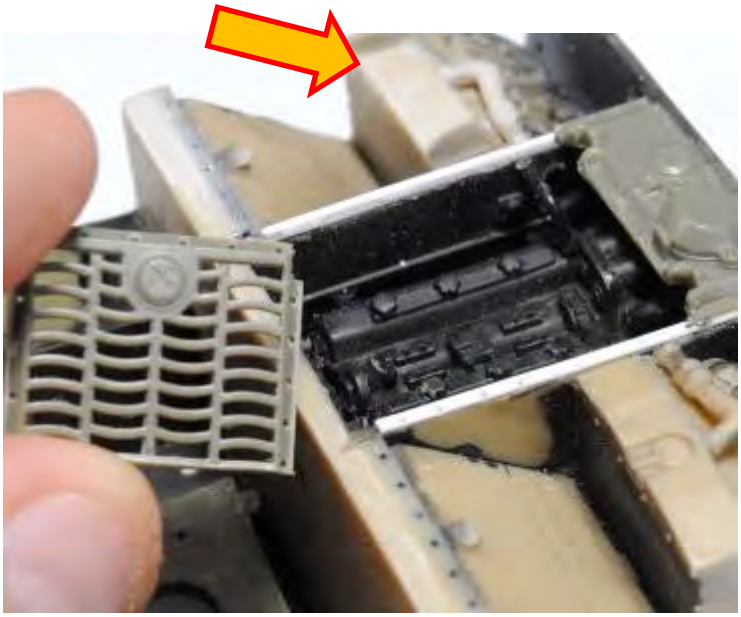
To open the various hatches, I placed the upper hull on a block of wood for support and carefully cut the hatches on their scribed lines using a new, SHARP hobby knife blade.

Below left: After removal, we have separated the engine hatch (which will be re-installed in the open position), and the various left side grates and louvers. These latter parts will be removed from the tank and placed on ground adjacent to it in the final scene.

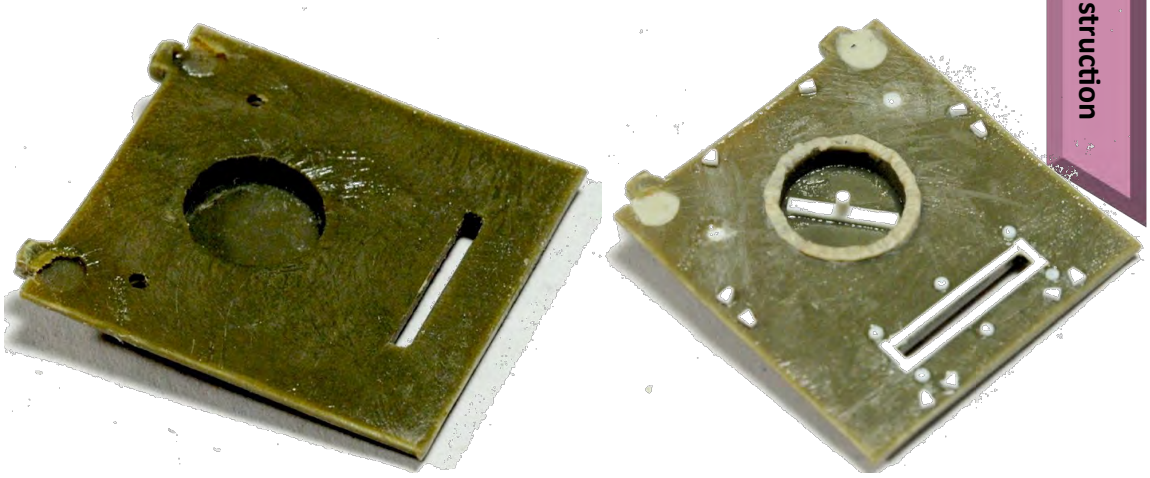
Below right: Some final detailing was done in the engine compartment. This consisted of adding styrene strip with holes drilled to match up with the bolt holes in the removed grates and panels. Finally, the bolts molded into the removed grates and panels were drilled-out.

The grates and panels on the right side of the engine compartment are still in place as seen below left. The top of the radiator interfered with fit of the upper hull, and was sanded down at the point indicated by the arrow. This will not be visible on the finished model.

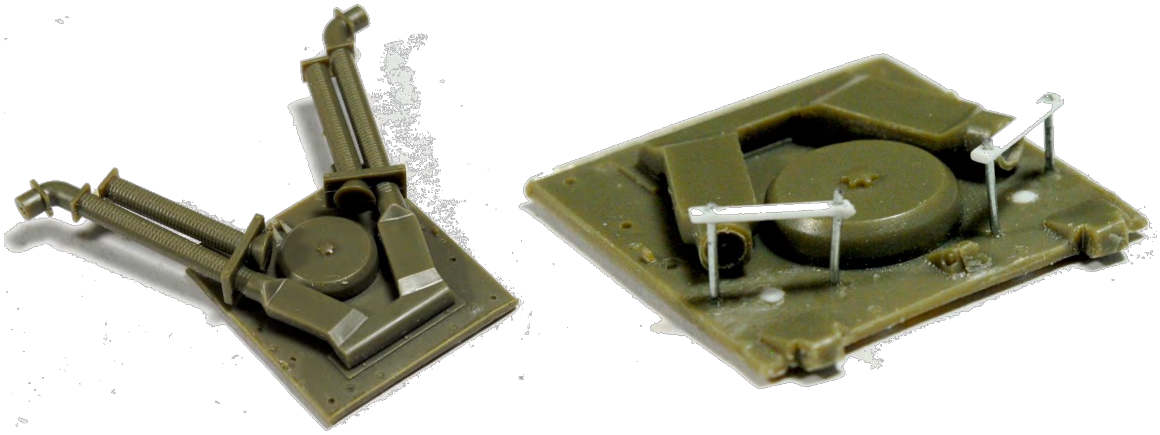




Top: Mold marks on the inside of the engine hatch were removed and details were added using putty, styrene strip, and styrene rod. The triangular latches were cut from lengths of stip.



Bottom: The Feilfel hoses and trunks come molded as one piece. The hoses, with integral mounting brackets, were cut from the trunks, the ends of the trunks hollowed out with a pin drill, and new mounts fashioned from styrene strip and wire. The separate handles are not yet glued to the hatch in this photo.



THE REAL THING

My model features a vehicle that has had the Feifel air cleaners removed. This will leave the mounts. Photos of tanks with the filters removed show the trunking is usually still in place. The photo below right shows this very well (although only temporarily disconnected from the present filters). At left we see the trunking on this vehicle with cleaners removed peaking out from under the turret stowage bin. The photo below left also shows that the screen covering the louvers were not always in place.

A


B


C

2. To use the mold, just take a bit of sprue tree and heat it over a candle until it's molten (but not boiling or bubbly as this will cause a bad casting). 3. Simply mash the molten plastic into the mold and allow it to cool. This will take only a couple seconds. 4. Remove the part and cut/trim off the excess sprue.

MOLD MAKING

There are times when you may need to create molds and cast your own parts (or copies of parts). If copying parts, be aware of copyright laws. You can copy parts you have purchased for you own use, but you cannot sell or even give them away. You can buy, from places like Micro Mark, complete molding and casting sets containing RTV (room temperature vulcanizing) rubber to make molds and casting resins to cast parts, along with the associated mold release agents, mixing cups, etc. While expensive, these work quite well. Instructions are included in the kits or can be found online. For complex parts or parts for which you need two-part molds this is necessary.

However, for this project, I did not have need of anything so sophisticated. Everything I needed to mold were suitable to cast as single-piece castings using open-faced molds. I used "Mold Builder" (A) - a liquid rubber mold-making agent. It is easy to use. Simply fix the part to a flat surface (I use glass) and paint on a layer of the rubber (B). Once this cures, add another layer, and so on until you have built up the mold to the thickness you need. Then, using whatever casting material is suitable for the part, cast what you need (C).

MASH MOLDING

You can use a method I call "Mash Molding" to quickly make simple small parts. It has the advantage of being quicker and cheaper than traditional molding/casting methods and bad casts can simply be remelted and used again. Here we see copies of an MG-34 ammunition bag being made.

1. Using a blob of epoxy putty and plenty of talcum powder to avoid sticking, I make an open-faced mold by pressing the part in the putty. A length of sprue glued to the back of the part makes it easy to handle/remove.

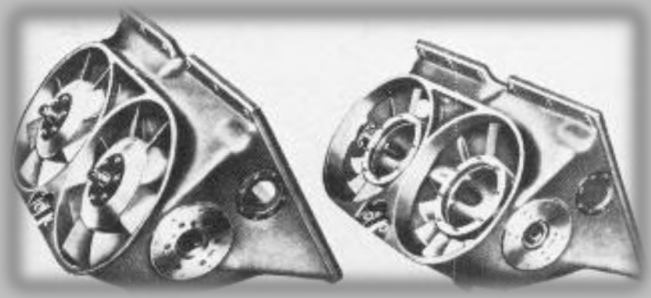
Once the putty cures, you have a rigid open faced mold. The rigidity is needed to ensure the mold doesn't deform when you mash the molten plastic into it. Still, if using Kneadatite, which remains somewhat flexible, parts are easy to remove.

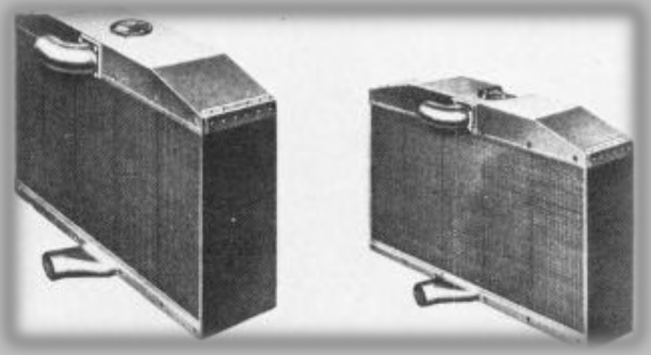

1


2


3


4

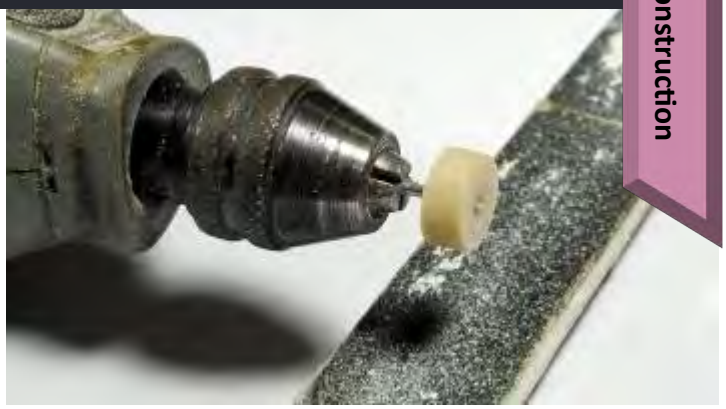


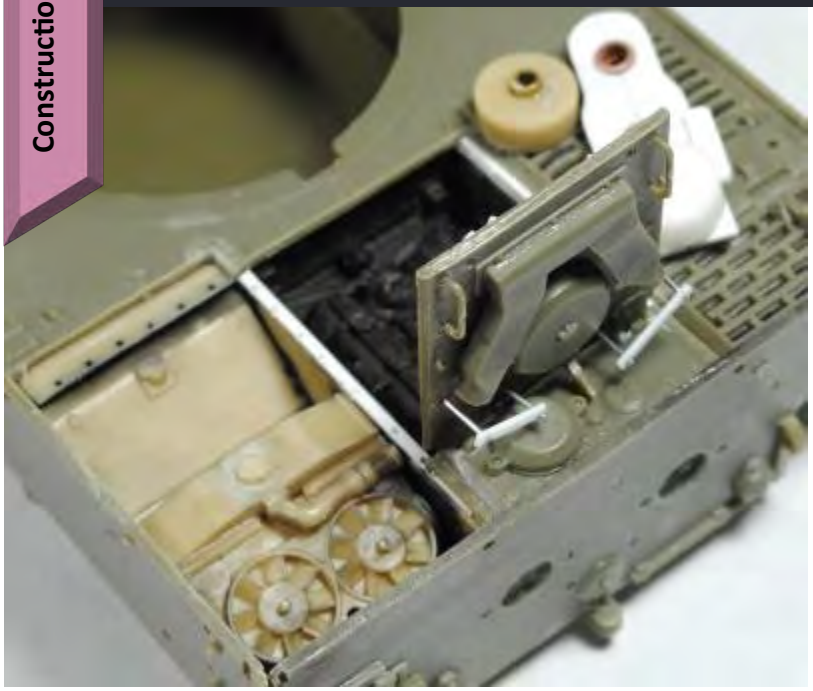


THE REAL THING

Here we see some detail photos of many of the other features that are prominent in my model. At top are the three air filters that feature on the earlier engine. I modeled this area in a disassembled state. The second photo shows the fan assembly, both with the fans in place and removed. At the bottom are the radiators.

A kit air filter was modified to make the earlier type. First, it was drilled and glued to heavy piece of wire. This was chucked in a Dremel tool and used like a lathe to reduce the diameter with a sanding stick. Thickness was reduced by sanding the piece on the same stick. In the third photo we see the result. A mold was made (facing page) and additional filters were cast. The piece they mount onto was fashioned from styrene strip of various sizes, cut and sanded to the appropriate shapes. Attachment points were cut from brass and copper tubing.

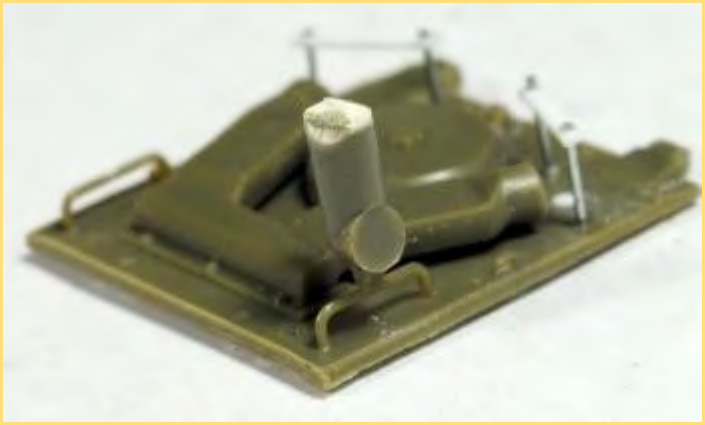




The engine compartment is now complete. The engine hatch, removed grills, and various parts of the air cleaner assembly are left separate for painting.

TIP FOR ATTACHING SMALL PARTS:

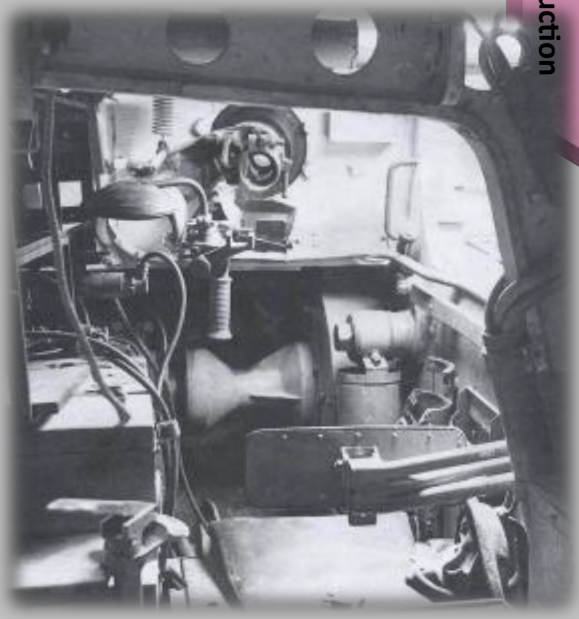
When attaching small, fragile parts to models I often leave the part attached to a piece of the sprue tree as we see on this hatch handle. This helps prevent breakage and loss by giving us an easy way to hold the part. Once glued in place and the glue has cured, it is a simple matter to snip off the bit of sprue tree and then sand away any remaining nub—as has already been done on the opposite side handle.



Work now moved to the interior. I started with the fighting compartment in the hull. Almost none of this will be visible. Little, if any, will be seen through the front hatches, and view through the turret hatches will largely be blocked by the gun breech, crew seats, turret basket, and various other bits and pieces. Still, I would rather err on the side of caution: it would be better to include detail that cannot be seen than to miss detail that should be visible. Still, in this area I added only basic shapes and forms. These were, for the most part, fashioned from bits of Evergreen and Plastruct styrene sheet and other forms. A couple of bits from the scrap box finished the area. The floor of turret basket (made from a piece of Plastruct tread plate) is not glued in place—it is merely sitting in the hull to ensure fit.

THE REAL THING

The front compartment of the Tiger contained the driver on the left and the radio operator/bow machinegunner on the right. Below we see the driver's compartment below and the radio operator's at right. These front positions were separated by the turret compartment by a brace across the width of the fighting compartment. The floor is also lower here than the false floor around the turret basket, with the torsion bars visible in many locations.



The turret featured a complete turret basket. The gunner sat to the left of gun, and the commander was behind and above the gunner. The loader was to the right of the gun. The photo at left shows the turret from the loader's position. Below left is the gunner's position. Below we can see the turret basket to good effect on this assembly line photo. The "Tiger 1 Information Center" website contains great interior diagrams.

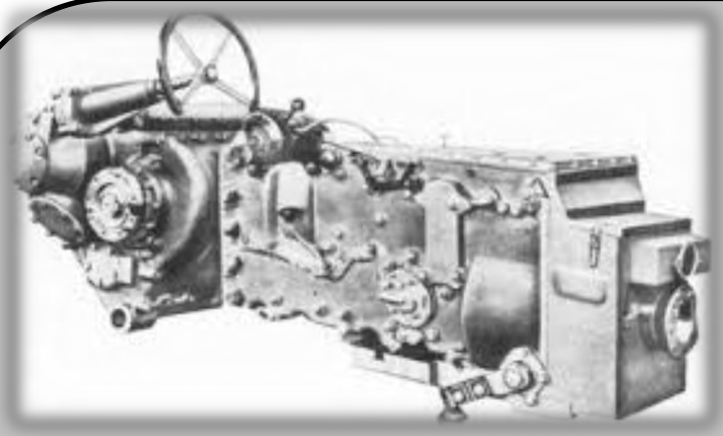
Tiger 1 (Early Production)

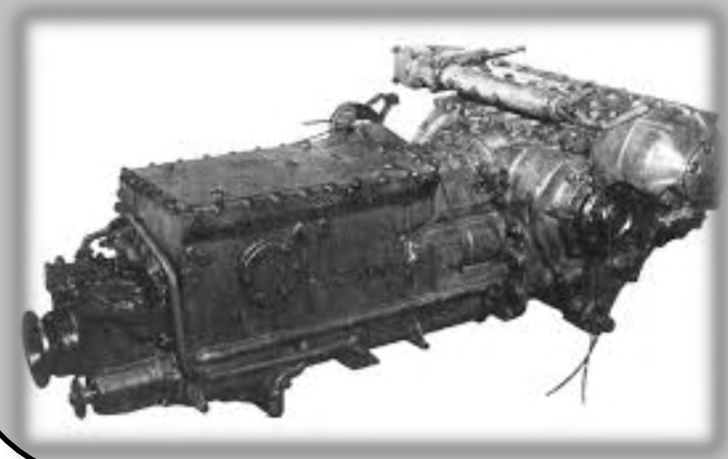
Since not much of the interior is visible through the open hatches, I primarily used "gizmology" to create the guts of the tanks. This simply means that various bits—gizmos—were used to create the impression of the interior. While details are not exact, it is necessary to keep basic sizes, shapes, and locations proper in order to give a convincing appearance. Items immediately visible through open hatches must, of course, be more detailed than those hidden in the belly of the beast. I have found that it can help create the illusion of reality by strategically placing a couple very accurately details items in the viewer's line of sight. These bits of eye candy catch the viewer's attention and help disguise the fact the rest is just smoke and mirrors. Above left we see the compass located on the hull sponson to the driver's front left. This is very close to the open driver's hatch. It was fashioned from various styrene bits. Remember, even complex items are made easy by breaking them down into their various shapes—even something as small as this part which measures only about 4 x 6 millimeters. On the right, we see several mg ammo bags (made using the mash-molding method shown earlier). Many of these will be visible, in whole or part, through the radio operator's hatch.

THE REAL THING

While popular in modeling circles to model the vehicle with the driver's head out of the hatch, this was not possible on the Tiger I. The seat was not adjustable for height and was just over 3 feet below the hatch. The hatch itself was partially over the sponson and not above the driver's seat. The center of the hatch was offset 15.4 inches from the center of the seat. All you have to do is look at a photo of the Tiger and note how far the center of the vision slit and the bow machinegun are offset from the center of the hatches. This photo of the radio operator shows it nicely. He could stand on his seat, leaning on the sponson and have his head/upper torso out of the tank. Not so the driver while the vehicle was in motion. Still not convinced? Check out You Tube videos of Bovignton's Tiger 131 in motion—you will never see the driver in his open hatch.

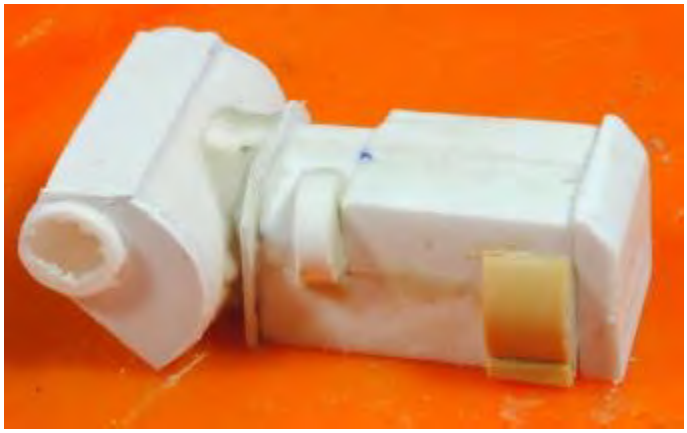
Gizmology was also used to create the transmission and gear box. Complex parts are easier to make if we remember that everything, no matter how seemingly complex, is simply a collection of basic shapes. I started by cutting the needed shapes from styrene sheet and shapes and gluing them together, building up to something resembling the actual tank's assembly.

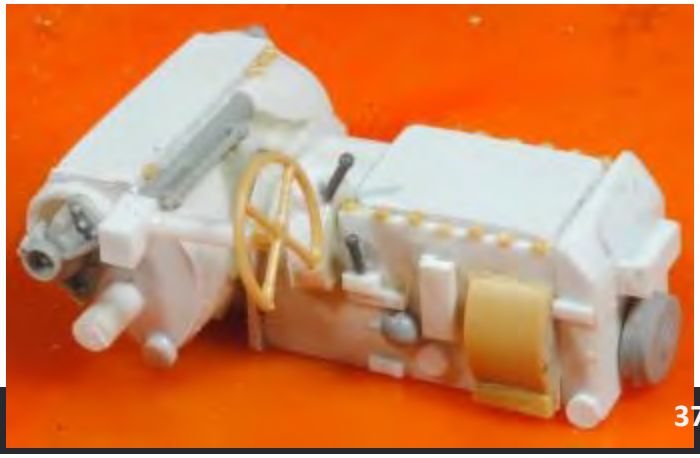




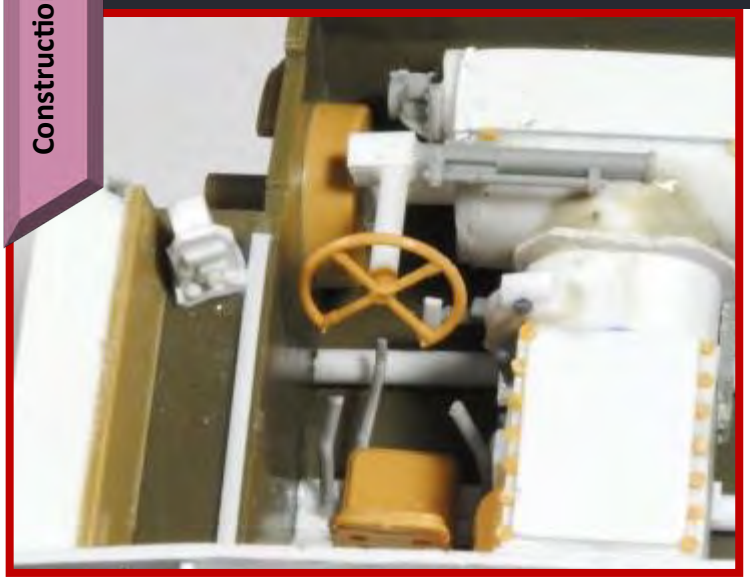
THE REAL THING

Here we see both sides of the gearbox and transmission. This is one of the largest components in the hull and, due to its location between the two open hatches in the driver's compartment, one of the most visible. Not counting the engine, the only other internal component as visible as this is likely the gun breech which sits between the two open turret hatches. While this complex structure is a prime candidate for "gizmology", due to its visible location, we must take care to get all the basic shapes correct and many of the key components properly placed.





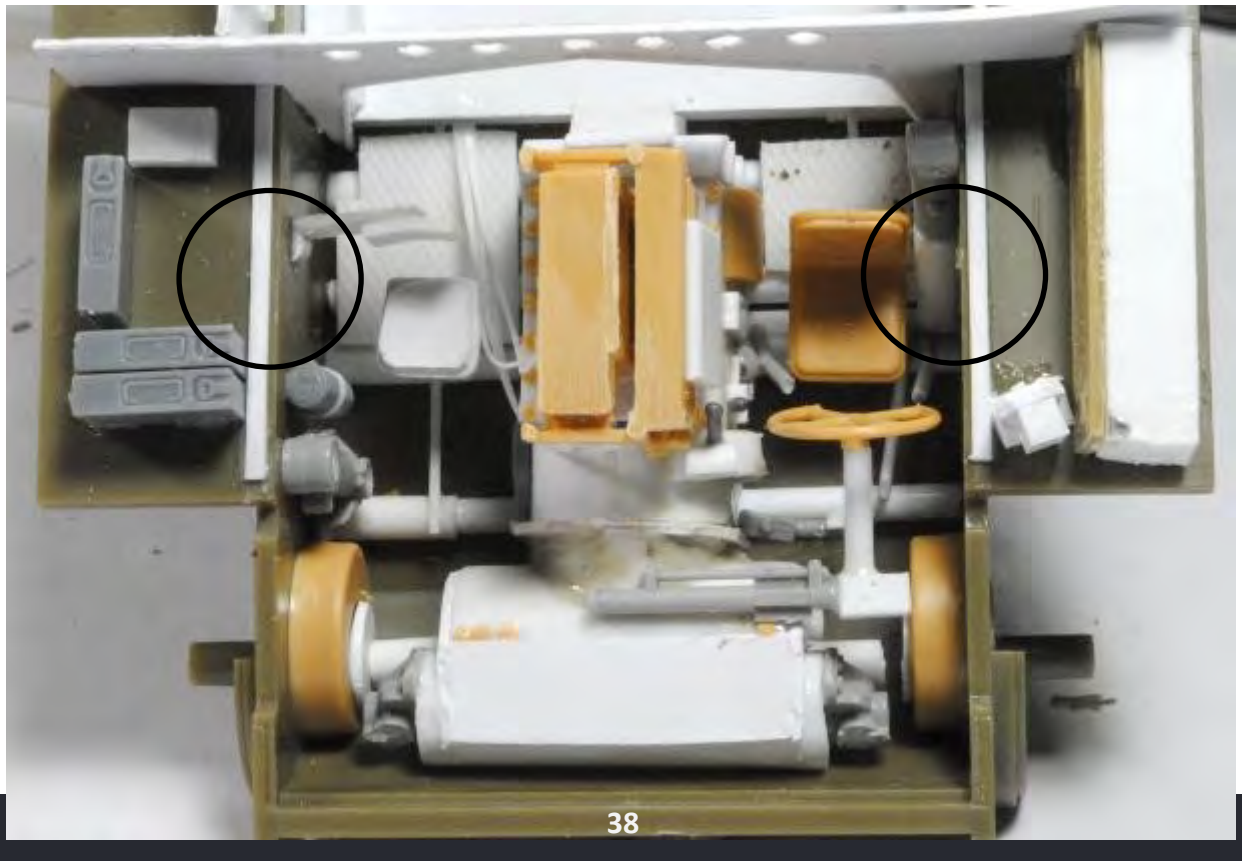
This process was continued until I had built up all the basic shapes and forms (above left). Epoxy putty was then applied to fill in any gaps and blend needed parts together (above right). Then, using bits of styrene and pieces from the scrap box, the part was detailed (left). Details are not exact, but what little is visible through the open hatches will look like a Tiger I transmission and gearbox.



Top: The finished driver's position.

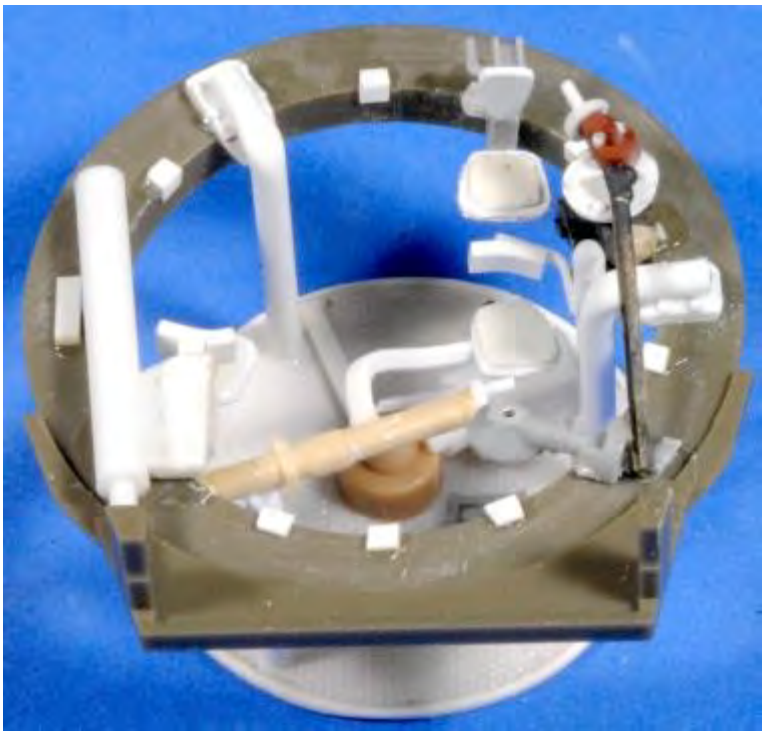
Middle: The complete front compartment showing the radio operator's "office". The radios are from the scrap box—cut down from parts originally from Tamiya's 1/48 Sd.Kfz 250/3. When building and installing the internal guts of the machine, constant test-fittings were done with the upper hull piece to ensure proper fit remained.

Bottom: The front compartment from above. The black circles represent the approximate size and location of the front hatches. In 48th scale, these are only about 3/8 of an inch in diameter. All that will be visible on the finished model is what can be seen through these small apertures. Clearly, the farther away from these points an item is, the less detailed it must be.



To complete the construction of the internal lower hull some basic details were added to the inside of the front plate. We've already seen the MG ammo bags. To these were added the driver's vision block and the bow MG. The MG itself is a Tamiya piece. All else are either bits of styrene or pieces from the scrap box.

We can now turn our attention to the turret—the inside of which will be visible through the open commander's and loader's hatches.



Above: Two views of the turret basket. The floor is a piece of Plastruct tread plate. Basic detailing was done with styrene pieces and bits from the scrap box. Again, it's minimally detailed and not completely accurate, but it will look good through the small open turret hatches.

Left: The kit-supplied gun mantlet is the initial style. Photos show Tiger 122 had the Mantlet with the reinforcement around the holes for the binocular gun sight. This was added with a bit of Kneadatite epoxy putty. A small blob was put in place and then shaped with a putty spoon. Holes were pressed in with the back end of a drill bit.

The gun breech was made using the same gizmology process we have already seen. Again, most of this will not be visible inside the turret, however, the very end of the breech and the recoil guard will be some of the most visible parts in the turret being under and between the two hatches.

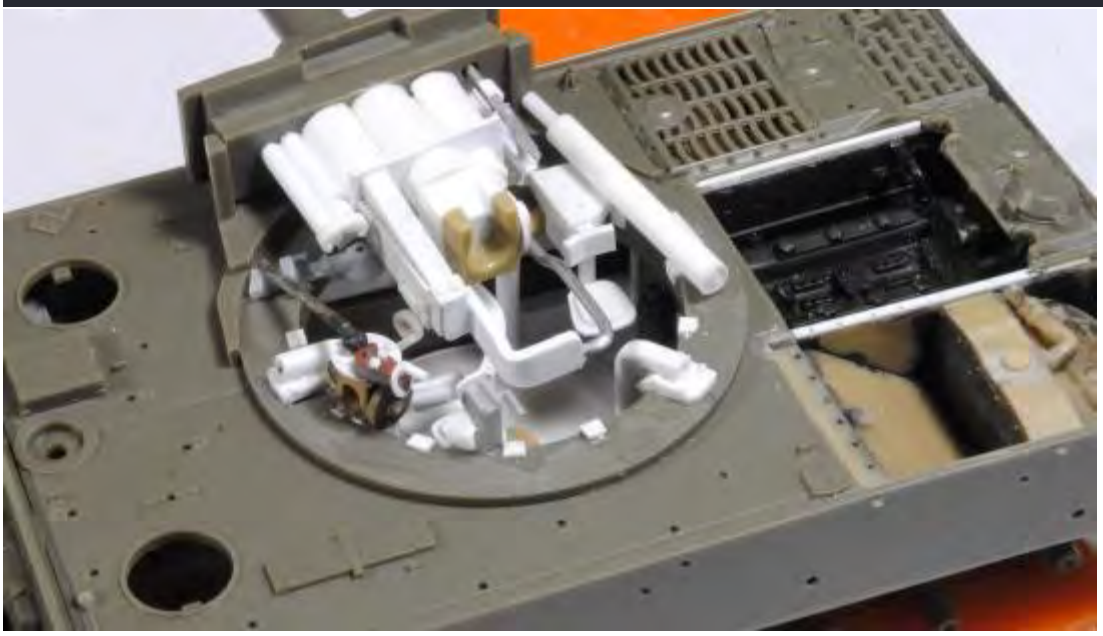
1: Basic shapes were made of Styrene pieces. The very end of the breech is a suitable piece from the scrap box (I believe a 1/35th piece from the breech of a Pak 40—I trimmed the edges to make it slightly smaller to fit onto the styrene piece).

2: The various bits were glued together and attached to the kit gun mantlet.

3-4: The coaxial machinegun is a Tamiya piece (form any of their German Infantry sets). It was slightly modified and the mount made from styrene bits. Note the muzzle should protrude only slightly from the front of the gun mantlet.

5: The binocular sight was fashioned from styrene bits.

6: The recoil guard on the loader's side was fashioned from a length of wire and super-glued into place.

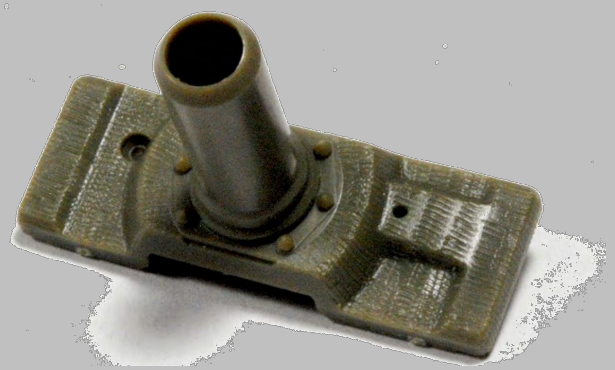


Throughout the process, constant test-fittings are needed to ensure all the parts play well together. Here, the gun and turret basket rest on the hull. Although a large tank, the "office" is still quite cramped. Detail, while not perfect, is more than good enough for what will be seen looking through two small hatches.

The bag that hangs under the recoil guard to catch the empty shell casings was fashioned from Magic Sculpt epoxy putty. A form was carved from an appropriately sized dowell and a sheet of putty, rolled out flat, was shaped over the form. Once cured, it was carved to shape and glued in place under the recoil guard.

THE REAL THING (and a model)

The photo below left (of Tiger 131 in the Bovington Tank Museum) shows the early style gun mantlet included in the kit. The kit also includes a few parts intended for the late Tiger including the late mantlet (below right). This is the reinforced type and was used as my model when converting my mantlet. The only difference is that this example only has one hole for the monocular sight instead of the needed (for my tank) two holes for the binocular sight.



Right: Once cut to the appropriate shape, the part was glued under the recoil guard.

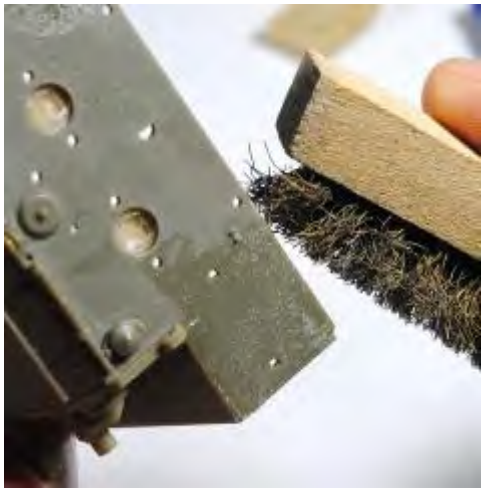
Below: Two views showing the interior through the turret hatches.

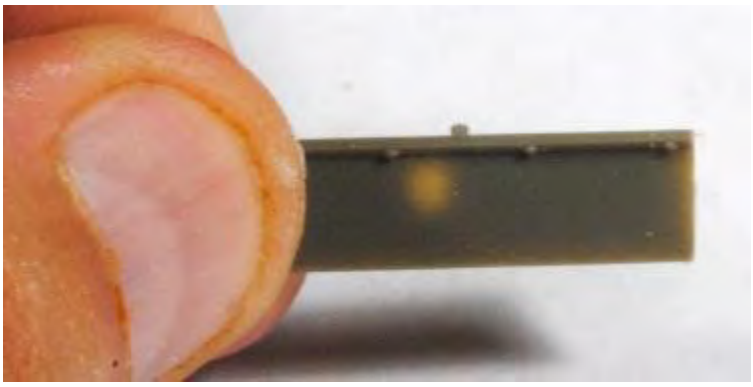
Above: Two views through the open driver's hatch. These four photos were taken with a Macro Zoom lens almost touching the model, and thus gives us a closer view than we will be able to achieve with the naked eye. This was the final test to make sure the detail on what will be visible is sufficient.

After the interior was painted (see the chapter on Painting and Weathering), assembly continued as normal. First, the gun assembly was glued to the bottom of the turret (top left), and then the turret halves were joined (top right). Note the addition of a bump stop, marked by the arrow. This is a short length of styrene bar stock. At left we see the upper hull attached to the lower hull.

The gun is well molded as a single piece, complete with muzzle brake. It is keyed for a perfect fit into the mantlet. A fine mold seam line is present on both the top and bottom of the gun. It only takes a light touch with a sanding stick to remove this. Don't sand too hard or you will leave flat surfaces on the gun barrel. There are also two ejector pin marks on the gun. One will be hidden in inside the gun mantlet sleeve. But the other, near the muzzle brake, is visible. I filled with this a tiny bit of epoxy putty, applied with a putty spoon and smoothed with the swipe of a damp finger.

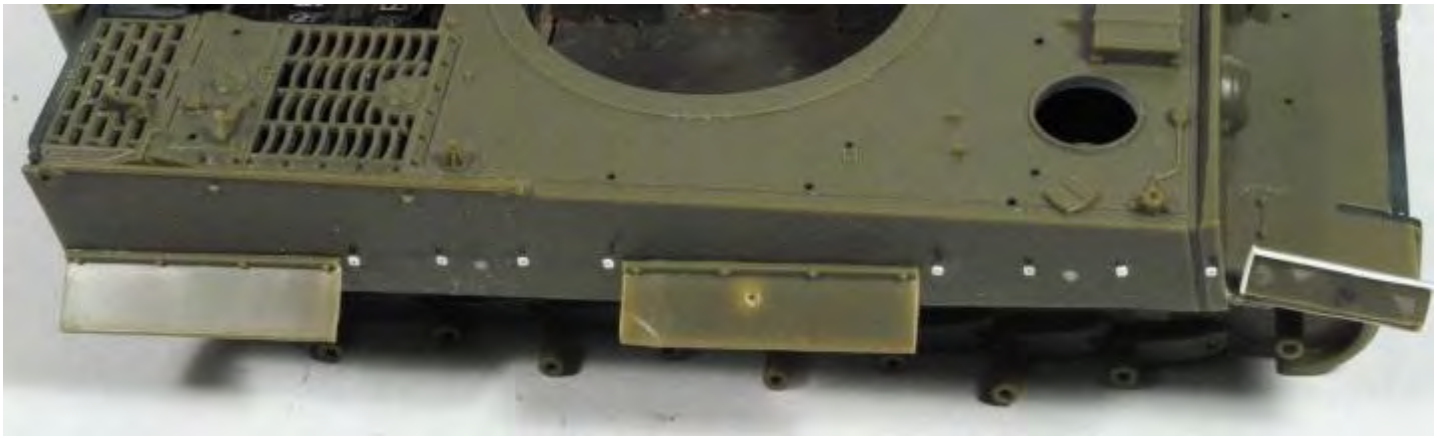
Right: The right rear mudguard was cut and sanded away, as were the kit mounting points for the air filters. To restore the lost texture in the armor, the affected areas were coated with Tamiya Extra Thin liquid cement and, while the plastic was softened, the texture was stippled in using a wire brush.





THE REAL THING

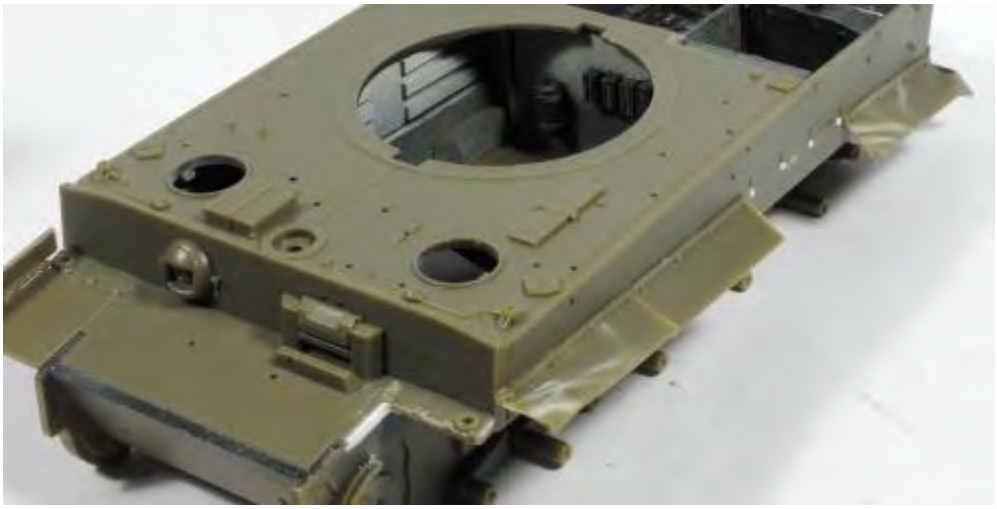
The bump stop on the gun mantlet is clearly visible in this photo. This feature is missing from most, if not all, 1/48th scale Tiger kits.



The photos of Tiger 122 all show damage to sheet metal components. However, as the photos were not taken at the same time or in the same location, damage varies. For example, some photos show the exhaust guards in place and damaged. Other photos show them missing. The side mudguards on the left also show progressive damage, with some photos showing three in place and others only two. It's logical to assume that damage progressed from none to the most severe. I chose to model the least amount of damage shown in the photos. For bullet/shrapnel holes, I followed my normal method of thinning the plastic from the inside using a cutting bit in my Dremel Motor Tool until the plastic was quite thin (middle photo). Then the holes were punched and gouged. Bent areas was thinned and then bent using pliers. The kit's side mudguards come in one piece for each side. Before cutting these apart, I put them in place and drew a pencil line along the side of the hull to mark the correct location and angle. I also marked the location of the mounting bolts. The mudguards were then cut into their individual pieces, damaged as needed, and glued in place. The right side guards are shown above. The mounting studs for the missing mudguards were added from thin slices of .8mm square bar stock with a small hole drilled in the center of each. The upturned front fender was cut from the hull, thinned, and the side edges added from thin styrene strip. The unused kit mounting holes were filled with Magic Sculpt epoxy putty.

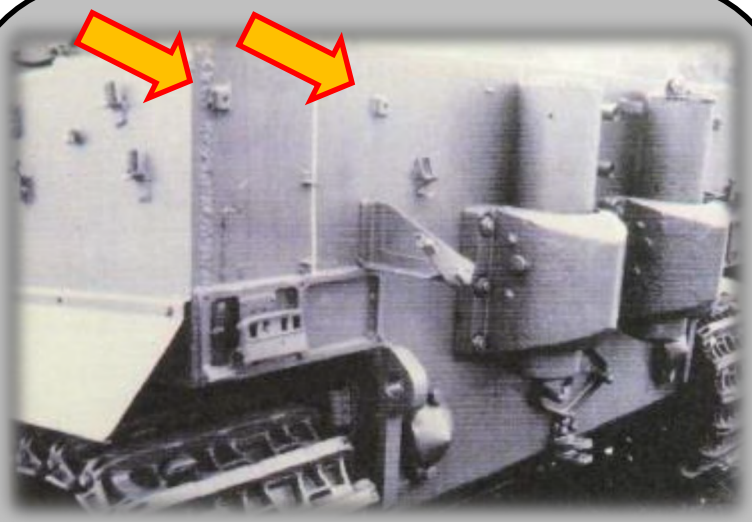
THE REAL THING

This photo shows damage to the right side mud-guards. Compare with my tank at the bottom of the facing page.



Left: This shot shows the mudguard damage on the left side. The entire front mudguard is removed on this side. To accomplish this, the guard was cut away and damage repaired with Styrene strip, which was then filed/sanded to the proper contours.

Above: The mounting points for the removed air filters (see photo at right) were added using slices of 1mm bar stock. A small hole was drilled in the middle of each.



THE REAL THING

This photo clearly shows the hull mounting points for the air filters. Most photos of Tiger 122 lack the filters, with them having been damaged and removed.

Top: The bullet holes on the rear of the turret stowage bin were made using a similar method to the other sheet metal damage. However, instead of just thinning the plastic from the inside, a small dent was added to the outside by touching a round cutting burr to the outside of the bin over the thinned areas before poking the hole with a needle. Damage to the exhaust guards was added in the same fashion, with dents being carved into the plastic.

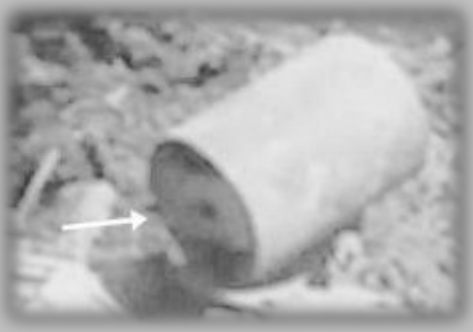
Middle and Bottom: Details on the bottom of the smoke candle launchers were added using slices of .8mm bar for the plugs and .3mm rod for the wiring conduits. For the missing candle launcher, a hole was drilled in the mounting plate.

THE REAL THING

Photos of Tiger 122 show it was missing one of the smoke candle launchers on the right side of the turret.

THE REAL THING

This photos of Bovington's Tiger 131 shows the plugs and wiring on the bottom of the smoke candle launchers.



THE REAL THING

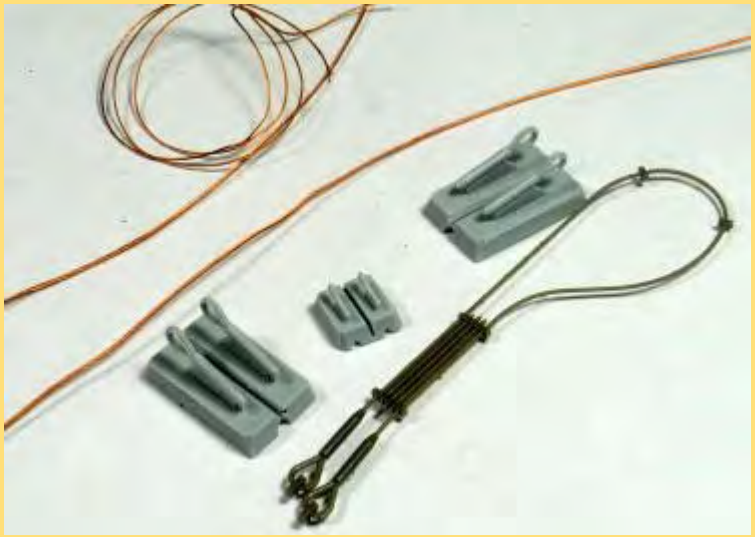
As early as December, 1942, tanks were produced with mounting brackets for S-Mine launchers, however, the launchers themselves were not installed until late February or early March of 1943. The hole in the rear is a finger hole for pushing out a mine—not a hole for wiring.

To replace the kit tow cables with the Eureka XXL cables, I started by gluing the kit cables in place. ONLY USE GLUE ON THE MOUNTING BRACKETS—do NOT get glue on the cable itself. Conveniently, the mounting points on the model are the actual mounting brackets.

EUREKA XXL TIGER I TOW CABLES:

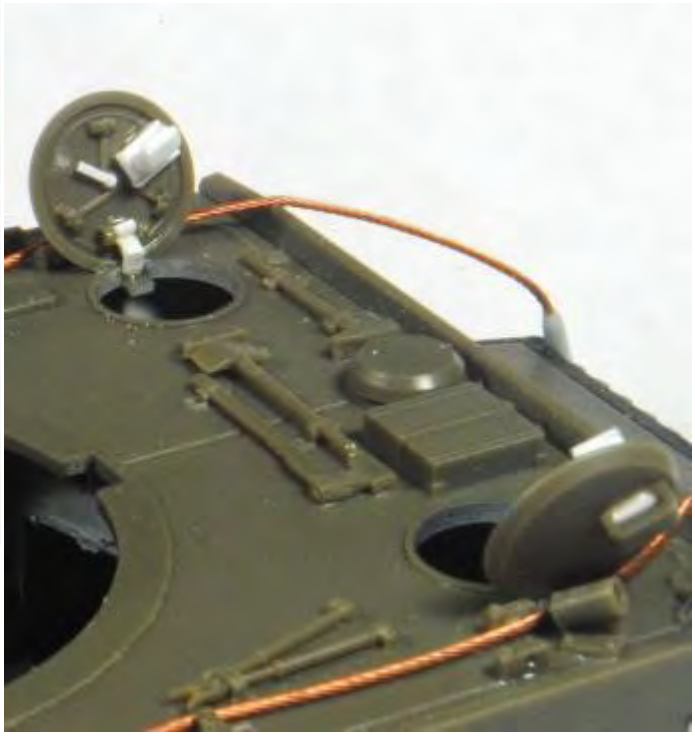
I replaced the kit cables, which are molded in one piece along with the brackets and gun-cleaning rods, with the Eureka XXK set. If you want to place the cables in the stowed position, there is nothing wrong with the kit part. If you want to deploy them, you will need to replace the kit cables. The Eureka set contains very nice cables for both the tow and track cables (which I did not use). These include copper cables with resin ends, perfectly cast. They also include replacement gun-cleaning rods. What the set does not contain are replacement mounting brackets. These must be salvaged from the kit, scratch-built, or sourced from aftermarket detail sets. The cable itself is very pliant and flexible, is easily formed, and will hold the position you put it in.

The cable is basically standard 7-strand copper wire—you could easily make your own. What the kit gives you is convenience, consistency, prepared end pieces, and comes already in the proper length.



Top left: The kit cables were cut away, leaving only the mounting brackets. Above: Once the glue was completely cured, the brackets were drilled hollow.

Left: The Eureka cables were attached. To build the cables, simply glue the cable into the end pieces and attach to the model as desired. Photos show the cables were often attached to the clevises to speed the process if the tank needed towing or needed to tow. This was how I placed my cables. I glued the cable down with a drop of superglue about every centimeter to ensure it remained in place.



Missing detail on the inside of the driver/co-driver hatches (periscopes, hinges, and locking handles) were added from bits of styrene pieces.

AFV CLUB TRACKLINK

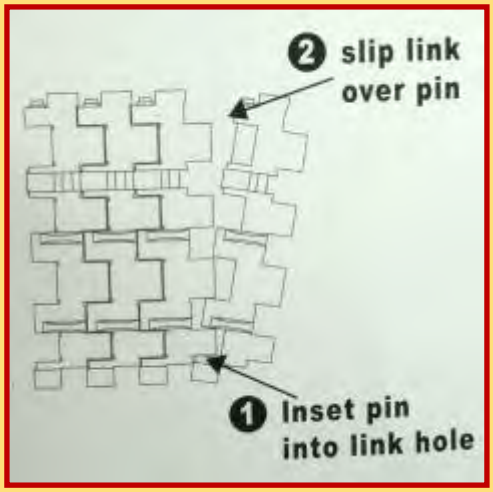
Rather than use the adequate rubber-band tracks that came with the kit, I chose AFV Club's early Tiger Individual Link Tracks. These come in a bubble pack containing two ziplock bags of 100 links each. The instructions are printed on the backing for the packaging. The actual tank had 96 links per side. The AFV Club rubber band tracks also have 96 links and, since the individual links are exactly the same size, we need 96 links per side. As the set contains 200 total, that gives us 8 extra links.

The links come pairs attached to a sprue. The ejector pin marks are on the sprue pieces and not the tack links. Just snip them from the sprues. Each link has two tiny fragile attachment pins. Follow the instructions EXACTLY. Any other way and one or both pins WILL break. If it doesn't easily click into place, readjust and try again. Do NOT use ANY forcer. Be careful handling the assembled tracks - they can come apart with any tension/torsion.

Broken pins are not a significant problem. I put these on each end of the run. These are glued into place. They will be the ends that join together on the bottom track run where it needs to be flat anyway. So as long as you exercise caution and common sense, the fragility isn't an issue.

As you click them together, you get a nice, realistically bending and sagging length of track. How do they compare with the rubber-band tracks? The photos show side-by-side comparisons (the individual link tracks are on top). Difference in detail is negligible. They are exactly the same size. The individual link may give you more realistic sag, but the rubber band track can be glued to the wheels creating a realistic impression of sag.

So... my assessment. These are ok. If you absolutely hate the rubber band track (I really don't have anything against it and have used AFV Club's rubber band tracks on their Sd.Kfz 251s successfully), these are a good option. Probably not as good as metal Fruils... but I haven't assembled those and can't say. But I would guess the metal gives a stronger and possibly better result but these are probably easier and likely quite a bit cheaper.

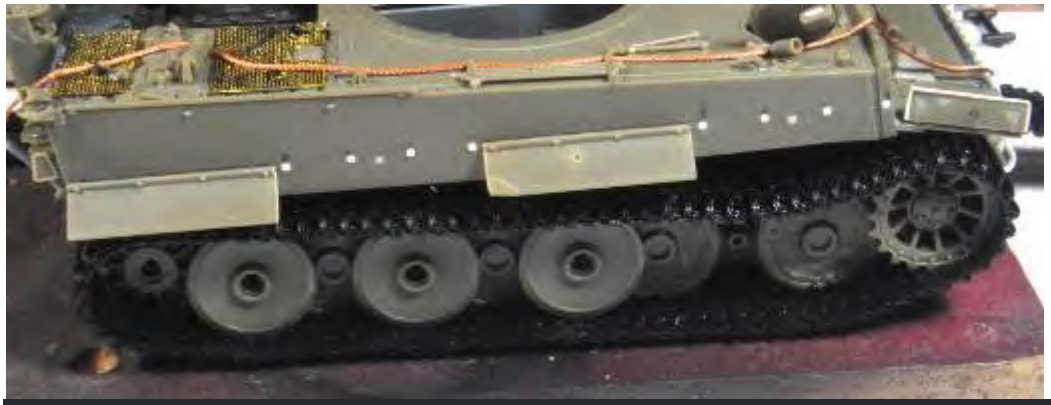


As seen here, a couple additional details were also added to the turret hatches.

Attention was then turned to the wheels and tracks. Those familiar with my previous works know I prefer to paint the tracks and wheels as one unit that is detachable from the vehicle. In this scale I believe this is the best option. It allows access to the hull for painting and weathering. It also gives good access to the entire track. Finally, it minimizes handling of finished parts with fragile painted and weathered surfaces—it is glued onto the tank as a unit rather than many separate parts. The choice, of course, is yours—you can solidly glue everything together before painting, or paint every part separately.

The Tiger had three wheels on each axle, overlapping and interleaved. This results in six layers of wheels on each side. It was my intent to glue the first three layers to the tracks so they were removable as a single unit. This includes all the wheels inside the track guide horns. The outer three layers were left separate for painting. I did not use the provided screws—these allow for wheel rotation, which I did not need.

Top: I slipped the first four layers of wheels on the axle. The tracks would only be glued to the first three (those inside the guide horns), but I added the fourth temporarily to ensure the tracks sat level. These wheels were held in place with poster putty.



Middle: Glue was placed on the bottom of the first three layers of wheels. Glue was also flowed into the track joints on the bottom section of track. Prior to setting, the track was placed on the bottom of the wheels and partially around the drive sprocket. This was allowed to dry.

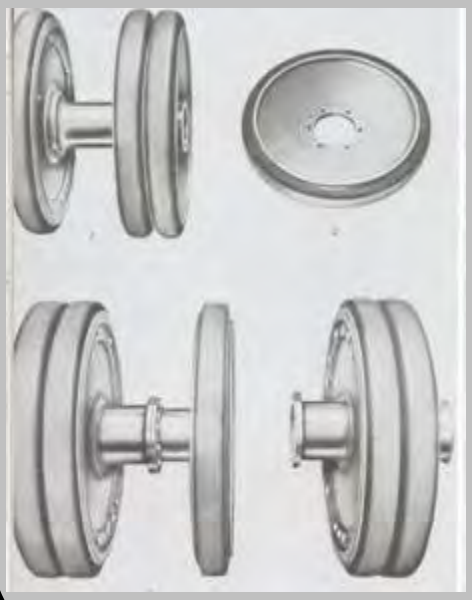
Bottom: The needed sag was added. The track should just touch the second road wheel. With 96 links, it was too loose, so I removed one to get the proper sag. The track was then glued along the top of the wheels and jointed on the bottom.

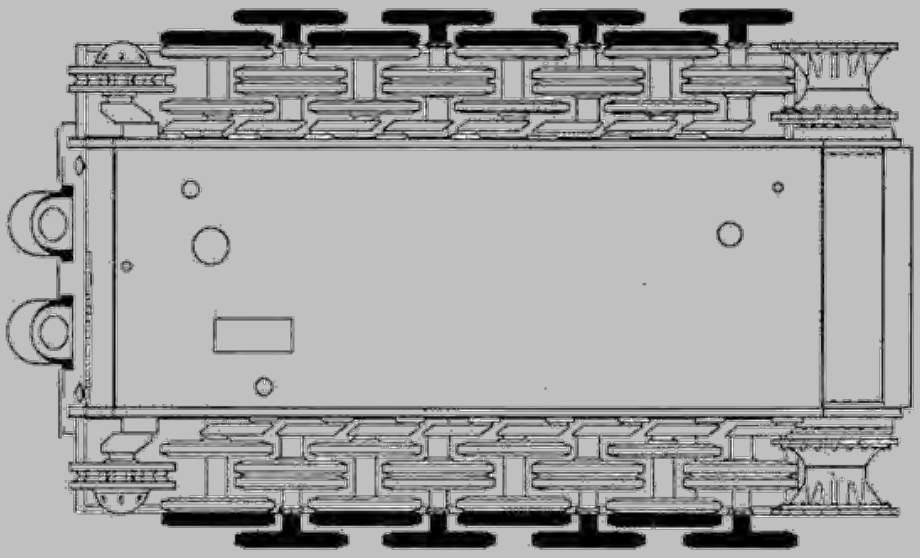
After this was given some time to cure, the fourth layer of wheels (those outside the guide horns) were removed and more glue flowed into the track joints and where the wheels touch the tracks.

After letting the glue thoroughly cure for a day, I was able to easily remove the assembly for painting and weathering.

THE REAL THING

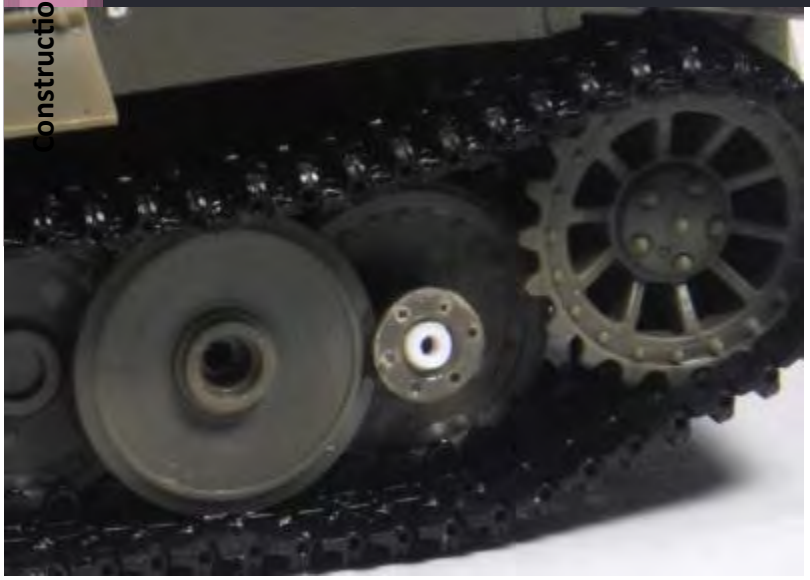
The below image from the Tiger manual shows the arrangement of wheels on each axle. Each axle supports three wheels—one pair and one single





This drawing (source unknown) shows the complex arrangement of wheels on the Tiger. The wheels in black are those which were removed for transport. A narrower transport track was also used. The cable stowed on the left side of the hull was, in fact, a track replacement cable designed to help with the track changing process. A well trained and drilled crew could perform this operation in about 30 minutes. Note the difficulty this arrangement presented to maintenance personnel. To get to an inner wheel next to the hull, as many as eight other wheels had to be removed.

Tiger 1 (Early Production)



Where road wheels are missing, the axle must be present. According to the photos, this is usually removed at the point where a flange exists between the two wheels of the preceding and following axle. This parts are not needed if the wheel is in place and are therefore not included in the kit. They were simply made by cutting the hub out of the kit wheel, removing the bolt heads and drilling bolt holes, shortening the axle so the flange sat at the right distance from the inner wheel, and adding the axle with a short length of styrene tube.

Below: The tank ready for paint. The turret, track/wheel assemblies/outer wheels/engine hatch/air cleaners are all removable for painting.

THE REAL THING

Photos of Tiger 122 show it is missing two of its outer road wheels—the front wheel on the left side and the second wheel on the right side.

Painting and Weathering

As is my normal practice, the tank was painted in sub-assemblies as seen above. These will only be glued together after most and weathering processes are complete.

Painting and weathering of the Tiger followed my normal methods. These have been amply explained in my other build logs and so will not be shown in great detail here. The process is also shown in chart format on the following page.

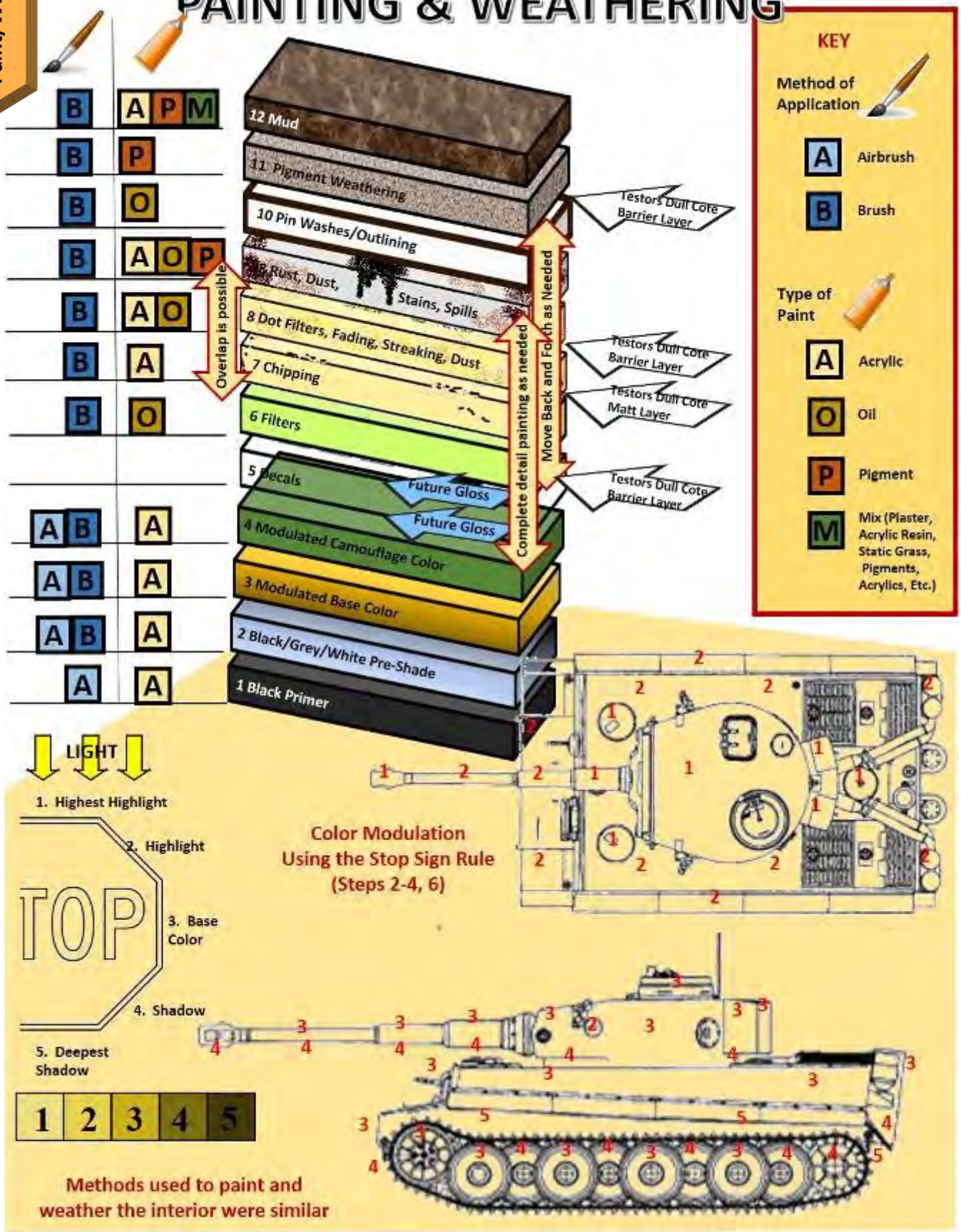
As the Kubelwagen has a base color of grey, I chose to paint it using a black and white pre-shade. So, for consistency, I did the same thing with the Tiger. However, either or both could also be painted using standard color modulation methods over my normal black primer coat.

separately and added after painting. This was done simply to allow easier access to the great mass of wheels and to the tracks.

The finished engine compartment (the other side, which will be mostly obscured by the engine deck grates and screens, received only basic colors. These parts were painted in appropriate colors using methods we've seen in other build logs. Most of the engine compartment was painted in machinery grey mixed from Vallejo Model Air Dark Panzer Grey, USAF Light Grey, and Intermediate Blue. The radiator was painted in Black, lightened with Dark Panzer Grey. The fuel tank was coated in Red Oxide Primer and highlighted with Scarlett Red. The galvanized steel fan unit was painted in a mix of Andrea Iron and Black. Color variation was added using different light greys, Steel, and Silver. Weathering was accomplished with oil paint glazes, stains, and streaks, pastel chalks and pigments, and pencil lead. Chipping was added as normal.

The ivory color used in the interior was various mixes of Vallejo Model Air Aged White, White Grey, and White. All interior weathering was done with acrylics (chipping), oil paint washes, and pastel chalks and pigments.

PAINTING & WEATHERING



The finished turret basket and gun. Detail is basic and impressionistic only, and painting is not to the highest standard, but considering how little will be visible through the open hatches, quality is more than sufficient to give the impression of a complete, accurate interior.

S.PzAbt 503 Panzer Colors (what colors should I paint my Tiger?)

As many readers will know, WWII German armored vehicle colors can be something of a contentious issue. Regulations often changed, colors and patterns were often determined by units or individual crews, time and resources for repainting were not always available, and historical information is often incomplete or contradictory. Photos are our best guide; and while I have enough photos of my chosen tank to determine the camouflage pattern, it is difficult if not impossible to determine colors in black and white photos. I have selected to paint my tank in the standard Dark Yellow—Dunkelgelb—that was the factory finish from mid February, 1943—with Olive Green stripes. Package of Olive Green and Red Brown were supplied with vehicles for camouflage to be applied in the field. Allow me to explain my choice and the possible options.

By December, 1942, the 503rd had received its first 20 tanks. Schneider (in "Tigers in Combat") claims these were painted Dark Grey, which would have been the factory standard color of the time. However, the 503rd was originally slated to go to North Africa, therefore it is possible—as other sources state—that these first tanks arrived in Tropical colors. It is my belief they did.

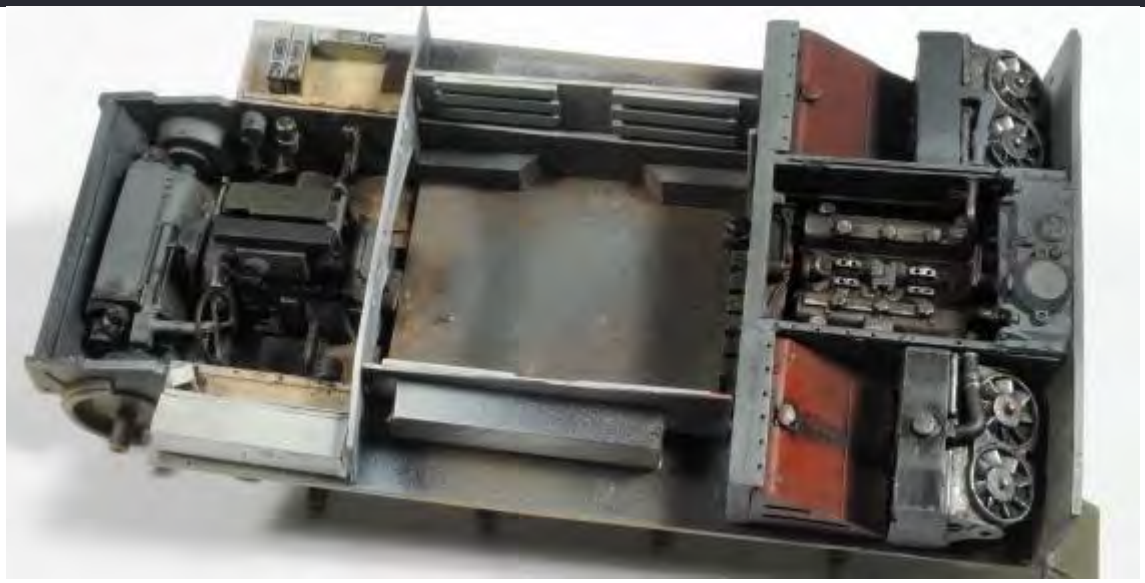
In February, 1943, the 2nd company of the 502 was integrated into the 503rd becoming its third company. In all likelihood, these tanks, as Schneider claims, were painted dark grey. All the tanks would have received a coat of whitewash for the Kharkov campaign.

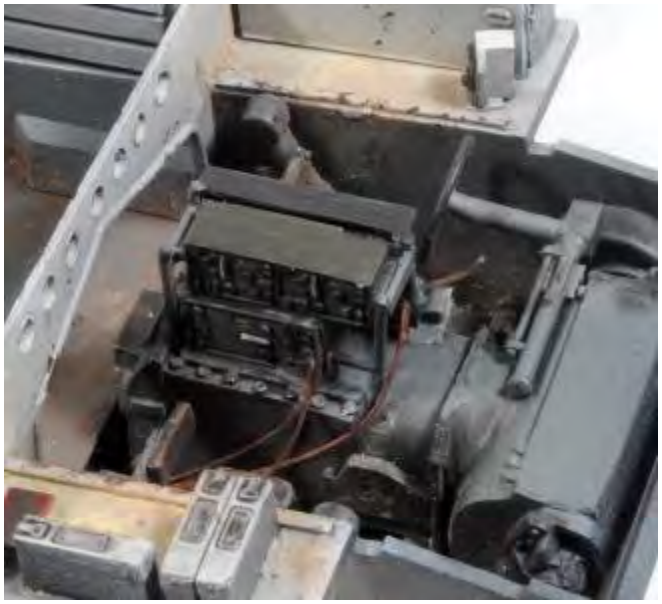
Note that these first tanks were initial production Tigers. Many had pistol ports instead of escape hatches on the right side of the turret. Most did not have the standard Tiger stowage bin, but would have been fitted with either old Pz III bins or the field designed bins unique to the 503rd.

Tanks delivered in March and April (including our 122) were probably delivered in the standard factory Dark Yellow. I have seen no evidence to indicate otherwise. These would have included all standard features of Tigers produced during this period.

At some point in the Spring, Schneider tells us the tanks were repainted in a "strange mix of dark yellow-olive green". There would have been no reason to repaint the new tanks which were likely already in dark yellow. "Occam's Razor" leads us to believe these new tanks simply had camouflage applied over this base—according to most sources this consisted of Olive Green. The Dark Grey tanks were likely repainted in the current standard Dark Yellow with Olive Green camouflage. But there is nothing "strange" about this. However, if the first tanks retained their Tropical colors, this could explain the reference to a "strange mix", as their "yellow" and "green" colors would have been noticeably different from the standard, and would have exhibited far less contrast between the colors.

Therefore, my belief is that the 503rd's first 20 tanks were originally painted—and likely remained—in Tropical colors. The tanks the unit received from the 502 were Dark Grey, repainted in the Spring in the new Dark Yellow and Olive Green colors. New and replacement tanks manufactured after mid February 1943 arrived in Dark Yellow and were camouflaged with Olive Green in the field.





Some additional photos of the finished interior. It looks enough like a Tiger to fool an observer into seeing a Tiger interior when they look through the tiny hatch openings into a dark interior.

Left: The vehicle was pre-shaded over the black primer with various greys and whites. Most of there were applied with an airbrush, but many smaller details were brush-painted. Colors used are shown above—Black, Grey, and White primer.

Below: Over the black and white pre-shade, the basic dark yellow was applied using three colors—a shadow color, base color, and highlight color. This was applied by airbrush in a very thin layer allowing the pre-shade to show through. Touch-ups and details were added with a brush.

Shadows were applied using a mix of Armour Brown and Dark Yellow. The mid tone is Dark Yellow + Khaki Brown, and highlights are the mid-tone mix with Sand added.

The kit instruction painting guide for this vehicle does not match what can be seen of the camouflage pattern in photos. As a guide, I painted thin light lines indicating where the camouflage should be added. Areas under the fenders and where fenders are missing, were masked with painters tape. The green camouflage was applied with an airbrush using German Green on the vertical surfaces and Medium Olive on upper, lit surfaces.

The tank after the next few weathering steps. Decals were applied after the camouflage painting. As normal, there were applied between two layers of Future floor polish and then a layer of Testors Dull Cote was added. After this dried, various filters, dot filters, and streaking were added and chipping was applied. Several colors were used in the chipping process to give variation. Chipping on the green sometimes shows the yellow. Deeper chips go all the way to primer or bare metal. Some chips are recent, others show rust. Details were painted, and pinwashes of oil painters were applied using my normal processes.

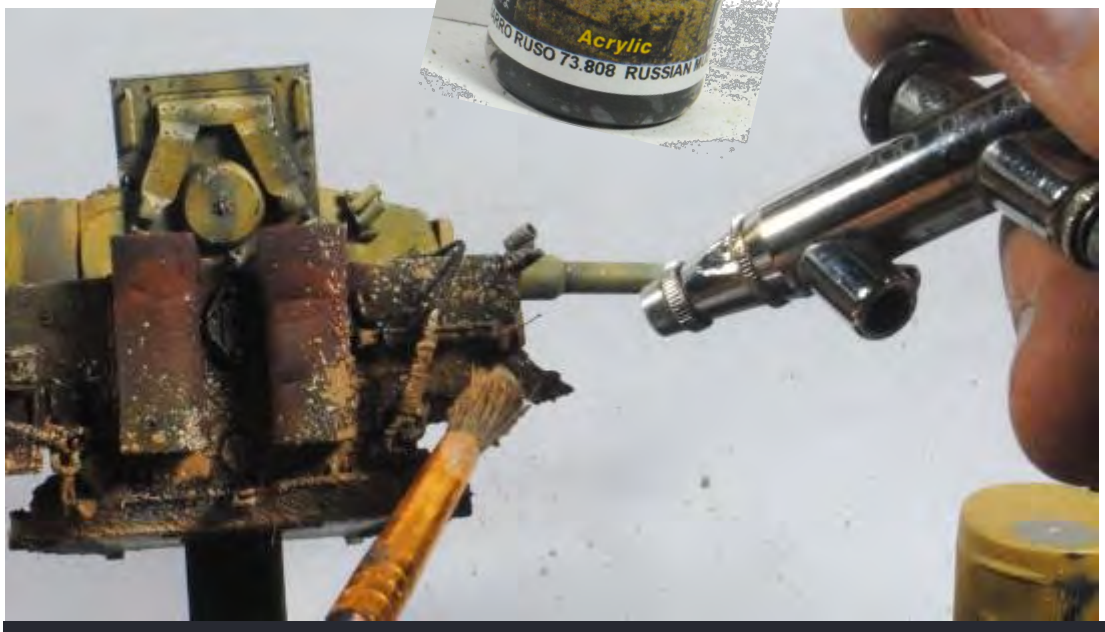
Top: Many photos of Tigers show discoloration on the exhaust guards. This was replicated with pigments. Appropriate areas were "painted" with Mineral Spirits and the pigments—rust colors, black, and ash grey—were sprinkled on. Once dry, a soft brush blended everything together and removed excess.

Middle: Wheels were painted using the same methods as those seen on the tank. The tracks were painted following my normal methods—a very dark rust color, followed by a wash of black oil point, followed by the application of a dark bare metal color on wear areas.

Bottom Three: To impart a general dusty, dirty look to the tracks and wheels, light earth colored pigments were used. The tracks and wheels were painted with water and the pigments sprinkled on. Water was used as this doesn't lock the pigments in place, making it easier to removed unwanted excess. Once dry, excess was removed with a brush and, on the tires, with a damp finger!

Heavy mud build-up can also be done with pigments. They can be piled on, and then pigment fixer (or Mineral Spirits or Rubbing Alcohol) can be flowed into them to lock them in place. See my build log on the StuG III Ausf G for a detailed step-by-step of this procedure.

Here, I made an acrylic paste. These can be purchased commercially, like the Vallejo product shown in the inset. I prefer to make my own as it's cheaper and gives me an infinite range of color and texture. I make my paste by mixing Elmers ProBond wood putty (an acrylic paste) with pigments, pastel chalks, and/or craft paint to get the color I want. To make it thinner, add water. If thicker gunk is needed, powdered plaster can be added. As desired, the mud can be further textured with fine sand or static grass.



This mud mix can be applied with putty spoons, brushes, or other suitable tools. It can be piled on, stippled, painted, or slopped.

It can also be splattered on. To do this, I load a brush with the mixture and blast it with an airbrush—no paint, just high-pressure air. I advise practicing first, to make sure your aim and technique are what you want!

Mud comes in all different colors, and wet mud is usually darker than old, dried mud. Therefore, I apply my mud in layers, working from light to dark.

To add a moist look to the mud, I mix some Future Floor Polish into the mixture. For wet areas, I paint Future straight onto the mixture after it cures. The colors can be subtly altered and blended with washes of various acrylic colors mixed with Future as needed.

As this Tiger has been driving over soft, muddy roads, some of the dark mud mix, and some Future, were irregularly added between the track cleats.

Workshop Kubelwagen

The little car ready for paint. Many parts are removable for painting. This photo shows the work involved to create this version of the little Kubelwagen. The dark yellow pieces are Tamiya, as are the dark grey pieces. The yellow bits are CMK's conversion kit. Light grey is Magic Sculpt epoxy putty and white are styrene bits. Parts for this conversion came from several sources as shown in the accompanying text and photos.

I decided fairly early to add this vehicle to the diorama. To create a Werkstatt Kubelwagen in quarter scale, there are two options. It can, of course, be scratch-built. As it consists of basic shapes only, this would not be very difficult. The other option is to use the Czech Master Kit (CMK) conversion kit. This is a resin kit that contains most of what is needed to affect the conversion. Most—but not all. My review of the kit can be seen later in this chapter.

Many modelers are wary of resin, but there is no need to be. Removal of parts from the casting block and clean-up of casting flaws are done differently than for injection molded plastic pieces, and plastic model cement will NOT work with resin pieces. But those are really the only differences. Parts are parts. How they fit and the level of detail are more important than the type of glue used to hold them together. And here, resin can be just as good—if not better—than plastic. In fact, due to differences in the casting process, resin parts can feature deeper undercuts and can offer the same level of detail with a far fewer parts count.

But, like any other medium, differences can exist from maker to maker and even from kit to kit. For example, I have used several conversion kits by Gaso.line (mostly in my Sd.Kfz 251 series of builds). These kits include everything that is needed for the conversion, providing complete replacement parts for any piece that needs altering. This makes them simple "drop-in" fits, merely replacing the appropriate parts in the donor kit. This kit by CMK follows a different philosophy. While it provides the basic parts, the modeler will have to do some surgery on the donor kit, cutting and altering many of the pieces of the Tamiya vehicle. It is also not a 100% solution—to achieve complete accuracy, the builder will have to source or make other pieces. That does not mean the final result is, in any way, inferior to a conversion kit such as Gaso's—it just means the conversion requires a higher skill level and more work on the part of the builder. While I would recommend the Gaso conversions to even a novice modeler, a kit such as this one should only be tackled by the more experienced kit builder.

In this section, we will look in detail at how I approached my build.

Tamiya's 1/48 Kubelwagen (#32501):

The first release in Tamiya's 1/48 vehicle line was clearly meant as a cross-over kit for use with aircraft models—the two included figures are Luftwaffe pilots, and three of the four marking options are Luftwaffe.

This kit, consisting of 55 parts and a clear windshield, is of Tamiya's normal high quality. Molding is perfect, detail is crisp and quite good inside the vehicle and out. Engineering and fit are first rate. Most ejector pin marks will be invisible on the finished model, but some in the interior will have to be sanded away or filled.

While detail is good, a notable omission is the lack of driver's pedals which will be quite visible with no driver in place. The clear windshield is perhaps a bit on the thick side, but detail is good with the windshield wipers being molded as part of the piece.

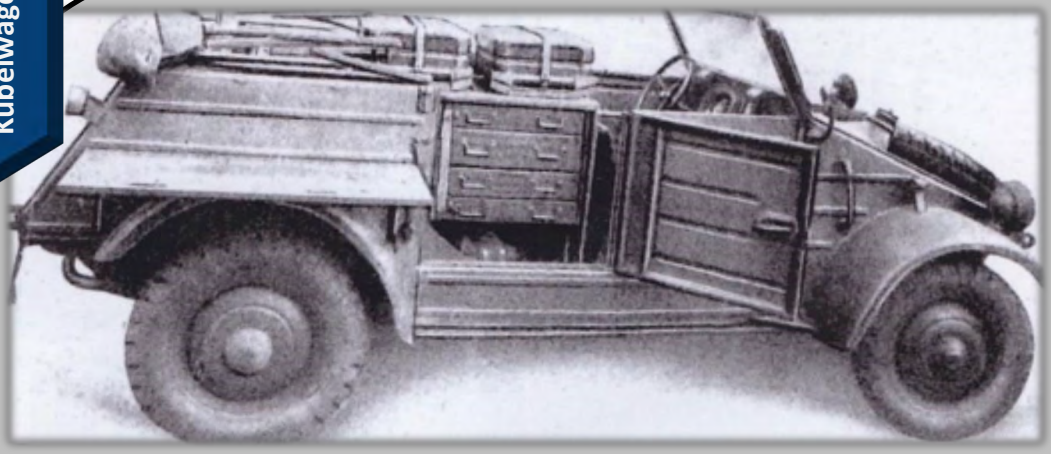
The folded canvas roof features good detail on both the roof and the frame, but there is no option for a closed roof.

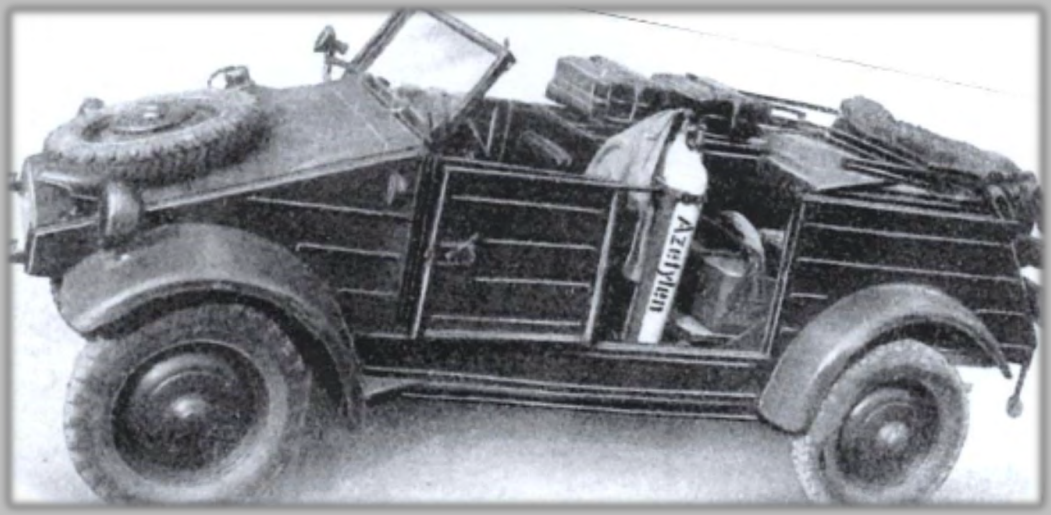
There are two figures in flight suits with flight gear included. These are better than most Tamiya figures, being very crisply detailed and standing at the correct height rather than being too small as many Tamiya figures are.

Decals are also typically Tamiya, with the carrier film being a bit thick. Still, with some setting solution or solvent, they snuggle down over detail nicely and, if applied correctly, look good once finished.

Tamiya's third 1/48 scale release was another Kubelwagen—an Africa version with the larger flotation tires. It also included two Luftwaffe figures in tropical uniform. Other than the different tires, it is very similar to this kit.

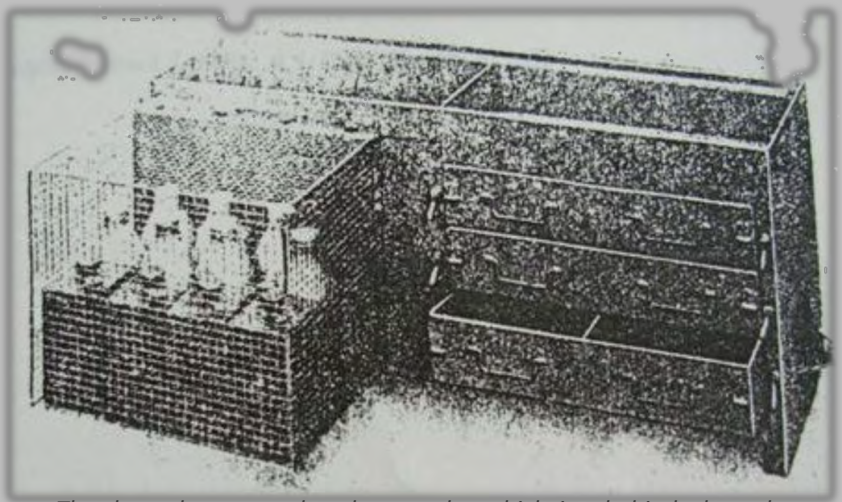
Both kits can be easily built into accurate and attractive models.

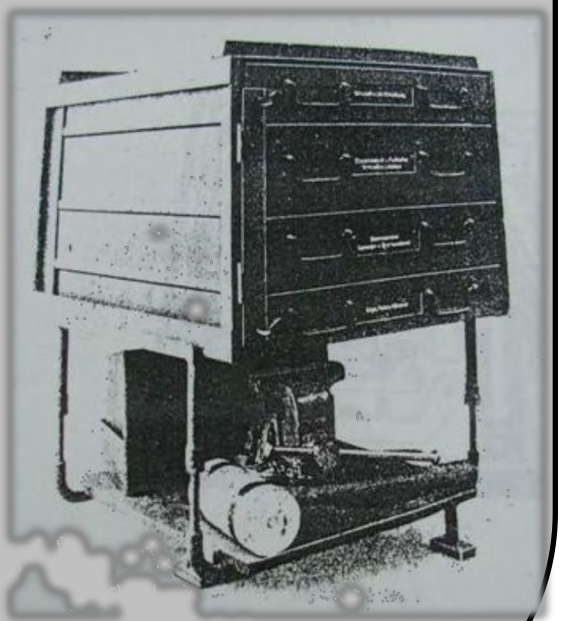




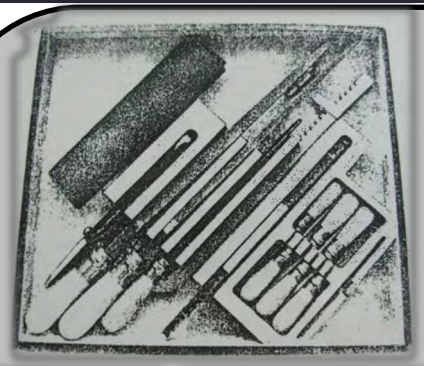
THE REAL THING

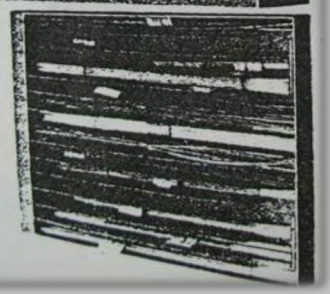
The Volkswagen Kubelwagen ("tub" car) was a light military vehicle used by the German military during WWII. Over 50,000 were produced. In addition to the standard version, multiple variants to perform different functions were made. One of these was the "Werkstatt" (workshop) vehicle as seen here. It was one of several three-seat variants where the back right seat was replaced – in this case by a large tool chest. This factory installation was built in fairly substantial numbers (approx. 2300) and made the best use of the limited space inside the small vehicle.





The chest above was placed across the vehicle just behind where the rear seat would have been. An open space between the back of this chest and the firewall was used to stow a folding table that could be attached to the vehicle above the right rear fender (see top photo). The chest at right was placed behind the right front seat and the drawers could be accessed through the back door. Welding tanks were mounted behind the driver's seat.





These photos show the standardized tool placement in the drawers of the large chest behind the passenger seat. On the CMK kit, these are molded in place. The drawers in the other chest are empty.

Kubelwagen:

Length: 12 ft 3 in

Wheelbase: 7 ft, 10 in

Width: 5 ft 3 in

Weight: 1,576 lbs

Engine: 985cc Air-cooled, flathead 4-cylinder producing 23.5 bhp

Ground Clearance: 11 in

Top Speed: 50 mph

Number Produced: 50,435

References:
-Wikipedia
-"Birth of the Beetle" by Chris Barber.

Working with Resin Parts:

Many modelers are unsure how to proceed when dealing with resin parts. Resin offers outstanding detail, but requires different methods.

Resin can be cut, sawed, sanded, and drilled. Take care and be safe—and don't breath the dust, it is bad for the lungs.

Parts do not come on parts trees—they are often attached to a large resin casting block that needs removed. Depending on size this can be done by sanding, with a hobby knife, or using a razor saw. You can also use a motor tool, but take care not to melt the resin (it is heat sensitive). This also creates lots of dust. Resin is also brittle and can break if handled roughly. Also, the casting block can sometimes cover detail that must be re-sculpted after the block is removed. If small details are nearby, it can be better to cut away the bulk of the casting block with a razor saw, leaving a small amount near the details and then carefully removing this with a hobby knife.

Speaking of heat sensitive, don't store resin parts in lofts, direct sunlight, or above fireplaces or heating radiators. These areas can become very hot and the resin can warp. The same rule applies to the finished model.

If a part is warped, it can often be straightened by applying a bit of heat (dunk it in hot water or use a hair-dryer). Carefully reshape by hand and "fix" the new shape with a dunk in cold water.

Examine the part. In addition to the casting blocks, there may be mold seams lines that must be removed. There may also be tiny pinholes (or larger craters) made by air trapped in the mold. Usually a bit of filler will take care of these.

Clean the parts with soap and water—paint will not adhere well to the mold release agent.

Standard model glue is designed to weld plastic parts together by dissolving the plastic at the mating surface. It is absolutely worthless for resin which it will not dissolve. For resins, use either super glues or, if you need a strong joint (weight bearing/etc.) then use a two-part epoxy. Both of these glues will glue resin to resin, plastic, or metal.

Resin is very versatile and will any accept just about type of paint topcoat. Many paints, however, will not adhere well to bare resin, so use a good primer.

Also be aware that some of the chemicals and solvents we use may attack the resin—if in doubt, do a test on an unneeded piece (the casting blocks are good for this).

As with any modeling medium, use caution and be safe when working with tools and chemicals

CMK's 1/48 Kubelwagen Workshop Conversion (#8006):

This resin conversion consists of 22 pieces. Casting is first rate with no voids or air bubbles in my sample. Detail is very good, with the tools and parts cast into the drawers being very well rendered. Where needed, parts are suitably thin, giving a good scale appearance.

Clean-up of the parts is the biggest challenge in this kit. As is normal with resin kits, parts are cast on excess chunks of resin left-over from the casting process. In many cases, these are large and substantial. Due to placement, they can be challenging to remove without damaging the parts. In some cases, the engineering is not great. In the case of the left door post and rail, even if the part can be removed, it will be nearly unusable as the bar is cast with its long axis on the mold block. The face of the drawers are cast to the mold blocks. Thus, there is no detail, such as handles, on the face of the drawers, and any damage incurred when removing the excess resin will be very visible on the finished part.

The parts as they come from the pages. Note the large mold blocks of excess resin.

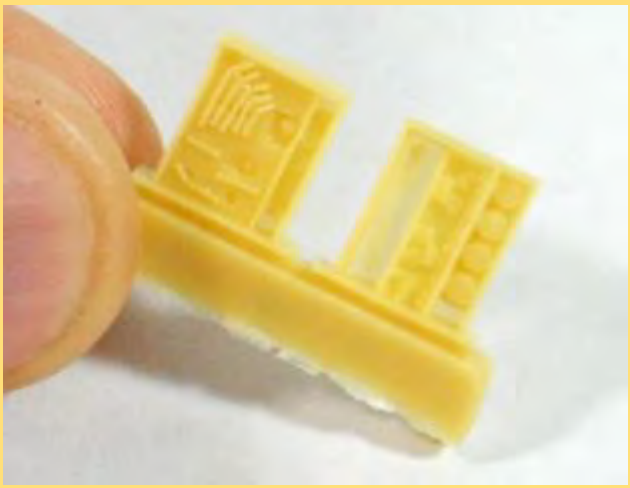
The drawers are designed to be removable. This results in them being very loosely-fitting. Fit of other parts is very good indeed. The four drawers in the side cabinet have their contents molded in. The drawers in the interior cabinet are empty.

Instructions are fairly complete and are adequate. Any confusion is easily cleared up by referring to the pictures from the vehicle manual (see previous pages).

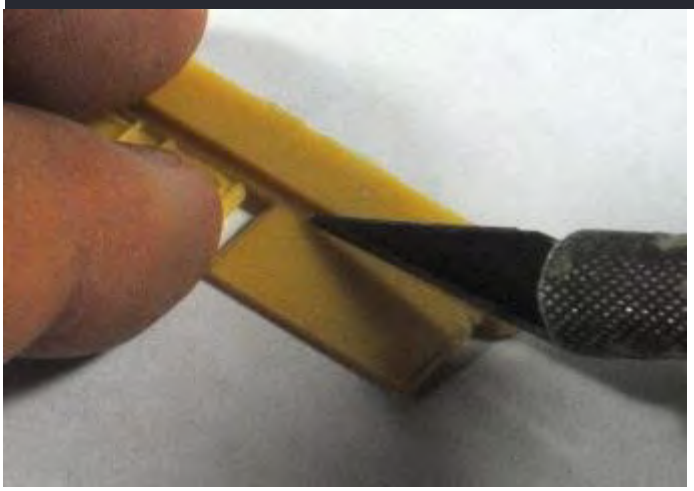
Note that while the workshop pieces are fairly complete, there are no replacement Kubelwagen doors or top rear access hatch. There is also no firewall for the Kubelwagen included. The lack of this part will be quite visible once the conversion is in place.

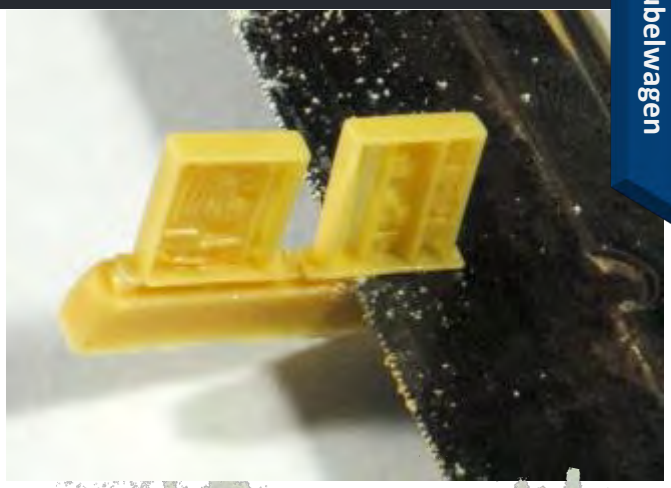
So, while this is not a simple drop-in fit, and while clean-up can present some challenges to the modeler, it is still a far easier option than scratch-building the entire shebang. It is also a fairly inexpensive conversion kit—MSRP is about $15, but I was able to get mine for $8 on e-bay. The final result, with a bit of work, is quite good and matches the original very well.

Let's build the kit, and see what challenges it presents and the methods I used to overcome them.



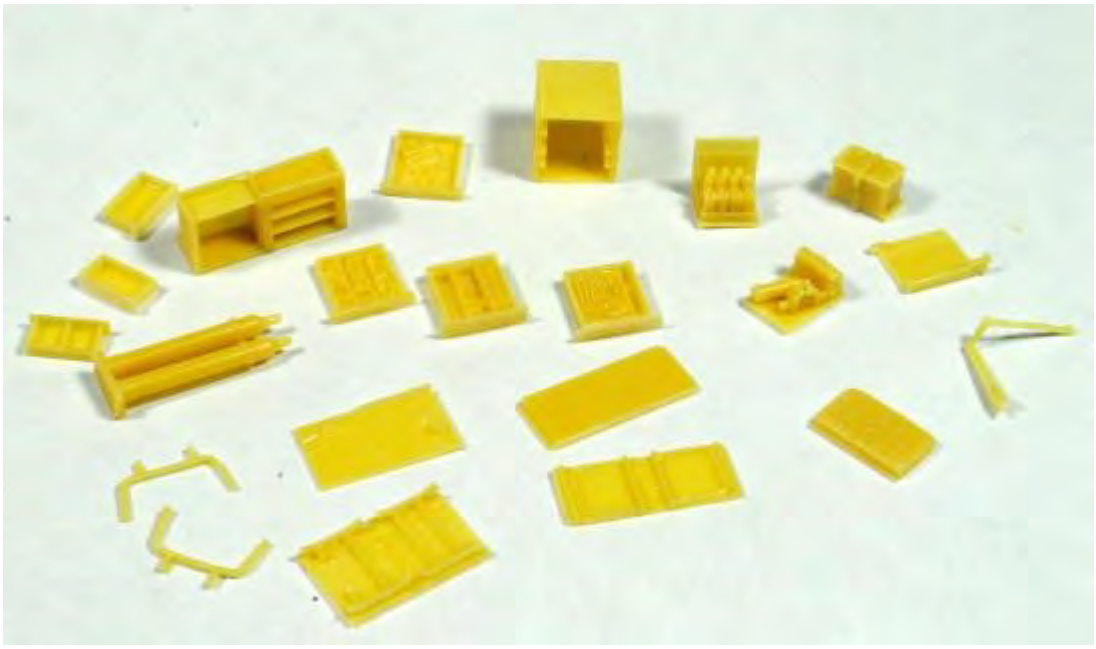
Left: The drawers are molded with their faces to the mold blocks. This precludes any detail, such as handles, and ensures any damage will be in the most visible places. Above: Removing this tiny bar without damage and while keeping it round is possible, but difficult. It is easier to make your own or salvage the Tamiya kit part.



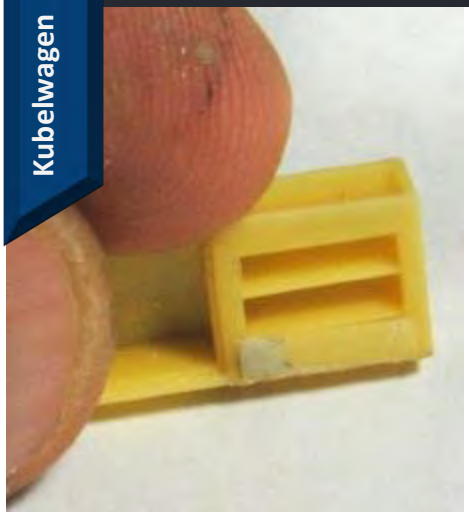


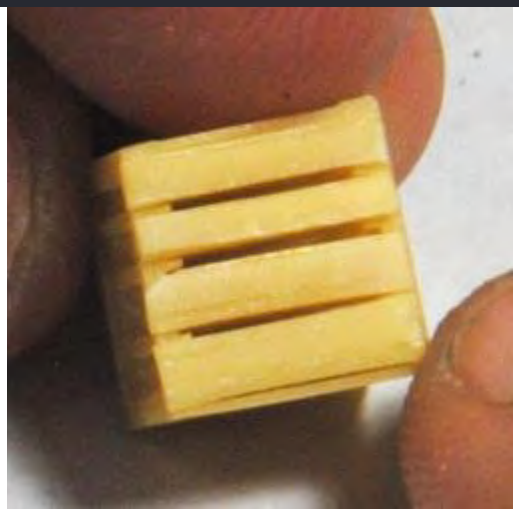
Top: Many parts can be removed from the blocks by scribing along the attachment line with a sharp hobby knife. Some, like the chest supports above, require great care when doing this so as not to break the delicate pieces. Top Right: In other cases, such as the drawers, I found it easier to use a razor saw. Despite being very careful, the tiny fragile corners on the face of two drawers chipped off.

Above: Sometimes you must study parts carefully to determine what is part and what is excess resin. As seen above, the rack that holds the welding tanks is cast as part of the tanks. Make sure you do not remove these!



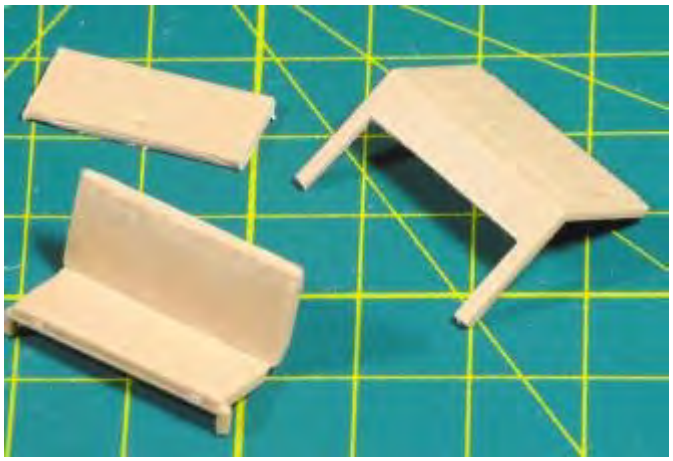
Left: All the various parts removed from the mold blocks. Once removed, any excess resin left can be carefully removed with by sanding or by cutting away with a sharp hobby knife. From this point, the kit assembles like any model. Plastic model cement will not adhere to resin. I normally use superglue. For large, heavy, load-bearing parts (none here), or if I need lots of time to adjust the pieces (again, none here), I will use a slow-setting superglue or five-minute epoxy.

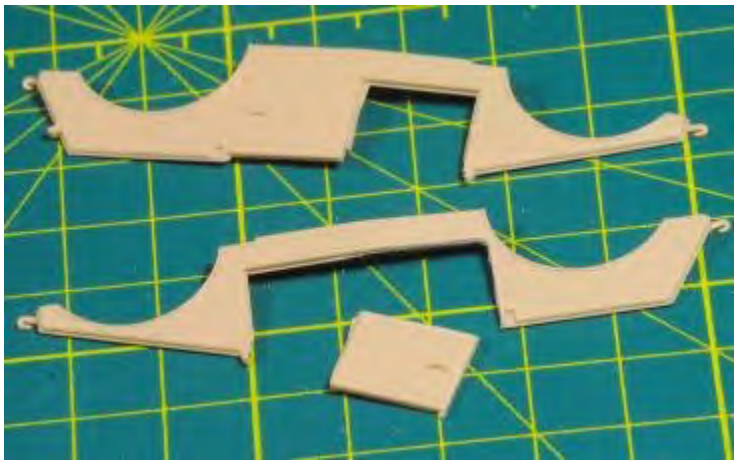




Far: For those drawers when the corners of the face chipped, I simply glued them in the closed position and repaired the face of the drawer with a bit of Magic Sculpt epoxy putty.

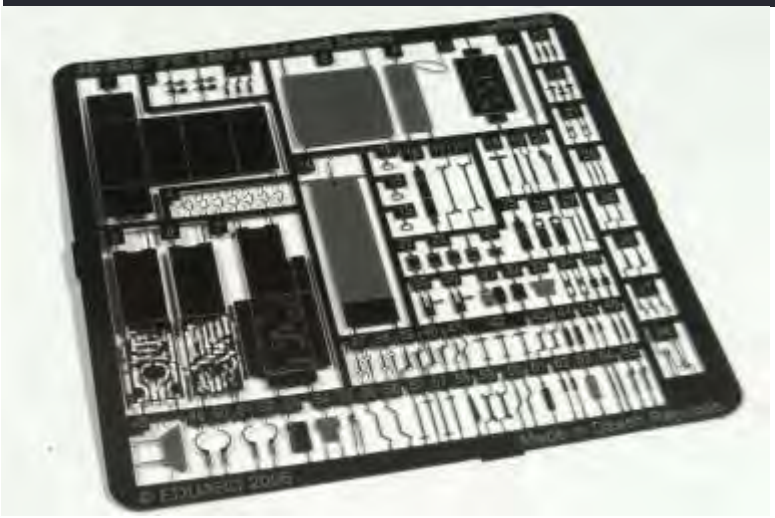
Near: The drawers are designed to be removable. This results in a very loose fit with lots of gaps. I recommend posing enough drawers in the open position that this is not noticeable. If you want all drawers closed, it would be easier to just represent their faces with styrene strip since details such as handles must be added anyway.





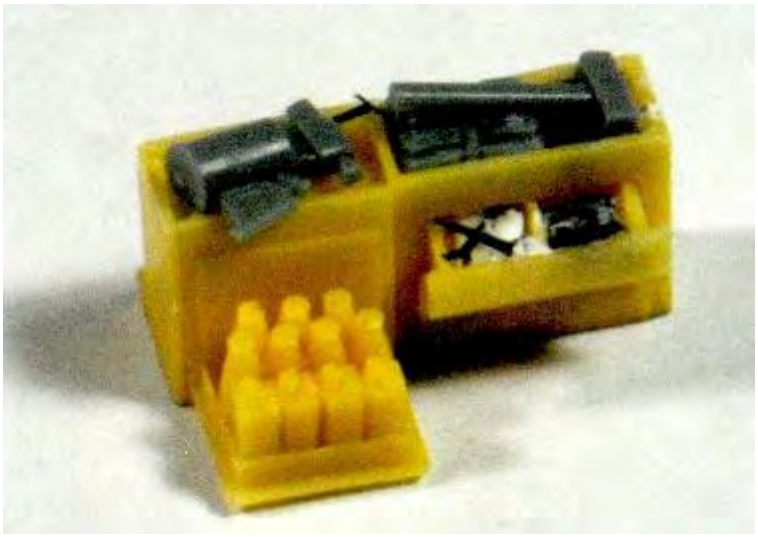
Per CMK's instructions, some parts of the Tamiya kit must be cut apart. The rear of the hull, rear deck, and back seat are all one piece in the kit. These must be cut apart as shown above left. The seat will not be used, but the other parts will remain, so care must be taken not to damage them. The same is true of the rear doors, above right. These are molded as part of the side of the vehicle, but must be cut loose for the conversion. This will take the door posts with them. Again, use care because the doors must be salvaged for reuse.

The large side cabinet was assembled per instructions with two of the drawers left open or partially so. This cabinet contains a rack for two Jerry cans, but no cans are included. I sourced my cans from various Tamiya kits. The straps are thin styrene strip and the buckles were sliced with a sharp hobby knife from some old plastic 1/35th backpacks in my spares box.



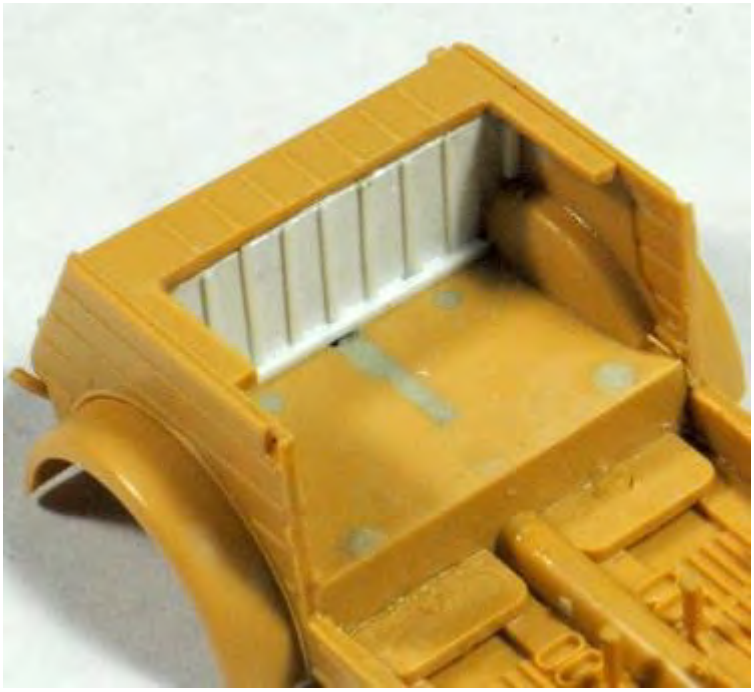
As this is a workshop, tools are needed. As stated, some of the drawers have tools molded in. Other sources for tools included this photo-etched set by Eduard (#48555). Although designed for German aircraft, it includes many tools on the fret. For under $10, the price was right, too. Other tools and tool boxes came from Tamiya's German Field Maintenance set. Extra tools left over from various armored vehicle kits were also used as needed.

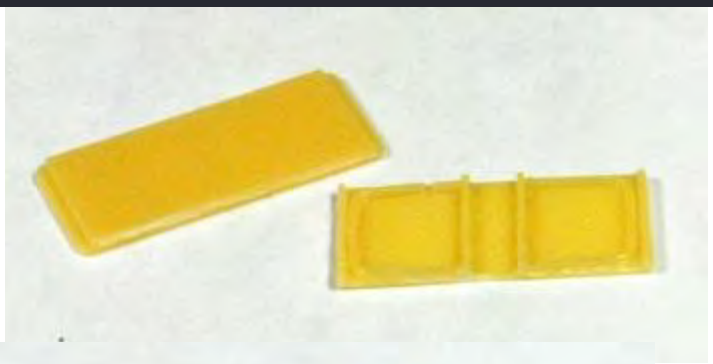
Middle left: Here the rear cabinet is assembled. Two of the drawers were glued closed. The other, empty, drawers were filled with bits of styrene, photo-etched tools from the Eduard set, and pieces from the Tamiya Field Maintenance set. I was aiming for a nice, cluttered, lived-in look for the workshop.

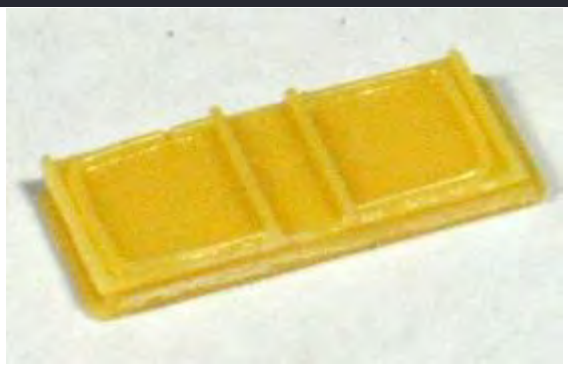


Below left: With the rear deck opened up, there is nothing to stop the viewer's eye from looking right into the empty engine compartment of the vehicle. There should be a firewall present, but this part is absent from the Tamiya kit (understandable as it wouldn't be visible if the kit were built as designed) and from the CMK kit (where I feel it should have been included). Mine was made from sheet styrene. The ribbing is .25 x .5mm strip. Although, if I were doing it over again, I might use slightly smaller stip.

Below: While I had the styrene out, I added the bulkhead at the front of the crew compartment and the missing driver's pedals.

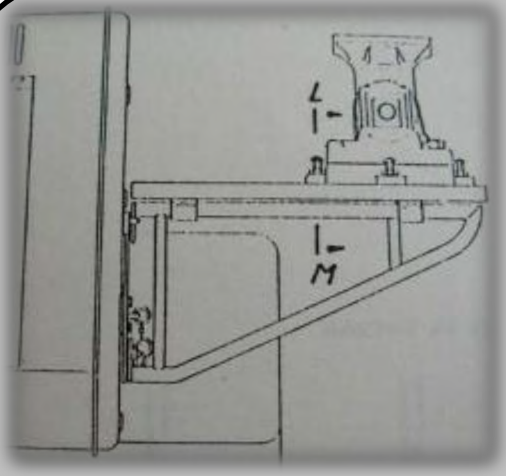


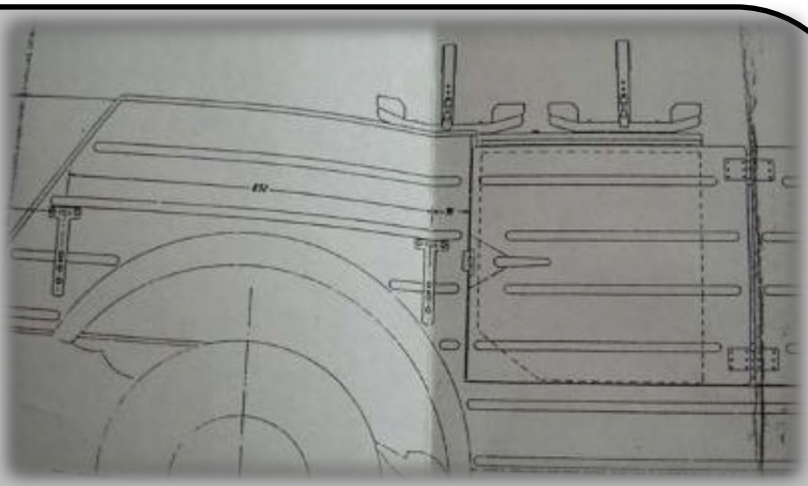




The folding table comes as two parts—the surface and a piece that contains the legs. Per the instructions, to model the table folded, one simply has to glue the leg piece to the backside of the face piece. This works quite well (above). The table can then be easily stowed in the hollow behind the rear tool chest and the engine firewall (see the test-fit at left).

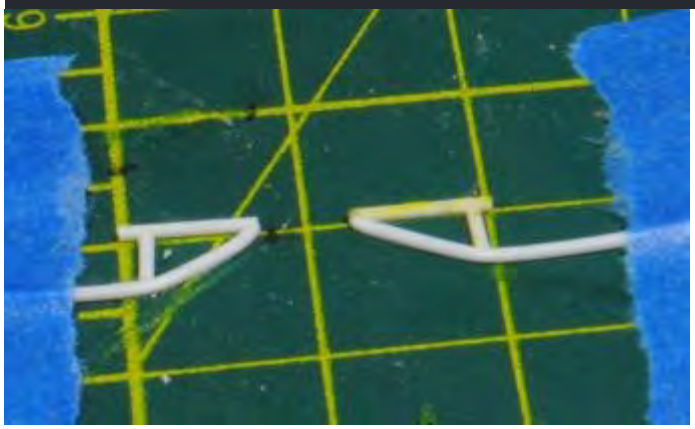
If you wish to model the table deployed, it is not so simple. The instructions would have us cut the legs from the backing piece. However, this piece is thicker than normal casting flash and the legs are extremely fine and thin. I do not believe it would be easy (maybe not even possible) to remove these without lots of work and a high risk of damage. Additionally, the design of the legs do not match the plans of the original vehicle (see below). Thus, it would likely be easier for the modeler to fashion their own legs.





THE REAL THING

Left: Here we see a rear view of the folding table deployed on the right rear fender. Right: Brackets mounted to the hull on this side held it in place. I can no evidence of such brackets also being present on the left side as well.

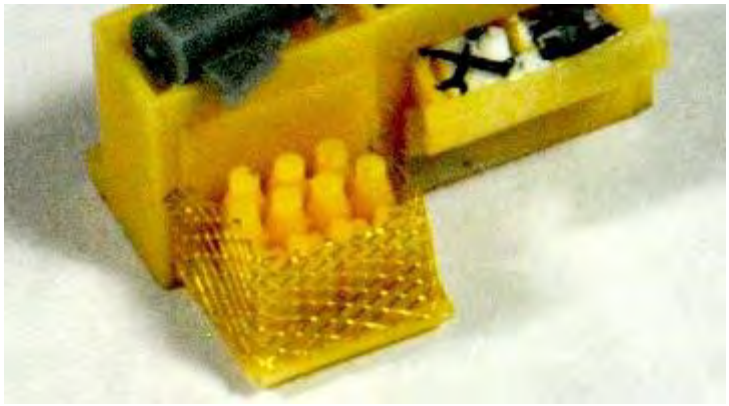


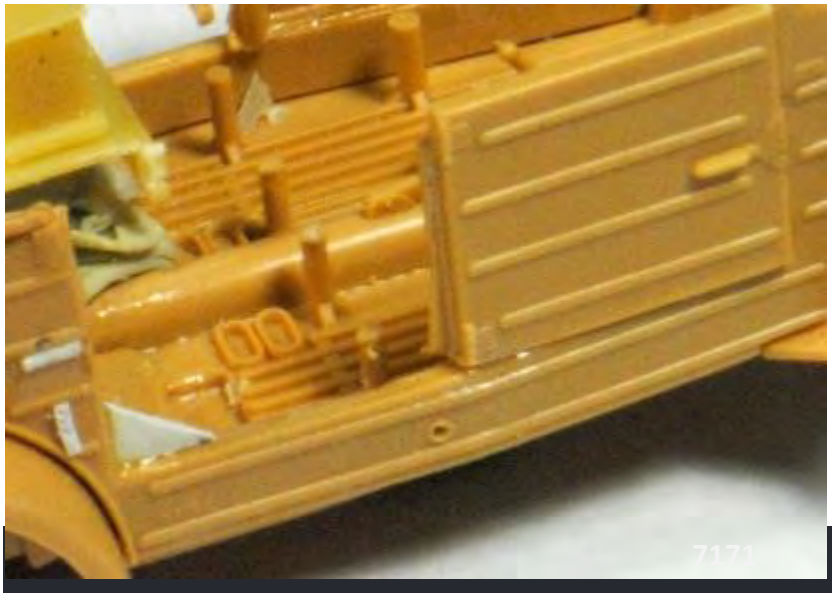
Above: Table legs were fashioned from .88mm styrene rod. The table top was scribed to represent woodgrain and the legs attached. Also attached were a vice and a couple oil cans (Tamiya) and some tools (Eduard).

Left: The hull mounting brackets were made from styrene strip

Below Left: A test fit made sure everything fit and that the vice handle did not foul the open drawers.

Below: The mesh on the bottle tray was added from fine PE mesh.



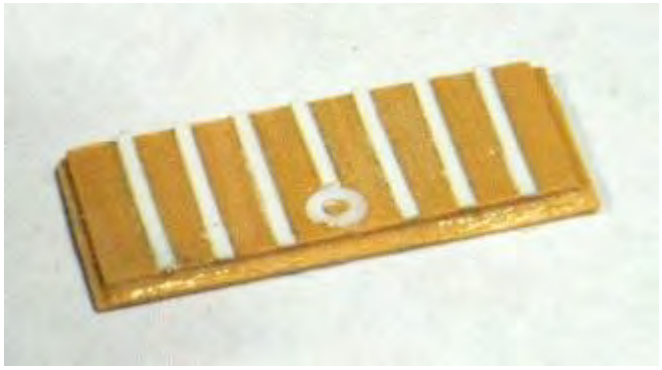


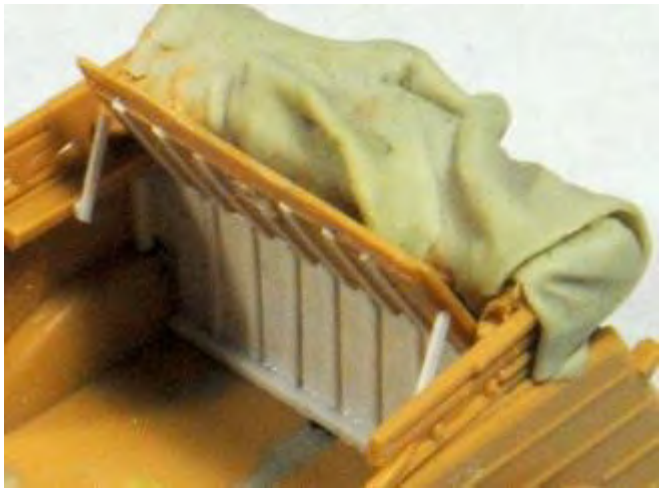
As the front and rear doors in the kit are identical, I merely swapped them and put the removed rear doors where the front doors should be. This allowed me to recycle the central door posts that otherwise would have to be replaced. Note that there is a triangular support at the bottom rear corner of each rear door. This is molded in place on the doors and must be carved away. This was replaced by cutting small triangles of plastic and gluing them in place in the bottom rear of the rear door openings.

Right: Since the doorposts were reused, I also used the bar that runs behind the seats from the kit. This was cut to the proper length to fit up against the tool chest. I also cut away the upper portion of the rifle rack attached to the bar. I did not worry about the floor portion of the racks—they will be covered by the welding tanks and the tool chest. At this point, I also attached the folding seat. Using putty, I made a shop rag/towel and placed under the seat.

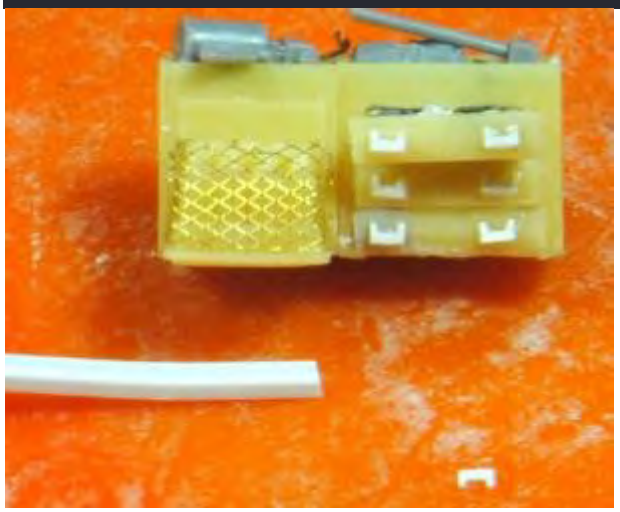
Below: I also reworked the folding top using putty.

Below Right: The inside of the rear hatch was detailed by carving a lip around the edge and adding ribbing and latch with thin styrene shapes. This was glued in place using thin styrene strip to fashion the sliding hinges.





This basically finishes the conversion portion of the build (with the notable exception of the handles on the drawers, but these don't affect parts placement or fit). Here we see the tool chests and welding tanks set in place for a test-fit. They will not be glued in place until after painting. Likewise, the wheels are not permanently attached. The only remaining piece is the folding seat back. From this point, the remainder of the little car can be built per the instructions. Like the werkstatt parts, the seats will not be added until after painting.



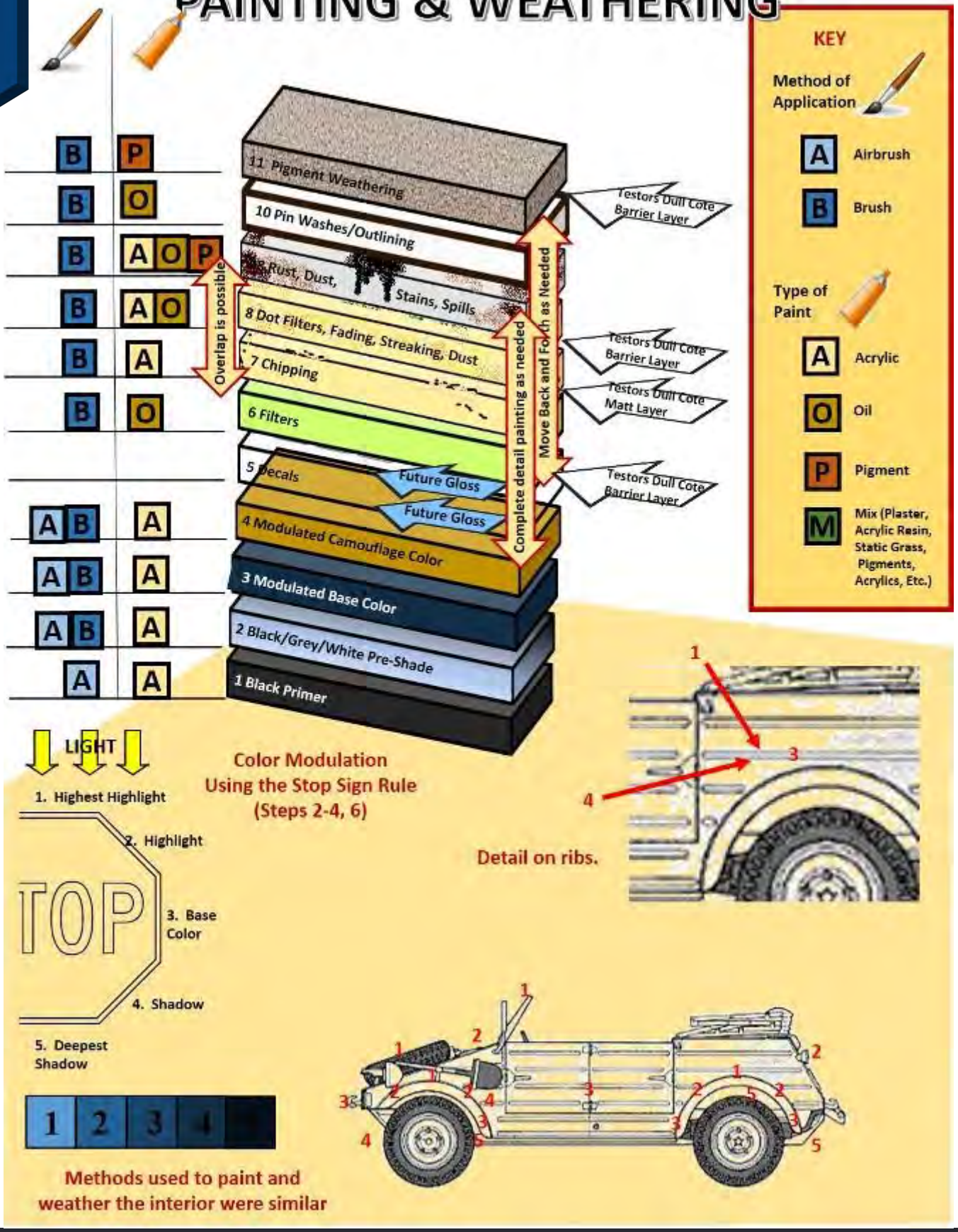
The handles were salami-sliced from a strip of Evergreen 1.5mm styrene channel.

The sub-assemblies of the Kubelwagen ready for painting.

Just as was done with the Tiger, the vehicle was initially pre-shaded in various shades of black, grey, and white.

Pre-shading is a technique I do not use with every build. It works best with single colors—the more layers of camouflage, the less the pre-shade shows through and thus the less effective it is. As the Kubelwagen was to be painted in primarily dark grey, and as it has the ribbed sides, the pre-shade will work with it very well. For consistency, the Tiger was painted using the same method.

PAINTING & WEATHERING



Over the pre-shade was applied the grey and the camouflage. As a pre-shade was used, I applied only three colors of grey—shade, base, and highlight. The shadow color was Black and Black Grey. The base was Black Grey with a bit of Intermediate Blue. Highlights were created by adding Pale Blue Grey. For the dark yellow I used two varieties—both different than that used on the tank. For the camouflage and one wheel, I used Green Brown. For the spare tire, I used Dark Yellow.

Weathering followed my normal process using my standard techniques. To protect the areas of the windshield wiped clean by the wipers, these areas were masked with blue painter's tape. The glass was then sprayed with Dullcote to give it a frosted, dusty look. After most weathering was complete, the tape was removed. Above Right we see the vehicle at step #10 of the process (see facing page). All that remains is to add the pigments and mud. These were applied using the same methods as on the Tiger.

The finished Kubelwagen

Army Panzer Crew Uniforms

A source of pride for the Panzer elite was the black vehicle uniform. Designed to be a practical outfit for working in tanks, the uniform consisted of a short, double-breasted, tight-fitting jacket without external features to snag, and trousers gathered at the ankle. The edge of the deep fall collar was initially piped in the arm-of-service color—pink for Panzer troops. This was dropped officially in 1942, but continued to be worn by many veterans and officers. The collar bore black rhomboid patches, piped in pink, that contained pin-on metal death's head insignia. Shoulder straps were of the usual army design. Lower ranking soldiers wore their normal sleeve rank insignia on black backing.

Full length marching boots were worn. The trousers were usually worn over the boots, but I have seen a few photos where they are tucked in. The tall boot was discontinued for panzer troops in 1941, being replaced with the laced ankle boot and gaiter (although the gaiters seem to have been rarely—if ever—worn).

By 1943, the beret originally worn by the panzer troops had disappeared. The side cap was common in both black and field grey. Versions made prior to 1942 featured an inverted V of pink piping in which the national cockade was placed. From mid 1943, the *Einheitsfeldmutze* cap became increasingly common. Officers' versions of both caps were piped with silver. Popular among officers was the standard peaked service cap in field grey with a dark green band piped in arm-of-service color.

The early style shirt, in mouse grey, had no pockets, shoulder straps, or insignia. Later, a dark grey shirt with pockets and shoulder strap attachments was issued. Shirts came in a variety of grey and field grey colors. A study of photos indicates privately acquired black shirts were also sometimes worn. Also popular were sweaters in black or grey (one series of photos shows what appears to be a civilian sweater being worn—color is impossible to determine).

The black uniform was often covered (or replaced in hot weather), by denim overalls of various colors and styles. The standard army off-white fatigue uniform dyed green was also worn. Starting in 1941, a green drill version of the black wool uniform was introduced for armored car crews, but tank crews also acquired numbers of these. The following year, a reed green version was introduced for tank crews. These were very similar to the black uniform, but had a large flapped pocked on the left chest and another on the left thigh. Also in that year, a green denim "universal" uniform was issued. It was made in the same style and cut as the field grey service dress uniform. Tankers often wore this with the jacket tucked into the trousers.

Photos clearly show that tank crews wore any and all of these uniforms, or even mixes of various uniforms. On campaign and in battle, the most "uniform" thing I've noted in photos is the complete lack of uniformity.

The black panzer uniform is worn by all these men. The Tiger commander to the left wears the earlier version with pink piping around the collar. His pink-piped shoulder strap is in silver braid with a gold rank pip. He also wears the early style side cap with pink inverted V over the national cockade. The cap scallop is also piped in silver indicating his status as an officer. Note the death's head insignia on the collars. The tankers at right (of s.Pz.Abt. 503) show the later style of uniform without the collar piping (although the patches on which the death's head was pinned remained piped). The man in the middle retains the earlier side cap while the others wear the later version. These photos show the regulation uniform. On campaign, in the field, crews would rarely be so neat and tidy as the photos on the next page indicate. Having served over twenty years in the military, I can attest to the fact that in the field comfort, practicality, and serviceability are more important considerations that uniformity.

Tiger 1 (Early Production)

Above: These tankers (of s.Pz.Abt. 503) wear a variety of uniforms. Note the mix of field grey and black items. On is in shirtsleeves and one may be wearing overalls. One (inset) appears to be wearing a civilian sweater in a plaid weave. Color is anyone's guess—grey, green, red? The man loading ammunition above is in shirt-sleeves. Based on the contrast, I'm guessing the hat is black while the shirt is mouse grey and the trousers are either the reed green drill variety originally issued to armored car crews, fatigue trousers dyed green, or even simply faded black.

Middle: The face of battle. The Panzer IV crew in this photo show the stress and strain of campaigning. The uniforms are dirty and disheveled. The NCO (probably the tank commander) seen at the far left wears what appears to be the reed green "universal" uniform with the jacked tucked into the trousers—a common practice with tankers. Or he could be wearing coveralls as the next two soldiers appear to be doing. From the faces fouled with burnt powder, I'd guess these to be the loader and gunner. The last two seem to be wearing the standard fatigue uniform dyed green. The NCO seems to wear the low boots and gaiters, all others look to be wearing the tall marching boots.

Bottom: Another Panzer IV crew in various forms of dress and undress. The man on the left appears to be wearing a lightweight green version of the standard panzer uniform. The two in the middle are wearing the green trousers and shirts with shoulder straps attached. The man on the right appears to be in the black uniform trousers. All wear the low, laced boots.

Creating the Figures

My methods for creating figures have been amply demonstrated in my other build logs. Here, we will look at how those methods were applied to this build.

There are not nearly as many figure options in quarter scale as there are in the more populous 1/35th. Therefore, you are limited to what is available unless you are willing to convert or sculpt your own. For this build, I used the two ICM figure sets shown at right as my basis and worked from there to get the poses and uniforms I wanted. The ICM sets are plastic like the Tamiya offerings, but are more appropriately sized and better detailed. However, they offer far fewer sets, and most they do offer are pilots and ground crew meant for the 1/48th scale aircraft modeling world.

COMPARING TAMIYA AND ICM FIGURES:

We have seen the Tamiya figures featured in many of my past builds (most notably my series of Sd.Kfz 251s which used over one hundred). While the Tamiya figures can be used with good results, they are less than optimal. Although they feature very good poses, they are too small, being closer to 1/50 or in extreme cases to 1/56 scale. One could argue that their scale size of 5 foot 2-5 inches is actually more appropriate for WWII Germans than six-foot tall supermen. The problem is that are *proportioned* as if they stand six-feet tall, being approximately 8 heads high. Regardless of a person's size, the size of the head is fairly consistent with an adult male's head being about 9 inches high. Thus, 8 heads gives us a height of 6 feet (refer to many of my earlier build articles for in-depth discussions on size and proportion). Additionally on the Tamiya figures, detail can be quite soft or even lacking.

How do the ICM offerings compare? As far as design/engineering, the ICM figures are much like the Tamiya ones (and every other injection-molded figure set). The also feature good pose and anatomy. Detail and molding are crisp. The photos below show a comparison between two similarly dressed and posed figures. Note that the ICM figure (tan) is looking down and his legs are spread farther than the grey Tamiya figure—thus, if both were standing to attention, the ICM figure would gain marginally more height than would his Tamiya companion. The "tick" marks on the photo background are at 1/4 inch intervals. If standing straight, the ICM figure would be close to 6 feet tall, the Tamiya mini-man a good 6-8 scale inches shorter.

It is clear the ICM figures are more appropriately scaled. They are taller, have larger heads, and (interestingly) much larger feet. Detail is also crisper—note the face, detail in the hair, seams on the overalls, and detail on the boots for examples.

Posed next to each other in a scene the figures would look odd. However, if they were far apart in the scene, the differences would not be so noticeable. One could also replace the smallish Tamiya head with a more appropriately-sized piece, such as those offered by **Figures With Attitude**. This would result in figures that were, proportionally, the same scale, with the Tamiya figure representing a shorter man.

QUARTER SCALE TANK CREW OPTIONS

When in comes to 1/48th scale, there is more available than ever before. Many vehicles have been kitted in plastic, and, if we include resin, there are only a few notable gaps. It is not quite the same with figures. It seems in the more bloated 1/35th scale, you can find any pose in any possible uniform. Our options in quarter scale are more limited. If you're looking for a "generic" figure to go with a "generic" vehicle, you are good to go. But if you are trying to find specific poses in specific uniforms then I hope you have passable conversion or sculpting skills. As I've shown in my other works, neither of those options are difficult.

Probably the most plentiful and inexpensive option are the plastic figures by Tamiya. Each of these sets contain 12-15 figures of which a few are vehicle crewmen. They also come with plenty of gear and weapons. The sets retail for between $15-20 (USD). The German Infantry set (32512) contains five tankers, four of which are posed to be placed in hatches. The Panzergrenadier set (32514) contains three tankers, two of which are in cold weather clothing. The Infantry on Maneuvers set also contains three tankers, one of whom wears the denims with the large breast and thigh pockets. The Field Maintenance set contains one tanker (posed as if painting a vehicle) and several men in overalls who could also be tank crewmen. The Tamiya figures are well proportioned and reasonably detailed. However, they are a bit on the small side as we have seen. (Detailed sidebars discuss this in my how-to's on the Sturmgeschutz III Ausf G on page 128 and my GAZ AA on page 27). The plastic Tamiya faces are usually rather expressionless and have soft detail. Still, as anyone who has followed my multiple-model Sd.Kfz 251 project knows, they are useable.

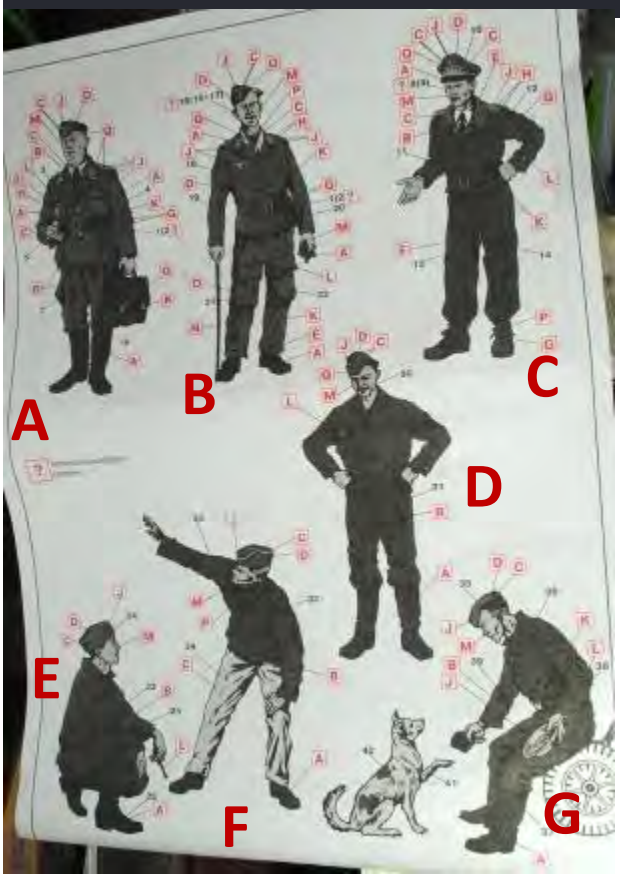
There are other good options. At right is the Figures With Attitude "Sturmgeshutz Crew". Obviously, these could be used with other vehicles. They are well posed, well proportioned, and well detailed. In fact, they may well be the best 1/48th scale figures I have seen. So too are Scale 75's figure sets. Their German Tankers are shown bottom right. All these are quality figures, but only a few are available and they come at a premium—$10-$12 per figure. A tank crew may cost you more than the vehicle they man!

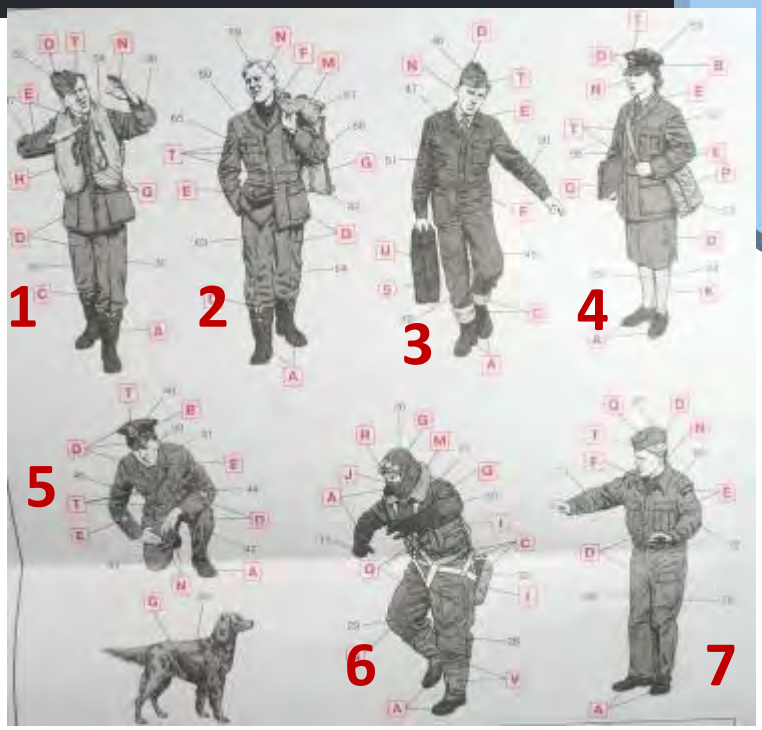
Several companies offer resin figures and sets. These vary in quality from good to satisfactory, and are a bit less expensive at about $15 per set of two or three. Shown here is a Dartmoor set of German Tankers with Jerry cans and two Gaso.line sets depicting Africa Corps crewmen.

There are also figures and sets for aircraft models that are useable—either as the basis for conversions or as-is (the ICM figures used in this build, for example). Figures With Attitude also sells head sets and, soon, hand sets.

If you are mixing/matching figures or parts from various manufacturers (or even different sets from the same maker), beware that not all are created equal! There is a notable size difference between some. People, of course, come in different shapes and sizes, but some things such as heads should be quite close and equipment should be identical.

You can also make your own figures. I have sculpted many of my own around commercially available heads. This process was shown, in detail, in my StuG III Ausf G and my Sd.Kfz 250/10 builds. Or you can convert any of the available offerings into just what you want. This process has been shown in many of my previous works and is explained in great detail in the Figures Chapter of my Project 251 and in my GAZ AA how-to.



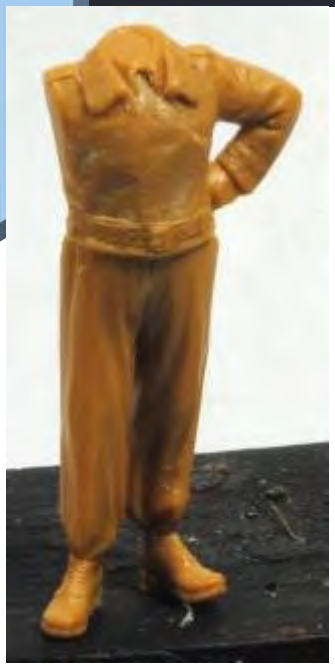


As already stated, the ICM figure sets shown here were used as the basis for the figures in the diorama. Set #48085 German Luftwaffe Ground Personnel is shown at left and #48081 RAF Pilots and Ground Personnel is shown above. The instruction sheets are shown. The letters and numbers are mine. They simply identify figures to make explaining the conversions easier.

Three of the figures (D,E,G) were already wearing suitable uniform and featured suitable poses. They were assembled stock from the Luftwaffe kit. Figure G was seated on a Jerry can.

The Panzer officer was also made from parts from the Luftwaffe set. The figure is mostly "C" with a right hand (with cigarette) from "A".

How he was converted is shown on the following page.




As usual, my preferred medium is Magic Sculpt epoxy putty. For tiny details, I used Kneadatite (the green putty). I work in small applications at a time and allow each to harden before working the next. For this figure, I started by cutting away the necktie, the fur texture on the collar, detail on the front of the coat, and the straps/buckles on the cuffs. The first application of putty fleshed out the right side and lapel. Next was the left side lapel followed by the lapel turndown. This progression is shown in the photos above. Finally (see previous page) the portion of the jacket under the belt was added and then the various medals and awards. These were fashioned from small blobs of Kneadatite that were pressed into place and then shaped and textured with a sharp hobby knife and needle. Ribbons and other insignia will simply be painted on.



The man carrying the Jerry can was converted from British figure 3. The pose is excellent as it actually shows the weight of the can. Many figures seem to lift things effortlessly. In reality, if the can were filled with water, it would weight about 53 pounds—41 if filled with gas.

Shirt, jacket, cuff, and sock details were carved away and the German fatigue/work uniform was created with several applications of putty. Buttons are lengths of stretched sprue. Note the center handle of the Jerry can was cut away to fit the hand. (Note: Jerry cans had three handles: for one-man carry, the middle handle was used, for two-man carry the two outside handles).




The other casual tanker from made from parts of the RAF set—legs from figure 7 and the remainder from figure 2. As can be seen in the photos above, most of the detail was removed and resculpted. He is in shirtsleeves with his Panzer wrap carried thrown over his shoulder. The trousers feature the thigh pocket of the green version of the Panzer uniform.

THE REAL THING

The look of fatigue. This early war photo shows armored vehicle crewmen attending a briefing. Some wear the full uniform, but many are simply in shirtsleeves.

A REAL-LIFE "ODDBALL"

Oddball

Oddball was the spaced-out Sherman tank commander portrayed by Donald Sutherland in the movie "Kelly's Heroes". Long-haired and bearded, he was, literally, a hippy 20 years before hippies (he would likely have used the term "Bohemian". Very eccentric, he seemed lazy and relaxed – passive even. He believed in the power of positive thinking and had the demeanor of someone who appreciates mind-altering substances. Yet he trained his men well, and effectively led in battle.

In some ways he reminds me of the Germany's highest scoring tank ace – Kurt Knispel. A Czech, Kurt joined the German Army in 1940 and trained in tanks, initially serving as a loader and then a gunner. In early 1942, when we was sent to train in the new Tiger tank, he was already credited with 12 kills. He was assigned to the 1st Company of the 503rd Heavy Panzer Battalion as a gunner and then a tank commander.

He became the highest-scoring tank ace of the Second World War, scoring 168 confirmed kills and perhaps as many as 195 total. It is claimed he often credited kills to others than he could have called his own. The affable Knispel shied away from such arguments. One of his kills was at the incredible range of 3000 meters! He is known to have faced superior enemies alone to give the units he was supporting the best chance to advance or the safest passage of retreat. One of his commanders praised him by stating he never abandoned anyone, even in the worst of situations and conditions. The battle-hardened sergeant saw action on both the Eastern and Western Fronts including Kursk and Normandy. He was killed in action just ten days before the war ended.

Kurt Knispel

He was awarded the Iron Cross First Class, the Tank Assault Badge in Gold and the German Cross. He was recommended four times for the Knight's Cross. The probable reason he never received it, and likely the reason of his slow rank advancement, was his displayed lack of respect for higher authority and regulations. He once assaulted an officer he saw mistreating POWs. Against regulations he had a tattoo, a goatee, and longer than authorized hair. But he was well-liked by his fellow soldiers and his skills were never matched. However, the Propaganda Ministry preferred heroes like Michael Wittman who looked more the part and were more "Nazified". It would have been asking too much to make a Czech (and a wayward one at that) into a war hero!

While it might be tempting to think that Knispel may have, in part, inspired Oddball, there is no reason to believe the writers of "Kelly's Heroes" had even heard of him.

The mechanic at the Kubelwagen (left) is figure F, with the right arm of figure 7. The sweater around the neck was carved away, and the right hand was slightly altered to hold the part (a bit from Tiger Engine Compartment set). He already wears the appropriate German work/fatigue uniform.

Der Spiess (right) is based on figure A. The arms were replaced as I had already used one and the other was unsuitable. I used arms from figure B with a new right hand. Only the head and the basic pose remain unaltered. The trousers and jacket were almost completely resculpted. Note the report pouch carried in the Panzer wrap.

DER SPIESS

In the German military, each company or battery-sized unit had a "Hauptfeldwebel". Rather than a rank, this was an appointment. While it could be held by any noncommissioned officer (NCO), it was usually filled with a senior NCO in the rank of Oberfeldwebel, but there is photographic evidence of soldiers ranked as low as Unteroffizier filling the role. The position was often referred to as "der Spiess" (The Spear), a term dating back to the day when NCOs were armed with pikes and followed behind the line to keep the soldiers in line and in order. More informally, he was known as "die Mutti die Kompanie" (Company Mother).

His duties were broadly similar to the British Company Sergeant Major or the US First Sergeant, although the German military did not have a direct equivalent to these positions. He generally performed the administrative tasks necessary to run the company such as personnel and supply functions. "Der Spiess" led the company headquarters and supply sections, enforcing discipline and overseeing all work done in the company rear including reports, orders, promotions, inventory, mail, pay, rest facilities, furloughs, passes, and rations. He was generally not expected to go into combat with the company but could, in the event of casualties among officers and NCOs, be called upon to lead a platoon-sized unit.

To indicate his status, this uniform tunic and greatcoat featured two rows of NCO braid around the cuffs. These were often referred to as "kolbenringe" (piston rings). Another visible sign of office was the black leather "Meldetasche" (reporting pouch) in which he carried papers, rosters, and other needed information. This case had no straps or slings and was carried thrust into the tunic front, both on the standard uniform and the armored fighting vehicle uniforms (black and field grey).

Above: Clearly visible in this photo are the trappings of office—the sleeve braid and the report pocket thrust into the tunic front.

Above Right: This photo of soldiers from the 6th Company, Panzer Regiment 10, 10th SS Panzer Division, includes the company Spiess (far left, note the report pouch) *SS-Hauptscharführer Fritz Stief*

Right: "Der Spiess" in this photo is identifiable by the sleeve braid. Note the tent made from multiple zeltbahn ponchos.

Tiger 1 (Early Production)








The figures were painted using methods previously described in my other build logs. Note that they wear a mix of Panzer uniforms (black and reed green), work/fatigue uniforms, and coveralls both in field grey and black.

Tiger I (Early Production)

When composing all but the most basic scenes, I usually start with sketches—trying various arrangements until I find what seems to work best. My final sketch is shown at right (earlier iterations can be seen on page 91). Then, using the actual models and figures or mock-ups, I work out final arrangements. Compare this sketch with the final diorama and try to find the differences—hint: there are at least eight of them, although most are minor. I spend as much time as needed on this process: after the diorama is complete, it's too late to say, "I should have done…". When a viewer looks at our finished piece, we only have one change to grab their attention and tell our story. The best possible composition helps ensure our success.

COMPOSITION

Those familiar with my works are likely also familiar with my "Ten Commandments of Effective Composition". They are briefly stated on the next page. These are designed to help us avoid common mistakes and errors in diorama and vignette construction. They are not so much rules, really, as guidelines—nothing is carved in stone, merely etched in Jello. Let's examine this diorama in light of these "rules".

HAVE A SINGLE MAIN POINT: The story is simple—resupply and repair of a Tiger tank on campaign. By virtue of its size and location, the Tiger is the main focus, and "Tiger" will be the viewer's first response. Everything else supports the Tiger, being related to either resupply or repair of, specifically, the Tiger. All figures and the other vehicle are either engaged in one of these activities or represent the Tiger crew taking a short break during the action. Everything in the scene literally or figuratively points toward the Tiger. Do I say Tiger a lot? So does the composition.

DIRECT THE VIEWER'S EYE: We know from previous build logs the near right side of the composition is the visually strongest. It is no coincidence the Tiger is located near this point. Everything else in the scene either points to the Tiger (directing the viewer's eye back to the tank) or sits immediately adjacent to the Tiger. Although the composition is rectangular, it's almost like a lopsided wheel. The Tiger is the hub, all the surrounding activity is the rim, and the action/movement are the spokes connecting the two.

SHOW ACTION AND INTERACTION: Action, in this case, may not be very dramatic, but there is action none the less. Everyone is doing something—even if it's just interacting with other characters. The maintenance crew interact not only with the tank, but with each other, their vehicle, and their tools. The man carrying the Jerry can is performing resupply operations and is walking toward the tank, clearly about to interact with it or the other figures. The tank crew, placed immediately adjacent to the tank to demonstrate their relationship with it, are interacting with each other and the dog. Their relative positions, expressions and poses indicate a friendly and light-hearted discussion.

Past build logs have focused on one or more of these commandments. In this case, since figures perform all the action in this composition, let's closely examine how they interact with the viewer, the vehicles, and each other. Figures are generally smaller items compared to vehicles, buildings, and such. However, by placing them in visually stronger positions we can make them somewhat more prominent. In this case, the figures I consider most important for the story are placed in very strong positions. The crew is occupying the immediate near right - normally

Small details help tell our story. To indicate the man carrying the Jerry can has just filled it at the well, some wetness on the well and ground were added. This was added using various dark washes (wet ground is normally darker) and using Future floor polish to add the wet look.

the visually strongest position in a diorama. They are also directly in front of the tank. The maintenance crew stand on the rear deck, using that elevation to draw attention to them.

Figures provide our human element and so attract the eye. Therefore, their importance in our composition is disproportional to their size. As figures tend to be focal points, the relationship between them and the vehicles is symbiotic—they serve to draw attention to each other. Having a figure interacting with a vehicle not only draws attention to the figure, it also makes the viewer look at that aspect of the vehicle. Here, for example, one maintenance figure is rummaging for a tool in the Werkstadt Kubelwagen, thus drawing attention to the unique features of this vehicle. The men standing on the tank's rear deck draw attention to the engine components.

Our viewer will follow figure glances and gestures, so figures can point to or look at what we what the viewer to notice. Figures on the edge of the composition can look in toward the center, keeping the viewer's eye in the piece rather than wandering off the edge. Here, nearly all the spokes in our imaginary wheel point back in to the center (or to another "spoke". None take the viewer out of the scene.

We can also affect the relative visual strength of a figure by the way he or she is facing. A figure facing the viewer is visually stronger than one facing away (see the diagram at left). We should face figures important to the story in the visually strongest facing practical—don't do position 5 if a lower number will also work, for example. Or use position 6

THE TEN COMMANDMENTS OF EFFECTIVE COMPOSITION

Composition is key to story telling, but effective composition is more than placing elements on a base. It requires careful planning. The viewer should quickly grasp what is going on. If not, the work has failed at some level. I use a tool I call my "Ten Commandments of Effective Composition". These are not carved in stone and do not all apply to every situation. They simply help transfer what I see in my mind's eye into the finished work. I do not consider them individually, but use them all in conjunction. They are not restrictive and do not take the place of imagination.

HAVE A SINGLE MAIN POINT. There can be several things going on at once, but like scenes in a movie, they should all work toward the main point. In a diorama or vignette, this is absolutely critical.

DIRECT THE VIEWER'S EYE. Large or prominent items are noticed first. Other things are generally viewed just as we read—from left to right. Things moving against the grain (right to left) will cause the viewer to pause. Viewers will naturally follow the glances and gestures of the figures. Arrange elements so viewers read the story in the proper order.

SHOW ACTION AND INTERACTION. Action is more appealing than static, but must be purposeful. Elements should interact in a meaningful way.

USE A TIGHT COMPOSITION. Tight compositions are visually more appealing than loose, open ones. They are better at conveying drama and stress.

HAVE BALANCE. Balanced compositions look better. Elements or action on one side of the composition should be or balanced by elements or action on the other side. A large item on one side could be balanced by several smaller ones on the other side for example. Note that balance and symmetry are NOT the same thing! Symmetrical work can look contrived.

USE ALL THE ELEMENTS. All elements such as models, figures, base, nameplate, groundwork, and method of display are important. These things should compliment, and not contradict, the main story.

MINIMIZE DEAD SPACE. Empty unoccupied space is boring and detracts from – or deadens – the final result. Use a smaller base or put something relevant in the space. Dead space should only be used if it helps tell the story.

USE SHAPES AND ELEVATIONS. The size and shape of the base, groundwork, and composition can compliment and enhance the composition, help direct the viewers' eye, and provide balance. It's also usually best not to align elements parallel with the edges of the base.

ARTISTIC LICENSE IS OK. Use artistic license to fill gaps in knowledge, create a more visually appealing piece, or simply due to style. Use it to assist in recreating the feel, emotion, and drama of an event – to capture the impression rather than just look.

PLAY WITH IT. I usually try different arrangements and various bases before I settle on a final composition.

COMMON MISTAKES AND PITFALLS IN DIORAMA BUILDING

Study of successful vignettes and dioramas drove my "Ten Commandments of Effective Composition". By "successful", I primarily mean those pieces that were both popular and impactful - awards they received were secondary. Of course for every such diorama there is at least one other that is… not. A disregard of my "Commandments" is usually the cause. We've discussed what to do in plenty of my build logs, let's now look at common mistakes. As always, these are largely subjective and there are exceptions.

USING TOO BIG A BASE: This is, without doubt, the most common mistake I've seen, whether applied to a single figure, model, vignette, or diorama. Our figure, model, or story can lost in sheer size and space. Our composition becomes unbalanced because our model doesn't pack the weight to balance the huge base it's perched on. This leads to way too much dead space, or – just as bad – to filling all the space with so much other "stuff" that our main focus gets lost in the clutter.

NO COHERENT STORY: This is also a common mistake. We could call it the "Why", "How", and "What" error - as in "What is going on?", "How did that big, heavy _____ get up there on that roof, and could that roof even support the weight?", "What is that guy pointing at?", "How is that possible?", "Why is that _____ there?". In other words, the story doesn't make sense or asks more questions than it answers. Maybe it tries to tell multiple stories or add too many sub-plots. This can be alright if they all point to the same "point", but when they are not all tied to one coherent whole, they simply confuse. This is doubly true if the main point – the story we are trying to tell – is not the main focus.

NO PLAN: This basically boils down to, "I don't have a solid concept or good plan, but what the heck – let's build it anyway". This is related to "No Coherent Story" as it usually results in no coherent story. This leads to key elements that are not optimally placed or elements in the scene for no apparent reason. If you're unclear on what you're building, how can the viewer be clear on what he or she is looking at?

NO FLEXIBILITY: The opposite of "No Plan" is no flexibility – call it "tunnel vision". We have an idea, and rather than "playing with it", we put on the blinders and rush to build, looking neither left nor right. This can result in an "aw…poopie" moment when we realize a much better composition was possible – after we complete the build. Sometimes the perfect composition results from a flash of inspiration, but most of the time the perfect composition is evolutionary. Time spent in the process is almost always time well spent.

PLAIN OLD LAZINESS: There is no process so simple that it can't be screwed up, and bad habits can be hard to break. Modeling is a personal hobby - if you're content with shoddy or poor workmanship, then so be it. But most strive to produce the best they can. Along with the classic, "The check is in the mail", and "I'll respect you in the morning", we can add, "I don't need to measure that…", "I don't need to mask, I won't overspray it", and "I don't need to change the blade, this one is sharp enough." (The last usually comes immediately before reaching for the first aid kit). And how often have I seen modeling errors or mistakes that are easily fixed, the modeler just didn't bother? Failure to removed mold seams might be a leading example of this.

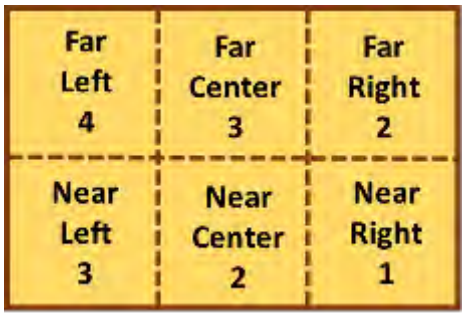
LEVELS OF FINISH DO NOT MATCH: We've all seen this…a beautifully finished model sitting on substandard groundwork, populated by poor figures, or sitting on cheaply made or shoddy base. A big culprit is static grass, straight from the box in its garish unrealistic colors, simply glued onto a slab and the model perched on top. Landscaping, figures, and basing should not be afterthoughts.

There are other landmines that while not exactly mistakes are just waiting to cause us problems. While it may not seem important, we must choose the right scale. Usually, this is simply personnel preference. But if the success or failure of our story rests on a nuance – a subtle gesture or expression, then we must work in a scale large enough to be able to both model it and for the viewer to see it. Further, if you are not comfortable with conversions, scratch-building, or sculpting, then you likely want to work in a heavily-populated scale.

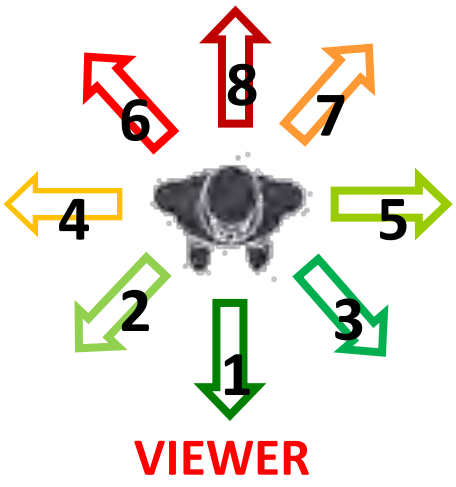
The internet is a wonderful thing – allowing us contact with modelers all over the globe. When we hit a snag, we can seek advice. Ask 25 modelers, and you'll get 50 answers. But don't take bad advice. Does it make sense? Is it something you can do? What is the experience of the advisor, and the quality of his/her work? A novice or average modeler can have pearls of wisdom, but the more experience, the more likely they have faced the same issue – and quality work shows they've mastered the task. Be wary of anyone who says something "must" be done a particular way. It's your project, you are in charge. Do what works for you instead of trying to slavishly copy someone else. It's smart to ask for advice, but you are under no obligation to take it. You may, or perhaps the input triggers other ideas that you may go with instead.

Challenge yourself in order to grow, but don't work beyond your ability. Many modelers have become discouraged after trying to bite off more than they can chew. Before we can run, we must learn to crawl and then walk. So build up your skills with easier projects before trying to build that uber-detailed, complex, in-depth model. Build models and you will progress in no time. Nothing can take the place of experience in gaining skill. In the book "Art and Fear" by Bayles and Orland, the story is told of a ceramics teacher who divided his class into two groups at the start of the year. One group would be graded on quantity only, while the other group would be graded on the quality of a single pot. Perhaps surprisingly, the best quality pots came from the "quantity" group. They had been churning out pots, gaining experience, and getting progressively better. The other group had spent their time studying and theorizing and designing. At the end of the year, all they had to show for their effort was a great idea…and a single poorly-made pot. So, build models, and challenge yourself a bit more with every effort. If you do your best with each progressive piece, you can be justifiable proud of your work.

TOP: This diagram shows our base divided into imaginary areas. Each of these has been assigned a relative visual strength number from 1 (strongest) to 4 (weakest). Note the shape of the base really doesn't matter in this regard. These diagrams do not take mitigating factors—such as elevation—into effect.



MIDDLE: This shows the relative visual strength of different directions a figure can face. A figure facing the viewer is strongest (#1) while a figure facing directly away is weakest (#8). Some facings which seem the same—such as 4 and 5—have different relative strengths because the eye moves from left to right. A figure facing or moving toward the left, against the grain, is visually stronger than one moving with the grain as it forces the eye to pause rather than rushing it along.



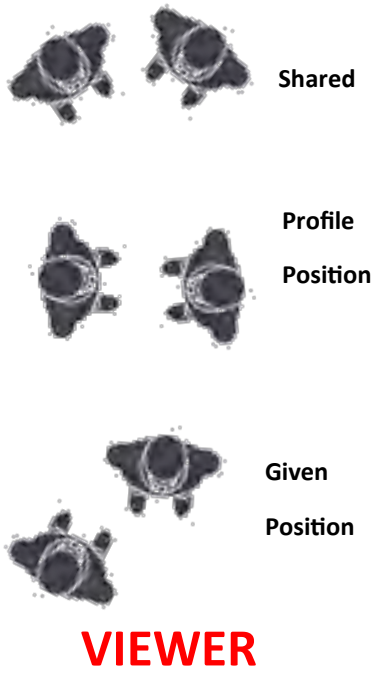
BOTTOM: Body positioning

SHARED POSITION: *This looks most natural and should normally be used, especially in non-hostile, non-threatening situations. Both figures are viewed in strong positions, but note that the figure on the right is in the visually strongest position unless he/she is sitting or prone.*

PROFILE POSITION: *In this position, the figures are both viewed in relatively visually weak positions. Still, this position is good to impart a dramatic or tense conversation between the figures—and the closer they are to each other the more dramatic and tense the situation is. It's also a good position for hand-to-hand combat.*

GIVEN POSITION: *This is a good way to throw emphasis on one figure in the conversation. In this case, the figure on the right is facing us, while that on the left is looking away. This is magnified if the weak figure is at a lower level, is sitting, or is prone.*

BODY POSITIONS FOR TWO FIGURES



or 7 instead of position 8 if the figure must face away.

When it comes to action and interaction, action is more appealing than static, but must be meaningful. Reasons for actions or gestures should be apparent or implied. Action for its own sake does nothing to help tell a story. Multiple figures should normally interact with each other, models, or other elements in some meaningful way – their relationships must be established or they are simply a collection of people on a common base or in a common display. In most instances, actions and interactions should either be part of or support the main point. To this end, things such as their orientation to each other and other elements of the piece, the direction of their glances and gestures, and where and how they touch should be worked out prior to beginning construction. For example, if a figure is pointing, what is he/she pointing at? Why? If yelling, what message are they conveying? To whom? To what purpose? These things should be apparent to the viewer, even if they are only implied and not physically present in the finished piece.

This action and interaction can directly help tell our story. For example, a group of figures and/or vehicles moving in a wedge formation with weapons firing are clearly attacking. Some firing from cover while others break cover to advance illustrates fire and maneuver. The direction of their attack clearly shows where the off-stage enemy is located. Figures and/or vehicles firing from dug-in, covered, and concealed positions are clearly on the defensive. A tightly clustered group, firing in all directions, are surrounded. Adding wounds, casualties, destroyed equipment, and contorted yelling expressions gives you a desperate last stand.

When figures interact with each other, there are essentially three positions we can put them in relative to each other and the viewer (see diagram). We can use this to emphasize mood, demeanor, attitude, or status. Figures in the "Shared" position are in the visually strongest positions, are more informal, most natural, and least stressful. This positioning shows figures to good effect and is ideal for casual and friendly conversion. The "Profile" position shows each figure from the side—a less than optimal viewing angle—but it is good at portraying tense or confrontational attitudes. The closer they are to each other, the more tense and confrontational is the interaction. The "Given" position is good at drawing attention to one figure at the expense of the other—especially if the other is lower (such as sitting, kneeling, or prone). There are endless variations of these themes. For example, if we want to depict a superior ordering (or berating) a subordinate, the superior could be directly facing

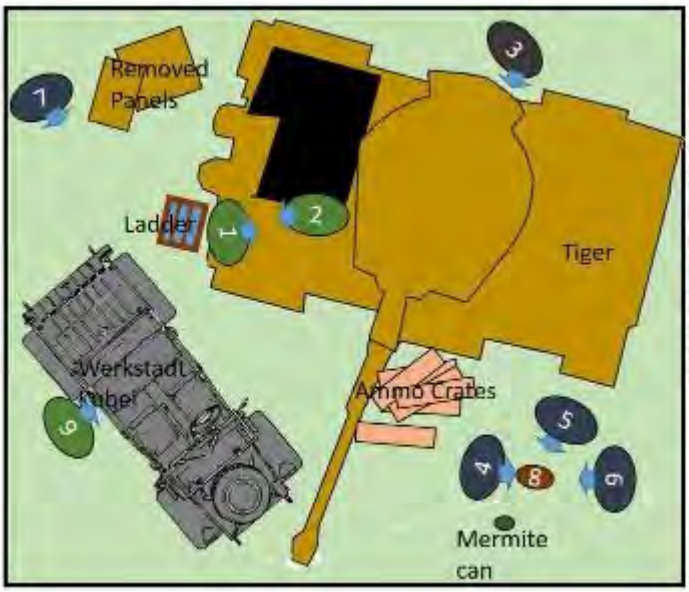
the subordinate while the subordinate stands at an angle . This means that relative to the viewer, one figure will be in the profile position and one in the shared position. The one whom the modeler wants to be the main focus should be the one in the shared position as it is the visually strongest.

Being so important, figures should not be a randomly placed afterthought. Action, pose, and placement should be carefully considered. Take your time and make sure you get them right. Note that in this small scale, expressions and gestures are harder to see and interpret—therefore they may have to be exaggerated.

On a related note, one of my pet peeves is the seemingly universal "random pointing figure" often seen as a single figure display or part of a vignette. A pointing figure is useful to direct our viewer's eye – but if the figure is pointing at nothing or for no reason it is simply a distraction. A single-figure display of a pointing figure says to me, "Don't look at me… Look at the figure (or model) over there!" If your composition includes a pointing figure, the viewer will try to discern the reason and will become confused if there is none. However, if incoming fire is being received, the pointer could be used to indicate the direction from which it is coming. A man pointing in the direction that others are attacking/shooting, reinforces the direction of attack. Still, however, to avoid the "look over there" effect of a pointing figure, if the figure is pointing off scene, I try to have them point in the direction of the viewer when practical.

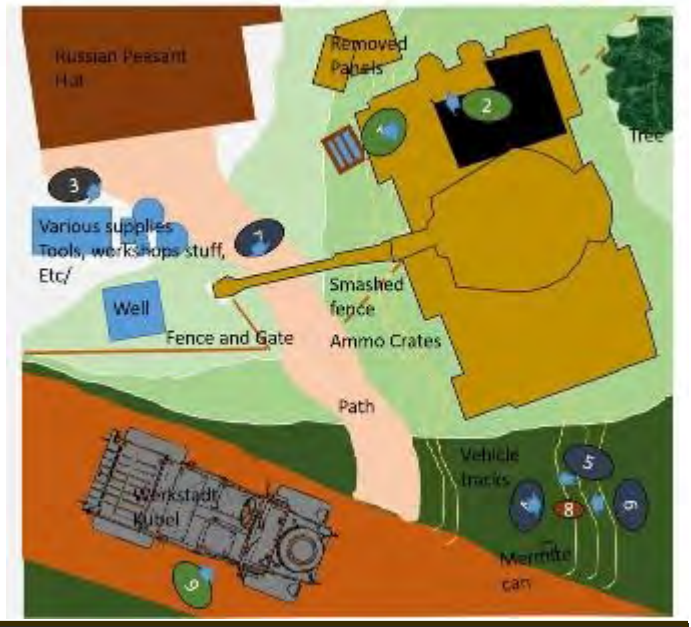
USE A TIGHT COMPOSITION: I generally accomplish this by keeping things as close together as practical without looking contrived. Keep in mind, the tighter we pack things, the tenser and more dramatic the scene appears. Thus, for more informal settings, additional spacing is needed. So, it's a balancing act between attitudes, aesthetics, and realism.

MINIMIZE DEAD SPACE: By following other commandments, such as using a tight composition and making sure our base is not too large for our scene, we go a long way toward minimizing unused, or dead, space. This also applies to how we select and place various elements in the scene. But if we must use things to fill the dead space, those things should aid in telling our story, not detracting from it. In this case, tank supplies



1: Standing mechanic
2: Sitting mechanic
3: Crewman checking road wheels
4: Eating crewman seated on Jerry Can or crate
5: Standing crewman
6: Standing crewman
7: Crewman walking carrying Jerry can
8: Begging dog
9: Mechanic rummaging in Kuble-wagen tool bins

The first part of the compositional process—rough sketches, either hand-drawn or created on the computer as here. These are two of my earlier examples. These are useful to give us an idea of what will and will not work. They also let us determine what kind and how many vehicles, figures, and other things we likely need. Next, once these items are present (or at least mock-ups of them), we can actually finalize composition. It is at that point that the exact placement of elements, poses of figures, and other pertinent things are determined. But remember, we are not absolutely locked-in to anything until everything is built, painted, and glued together.



or munitions would be appropriate, as would figures performing maintenance or supply operations. Although beware—if we use figures or some type of action, that can serve to draw the viewer's eye away from the main focus. When modeling a vehicle such as this, one factor that demands consideration is the length of the main gun. Assuming we do not want the gun hanging off the base (where it is susceptible to damage), there is the potential for a good deal of empty space where the gun tube extends beyond the tank, to the side in the instance. Options to deal with thin include pointing the gun toward the interior of the scene or filling the space under gun with the Kubelwagen, figures, or other relevant supplies. I chose to use the crew figures, placing them in the visually strongest position in the scene.

HAVE BALANCE: Imagine our diorama base as a playground teeter-totter (or seesaw). It should sit visually level with our elements balancing each other. In this instance, most of the vehicles, figures, and action are weighted from front center to one side and clustered together. These are balanced by rising elevation, groundwork elements, and some minor action such as the figure with the Jerry can that are not so tightly placed.

USE ALL THE ELEMENTS: Everything in this scene works to directly or indirectly tell the story. Not all of the elements present are vital to the story, and we could "crop" several of them out. But, even if some provide little more than visual interest, setting, or context, none detract from the story or distract the viewer.

USE SHAPES AND ELEVATIONS: While there are many ways shapes and elevations can impact our composition, we've already seen how they are used here. We've discussed the lop-sided "wagon wheel" shape of the composition—even if it sits on a rectangular base. We've also see a couple examples of the effect of elevation: the maintenance troops standing on the rear deck of the Tiger draw attention to both them and their activity, which in turn takes the viewer to the open rear deck of the tank, and the rising ground and large groundwork features provide the balance we need and serve as a backdrop.

ARTISTIC LICENSE IS OK: Some may have issue with this statement, so let's start by stating what I do NOT mean when I say "artistic license is ok". When creating historical pieces, we should try to be good stewards of history in my opinion. Russian partisans should not be engaging Japanese infantry in North Africa. I do not believe pink is a suitable substitute for panzer grey no matter how pretty it may otherwise be. Unless you recreating a scene from a Hollywood movie, M-47 tanks should not be painted in panzer grey with large, prominent, German Balkenkreuz markings. Obviously, this applies only to historical subjects—for whimsical, Sci-Fi and especially Fantasy pieces, anything goes.

But we must remember we are creating visual art. We are NOT creating reality—only the impression of miniature reality. Sometimes it can be necessary to take a few liberties to help tell our story and transfer the image we see in our "mind's eye" onto our stage. Maybe it's something as simple as clustering figures together perhaps unrealistically tightly to convey stress, drama, and emotion. Maybe it's slightly brightening or darkening a color to help imply mood or temperature, or to draw attention to or mute an object, vehicle, or figure. In other words, in some instances, it may be better to create the *impression* of reality rather than reality itself.

While I altered the RAF uniform on this ICM figure, I did not change the pose as it already conveys a figure carrying a heavy weight. Note the tilt of the head and the other arm thrown out as counterbalance. Full Jerry cans are not light or easily tossed around. A water-filled can would weight nearly 55 lbs, while one filled with gasoline would be just under 40. That's why the cans have three handles: the outer handles would be used for a two-man lift and the middle handle for a one-man carry. Even if the viewer doesn't consciously recognize it, small details like this help make our scenes believable.

Simply put, there are three instances in which we use artistic license. One is to fill gaps in knowledge. Perhaps information about a unit's markings or colors are non-existent or details about an event are lacking. Recreating these things requires us to take our "best guess". The second is to create a more visually appealing piece—many popular painting and weathering techniques are examples. And finally, three is to capture the impression, emotion, and drama of an event rather than just the look of an event. This is a generally accepted practice in the art community, but often provokes controversy in the hobby realm. It is, in fact, just another tool we can use, or not, as we choose. I am willing to stretch the truth or make minor liberties in the interest of telling the story or to create a more visually appealing piece. To me, the feel (emotion, drama, stress, etc.) of an event is at least as important as the exact look. Sometimes, a "photographic" recreation may fail to properly convey these things, forcing us to chose between the "look" and "feel" of any event.

Almost all of us—even those who claim to be staunch opponents of any type artistic license—use it whether we realize it or not. How so? For one, our scenes are artificially cropped—just like photos. We often times cut off sections of buildings, fences, etc. (sometimes even vehicles in "wedgie" vignettes and dioramas) that extend beyond our frame. This normally doesn't bother the eye as we are accustomed to seeing it in photos and paintings. We often minimize blood and gore in battle or post-battle scenes, being content to give the impression of carnage without

actually creating it. We use license sometimes simply due to our style. Extreme color modulation where almost all panels and surfaces are painted separately is an example—if done well it looks really good, but it's arguable how realistic it is. The same holds true for some weathering techniques. Chipping, especially on small scale models, is almost always overdone. Chips are usually overscale and often excessive (especially on a vehicle whose combat life-expectancy was measured in days or weeks). Still, if done well it looks good, and—perhaps more importantly—helps give the *impression* of hard use and rough conditions. And these are only a few examples.

There are instances where we take liberties with scale. Trees are a good example. It's generally better to use small, shorter trees in our dioramas—a full-sized tree, even in a small scale, can be a foot tall or higher. We can also play with scale on buildings. When making buildings, I usually make them a bit too small. Ironically, I've found that if made strictly to scale, they often *appear* to be too big. This is especially true of multi-floor buildings. A trick I learned from the legendary Shep Paine is to shorten each successive floor by about a scale foot (or even a bit more)! This is because we are accustomed to viewing tall buildings from ground level where they seem to get smaller as they rise. This shortening of successive floors helps to recreate this perspective even though we look at models from above! It seems strange, but it works. Obviously, if figures are present in, on, and adjacent to the structure, we can only play with scale a small bit. In 1/48th scale, I may actually model the building at 1/50th scale or even 1/56th scale. These subtle reductions not only keep our composition slightly smaller, they help ensure that background buildings remain in the background in a supporting role and do not, by virtue of size alone, steal the show.

A plan view of the final composition. Note how it differs from my original concepts shown earlier. The Tiger has been reversed so that the open engine bay is nearest the viewer as that is where the action is. This puts the Tiger is an overall weaker vision position, but this is offset by its general location, the presence of the figures, and turret being turned toward the front. The seated mechanic looks at the standing mechanic, but the this man is interacting with the soldier at the Kubelwagen who is looking for a tool or some other item. There have also been a couple additions and other changes—but the other changes are relatively minor. There are lots of things happening, but they all are happening toward a common cause—servicing the Tiger.

THE REAL THING

Resupply and replenishment includes several critical aspects. The vehicles need constant servicing and maintenance. They were also hungry for fuel and ammunition. Their human crews needed water and food. I have tried to show all these vital needs in this diorama. The source of the information on this page is "Panzer Tactics" by Wolfgang Schneider.

Left: In the field, refueling was often accomplished via 5 gallon Jerry cans—a very tedious process. Often, fueling could be done from 200 liter barrels (left) using a hand pump as shown or, rarely, an electric pump.

Right: Jerry cans for water, right, were prominently marked with large white crosses to prevent mistaking them for gasoline containers (and vice versa).

The guns also needed replenishment. Ammunition was well packed two rounds to a crate for the Tiger I. The heavy rounds had to laboriously unpacked and man-handled into the tank. The empty crates were meant to be returned for reuse.

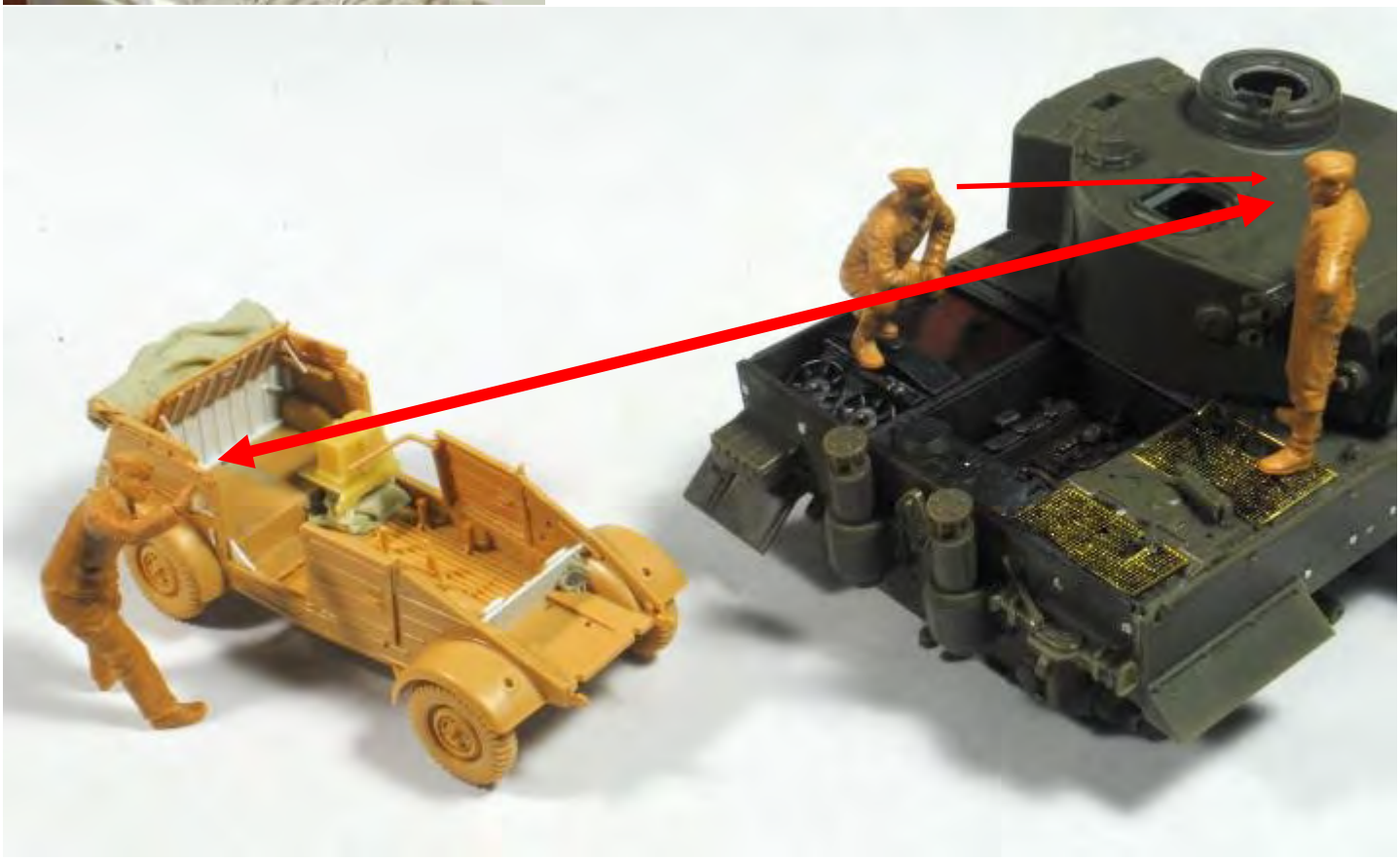
Resupply points were generally high-traffic areas with a large volume of vehicle unloading and taking on supplies. This scene is clearly located in a place where the threat of air attack is minimal.

PLAY WITH IT!

Often, with simple positioning changes, we can have a large impact on the effectiveness of our composition. Let us consider the three maintenance troops working on the Tiger—the two on the engine deck and the on by the Kubelwagen.

In my original arrangement, the two figures on the engine deck would interact with each other while the man by the Kubelwagen would be rummaging for a tool.

In that composition, the interaction of the two mechanics on the tank was excellent (right). However, there would be no interaction between the action on the tank and the action at the Kubelwagen.



This problem was resolved by simply turning the standing man on the tank around so that he was facing the man by the Kubelwagen. I altered this figure by having him look at the standing mechanic and hold up a tool as if to say, "Is this the one you want?".

Although better, there are still some issues. Neither of the two standing figures are shown to their best advantage (being in positions 4 and 5) and the man by the Kubelwagen partially masks the conversion. This latter factor is mitigated somewhat by placing the vehicle at the angle shown and having the figure take a step back. The result of this being that the only part of the Kubelwagen masked by the figure is the table placed over the rear right wheel. The positioning of the figures is likely the best we will be able to get. Many times in the compositional process, we have to settle for compromises between the ideal and the practical.

Note that both the other mechanics are looking at the standing man on the engine deck. The standing man is also in the profile position to the mechanic while both of the others are in shared position to him. This, plus his pose with hands on the hips and his higher position than the other two, marks him as the boss.

THE REAL THING

Photos such as these helped inspire my inclusion of a building—for the very sensible reason that maintenance and/or resupply operations would likely use a facility or structure if available. Of course, refueling or rearming could take place anywhere as could repairs due to breakdown. In the top photo, the crew assembles the gun-cleaning rod sections in preparation for cleaning the main gun barrel. In the bottom photo, more extensive track and wheel maintenance or replacement is being carried out. Compare the design of these buildings to the one I created for the diorama.

There is one thing for which I believe we should NOT claim artistic license. We should not use it as a crutch for poor workmanship, lack or research, or plain laziness. In other words, artistic license is something we normally apply to the more subjective aspects of model building and story telling. It is less applicable to objective parts of the hobby—removing seam lines and ejector pin marks, painting "within the lines", having correct details on the model, etc. It should go without saying that the goal of the hobby is to have fun, and you should build your models however you wish. Still, if you put your creations in the public eye (shows, displays, internet, etc.), you should be prepared for criticism if your work is poorly executed in these objective areas.

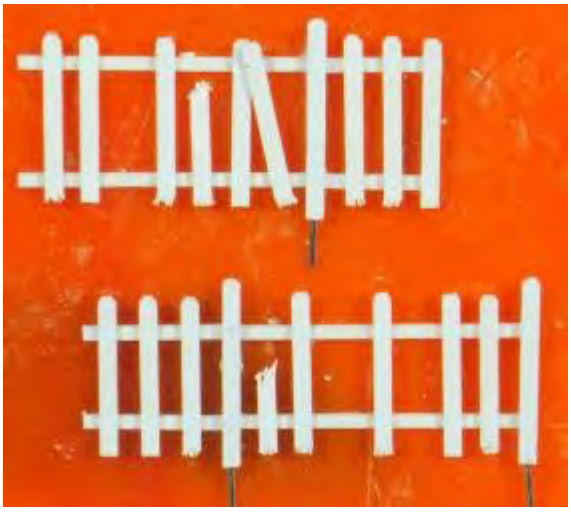
Our work should also be able to pass the "sniff test". Does it smell right? By this I mean it should be plausible and should make sense. We've all seen that great diorama or model that just has something… wrong. Soldiers effortlessly lifting a heavy object, for example. How about a 50-ton tank hiding inside a house, sitting on the wooden floor? That's strong wood! Or a vehicle parked inside a structure – with largely intact walls surrounding it. Was it air dropped? When composing your diorama, put yourself in scene. Think about what you're doing. First, is it possible? Second, would people actually DO that? Of course, people can be stupid and can (and sometimes do) things they shouldn't with tragic – or funny – results. Common sense isn't necessarily common, and people don't always follow proper procedures and safety regulations in field environments. A composition (tragic or humorous) can even be built around such a mistake or lapse.

PLAY WITH IT: This diorama is a prime example of this concept. Sometimes we get an idea, and then go purchase the things we need to bring it to life. Other times we get a kit and figure out what to do with it later. This was an example of the latter. My initial concept was a tank on a small base with some crew members on or around it. While discussing the build and the composition on the Track48 discussion forum I decided to add the engine details and the maintenance figures on the rear deck. Added next was the Kubelwagen simply because I was intrigued by the Werkstatt variant, and I felt it enhanced the story. After that I experimented with various compositions, both tightly framed around these two vehicles and including a portion of a building, a well (to indicate the man with the Jerry can had just filled it with water), and some additional groundwork elements. In other words, I tried both tightly framing the main focus and zooming out a bit, adding some more visual interest. The finished result clearly shows which option I selected in the end.

A couple of my earlier computer sketches and figure poses/placement options are shown on previous pages. Contrast these with the final result. As this process is subjective, you may find that, like me, you prefer the final composition, or you may like one of the earlier ideas better—or perhaps an entirely different approach! I actually enjoy seeing the same subject tackled by different modelers. I always get a kick at the different approaches and concepts that are displayed.

Please remember, my so-called commandments are a guideline only. For every rule there are exceptions. It is also important to realize they are not meant to creates limits or boundaries. In fact, quite the contrary is true. They are designed to give free reign to your imagination, and to help you—no matter how large, small, simple, or complex your story is—tell your story to its best effect. But in the final analysis, it is your story and your diorama, you should build it in the way that best suits you.

BASE AND GROUNDWORK



Top: The finished groundwork. The pegs simply mark the mounting holes for all the various vehicles, figures, and other bits. The fence posts were made from styrene bar stock while the cross pieces and pickets were made from styrene strip. Woodgrain was added with a coarse standing stick, and paperclip wire mounting pins were glued into holes drilled up into the fence posts. The fence was modeled damaged as appropriate.

There is truly nothing new under the sun. At least not here. Or not much, anyway. Although perhaps the largest and most in-depth piece of groundwork so far in this series of build-logs, the methods used to create it have been, for the most part, amply described before. Methods used to create basic groundwork applicable to this diorama can be found in the build-logs for the StuG III Ausf G, M4 Sherman, and Dingo. Tree and shrub making methods are found in the M4 Sherman and Dingo builds, and creating buildings is detailed in both the Dingo and the GAZ MM build-logs. All of these are also covered, in great detail, in my series of Sd.Kfz 251 builds. Readers are referred to these works for details on my methods.

There are, however, a couple of variations and perhaps new techniques that are touched upon here—chief among these being the thatched-roof on the house and the construction of the well.

There are several functions the groundwork fills in this composition and several things I was trying to achieve. First and foremost, the groundworks sets the context of the scene. While perhaps not consciously aware of it, the viewer determines season primarily from the groundwork, with the dress of the figures and the finish being only secondary. These combine here to indicate high summer. Groundwork can also, especially if there is architecture present, help to indicate location. In this scene, these things say “Russia”, and, more specifically, “Russian Steppe”. Groundwork can also provide compositional balance, fill dead space, provide visual interest, and even frame our scene or provide a backdrop.

So let’s turn our attention to this diorama and look at the specific aspects of it that make it unique from my other build logs.

Tiger I (Early Production)

THE REAL THING

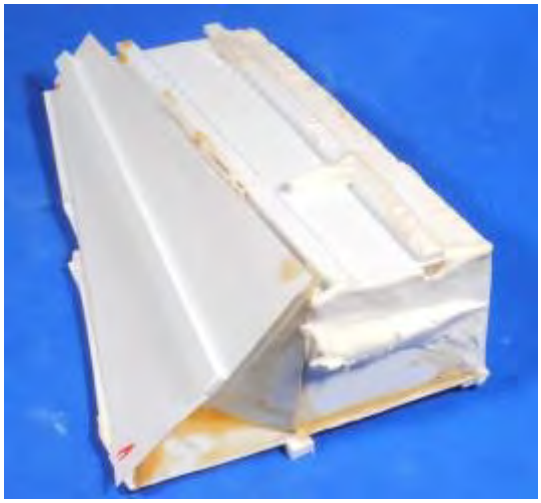
Some of the photos I used for inspiration. All were taken in the Steppe region of Russian and/or Ukraine. The two photos shown at top left were actually taken during the Kursk offensive, and show not only the buildings (in the background), but the generally type of terrain I was trying to recreate.

The well pieces were cut from a sheet of poured plaster. They were engineered to fit together as seen at far left. Individual logs were carved using the tool shown in the photo at left. The pieces were then glued together to create the basic well.

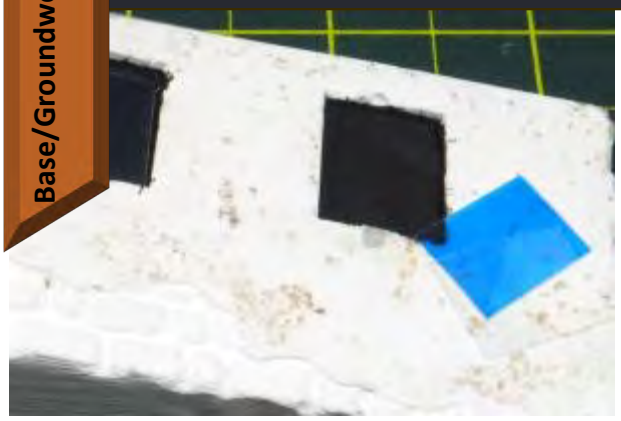
THE REAL THING

My well was based on a type common in Russia. It can be seen in many WWII-era photos. However, the primary inspiration for my particular design came from this somewhat more modern picture.

Below: The pendulum on which hangs the bucket was fashioned from various pieces of styrene stock, as was the bucket itself. The rope is a bit of model ship rigging and a small length of chain.



For the building form, a mold box was made of Styrene as we saw in the Dingo build log, open at the floor (above). This included indents for the door and windows. After pouring the plaster and allowing it to cure for at least 24 hours, the box was dismantled, leaving the basic building form (right).



Above: To give the empty windows a sense of depth, the recesses were first painted black. Then a piece of clear blue plastic was put in place followed by sheet of clear plastic to represent the window itself.

Above Right: Places on the building where the plaster covering was fallen away revealing the underlying clay blocks were created by scribing the cast plaster with a suitable tool. Window, door, and shutter details were added with styrene.

Above: To cut the decorative shape, I used paper edging scissors available in the scrap-booking section of the hobby shop. These come in various sizes and designs.

Left: To create the first layer of thatched roof, I used Milliput Terra Cotta epoxy putty. This was put in place and shaped as needed. Texture was added using the teeth of a razor saw and a stiff brass suede brush.

Left: As a preliminary to the thatch, the roof was painted in various tans and browns, given a few dark washes, and lightly dry-brushed with lighter colors. This step ensures any areas visible through the thatch look like part of the roof.

Below, the thatch itself was made from a variety of Woodland Scenics "Field Grass" in different colors, unraveled rope, and even doll's hair (available at the craft store—it makes excellent grass if purchased in an appropriate mousey color). This was glued in place using overlapping clumps starting from the bottom and working to the top.

The thatch was weathered by first giving it washes of Dark Burnt Umber and Black. It was then lightly dry-brushed with Khaki and Antique White.

Above: The basic colors were put in place. For the underlying clay blocks, different colors mixed from Nutmeg Brown, Terra Cotta, Khaki, Straw, and Burnt Umber were used. The plaster covering was pained using multiple colors mixed from Trail Tan, Sandstone, Chomomile, and Antique White, and White were used.

Left: One important factor in diorama building is consistency. Vehicles, figures, and groundwork should look as if they belong together. This means we should use similar colors, styles, and methods. Therefore, a good deal of the weathering of the building was done using my normal dot filter method. Dots of various oil colors including Sap Green, Yellow Ochre, Burnt Umber, Titanium White, and Neutral Grey were put in place.

Right: Using a brush damp with Mineral Spirits, these dots of color were blending into each other and the underlying colors. Some were merely blended, others were streaked, creating a suitable weathered appearance.

As a final step, to really make details "pop", high highlights were picked out with the lightest colors. Outlining was done with black.

Below: Although "wooden" areas will be painted, the weathered wood will show through the worn paint layers. As a base, the wood on the building and the fence were painted using a mix of Nutmeg Brown and Pewter Grey. Individual board were then picked-out using different ratios of the mix with the addition of Hippo Grey, Trail Tan, and/or Antique White.

I chose to paint the wood in a Blue-Green color (more green than blue). This was mixed from Vallejo Model Air Intermediate Blue and Cam Green. This was applied in a heavy wash, rubbing it off of wear areas.

Tiger I (Early Production)

Highlights, put in place to depict peeling and flaking paint, were added with a sponge in a kind of "reverse chipping" method. The first highlight was created by adding Wedgewood Green and Wedgewood Blue to the base mix. See the photo at left.

The second highlight was created by adding more of these colors. The third highlight was a mix of Wedgewood Blue and Wedgewood Green.

The photo at right shows the result to this point.

Below: Highest highlights were picked out with a mix of Trail Tan and Antique White. As a final step, outlining was accomplished with pin washes of a mix of Dark Burnt Umber and Charcoal.

The well was painting in bare wood colors. This was done using the same colors and methods as the underlying wood on the building and fence.

The worn white on the fence was painted using the same methods as the green on the building. The initial wash was Dolphin Grey with a small bit of Pewter Grey added. Highlights, applied with the sponge, were adding using first a mix of Dolphin Grey and Antique White followed by Antique White.

Below: Since the Styrofoam does not provide a firm base and will not support weight, all the mounting points for the building, well, figures, and the tank were creating by sinking dowel rods down through the foam to the wooden base at the bottom. The mounting pins for the various elements were fitted into holes drilled into the dowel rods.

Above: This photo, taken earlier during the compositional process, shows that the contours on the base were built-up using thin sheets of Styrofoam. This was cut and shaped with a hot knife.

Tiger I (Early Production)

Like other processes, groundwork does not have to be made all at once. I started with the muddy road area. This was made of Celluclay using my normal methods. The mix was precolored in a dark color. While wet and soft, tracks of various sorts were pressed into the clay. The last two sets of tracks added were first the Tiger followed by the Kubelwagen.

While the mix was still wet, highlights of Nutmeg Brown and Straw were randomly applied. Although it looks stark in this photo, the paint will diffuse into the wet mixture as it dries, resulting in a more realistic appearance.

The mixture was allowed to cure, and then a few dark washes of various dark browns and blacks were applied in the tracks and recessed areas. This was randomly applied heavily in some areas and only lightly in others. These were mixed with a bit of Future floor polish to impart a damp look. Note how the earlier applied highlight colors have blended into the underlying base color during the drying process. The washes have further visually blended the colors together, paradoxically providing more color variation while at the same time unifying the appearance of the whole.

Additional washes and highlight glazes, all mixed with Future floor polish for a wet look, were applied as needed. Final wet touches in a few of the tracks and footprints, was added using straight was added.

Top: The remainder of the groundwork was made using my normal methods. Grass is Woodland Scenics Static Grass, a Scene Scapes 6mm Grass Mat, and premade grass clumps in various shapes and colors by Mini Natur, Silflor, and Scene Scapes. The bare ground and grass was painted (see photo on page 97) using dry-brushing and various washes. Note that "trough" of bare base, painted black, were left for the tracks of the Tiger to sit in. This will result in the appearance of the vehicle sinking slightly into soft ground.

Middle: This photo shows to good effect the various grasses used to build the diorama. Note the vine crawling up the wall. This is a Mini Natur product.

Bottom Left: The transition areas between the churned-up muddy road and the drier higher ground was painted using various dark washes to blend the two colors. Wetness was added by mixing small amounts of Future into the wash.

Below: This photo shows some details of the well, building, bare ground, and trees.

The figures in the diorama. Note the action and interaction between them, the vehicle, and their setting.

Above: "Der Spiess" overwatches the scene. Here, he looks at the man carrying the Jerry can who is headed for the tank.

Middle: These three figures engage in conversation while the seated tanker teases the dog with a cracker.

Below: The mechanic sergeant, standing on the tank deck, is clearly in charge of his troops, both of whom look at him. The man by the Kubelwagen holds up a part as if to ask, "Is this what you want?"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Building and Painting a

TIGER I (early production)

with Werkstatt Kubelwagen

in 1/48 Scale

Demonstrating all the techniques used to create and paint the vehicle, stowage, crew figures, and groundwork.

This work also looks, in detail, at diorama composition.

by Kevin Townsend