Building and Painting the

M4 SHERMAN

in 1/48 Scale

Armor Modeling Vol# 3

by Kevin Townsend

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INTRODUCTION

This work documents the methods I used to build and finish Tamiya's M4 Sherman model in 1/48th scale. This article is not intended as a stand-alone work. It does not cover my basic vehicle, figure, or groundwork methods and techniques. These methods are detailed in my booklet describing the creation of my Sturmgeschutz III Ausf G. This supplemental work merely shows how those methods were applied to this unique modeling project. I hope this work can be of assistance to others trying to achieve the same effects regardless of subject and scale.

During my first "modeling career" through my Junior and Senior High School years in the 1970s I was primarily an armor modeler. Among my biggest inspirations were the works of Shep Paine, primarily those featured in the wonderful little "Tips and Building Dioramas" pamphlets included in Monogram models of the day. Of these, my favorite was, without doubt, his rendition of an M4A3 Sherman fitted with a Rhino hedgecutter crashing through a Normandy hedgerow alongside supporting infantry. Now, over 40 years later as I build my Sherman model that image is foremost in my mind, and the old pamphlet is sitting on my workbench. It is not my intent to copy his work, but the subject matter was inspired by, and serves as a tribute to, the great Shep Paine.

"...Bocage country is characterized by its multitude of small fields each surrounded by hedges… Sometimes these hedges grow from earth embankments… The farm roads and lanes which wind through the country are narrow, unpaved, and frequently sunken so that wheeled vehicles are generally restricted to the roads. Local observation and fields of fire are generally restricted… Cover for ground troops is excellent, but large concentrations of MT or armor on the move can not so easily be hidden… "Bocage" country may not be suitable for the employment of armor in mass, although tanks can penetrate most of the hedgerows and could no doubt work in small groups with infantry to good advantage. Antitank guns will not have adequate fields of fire. It is difficult to judge whether such terrain favors defending or attacking infantry. It provides excellent cover for coming to grips with the enemy but its closeness and the necessarily short local observation mean that forward movement would probably be slow. Mortars and mines can be effective but machine guns will be hampered by restricted fields of fire. Generally speaking it may be surmised that attacking forces could move steadily but slowly forward through such terrain and considerable difficulty would be experienced in maintaining contact between small units and control over them. The tactics to be employed in fighting through bocage country should be given considerable study by formations to be employed therein. "

-Pre Invasion US Intelligence Summary

A shot of the little diorama held in the palm of the hand shows how small these quarter scale kits are. 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 a few figures and detailed groundwork transforms a plain armored vehicle model into a piece that tells a simple story that illustrates many of the salient features of the Normandy hedgerow fighting during the Operation Cobra breakout. The vehicle has been fitted with a hedgecutter, allowing it to crash through the hedge rather than go over exposing its soft underbelly. The enemy casualty and gear shows the hedge was defended and the supporting infantry illustrate the good tank-infantry cooperation that was key to the success of the operation.

THE REAL THING

"In mechanical endurance and ease of maintenance our tanks are infinitely superior to any other"

-Patton

The M4 was designed as a replacement for the stopgap M3, with the goal of moving the 75mm gun from the hull to a fully rotating turret. The vehicle used the same automotive components as the M3. The vast majority of bugs in this system had already been worked out, both speeding the design process and establishing the Sherman's reputation for reliability. The prototype was ready by September, 1941, and after only minor design changes was approved for production. Production began in February 1942 and continued until the end of the war in several factories. While there were numerous changes, the basic design remained the same. Several different engines were standardized. To keep pace with changing battlefield conditions, new armament (including a 105mm howitzer, high-velocity 76mm gun, and – in British versions – the 17 pounder gun) and increased armor protection were incorporated. Even with the increased weight brought about by these improvements, the development of new suspension systems and tracks not only maintained, but actually enhanced the vehicles' mobility.

The Sherman chassis was used in common with thousands of tank destroyers and self-propelled guns. Commonality of parts among all these different vehicles greatly simplified logistic and maintenance procedures. The Sherman must have been a maintainer's dream compared to a Panther where several wheels had to be removed to get to an inner wheel, and where the entire driver/co-driver compartment had to be pretty much removed to change a transmission.

Versions of the Sherman were used by US, British, and Commonwealth forces on nearly all battlefronts during the war. Several thousand were also supplied to the Soviet Union through Lend Lease.

I believe the Sherman tank was arguably one of the most successful designs of the Second World War. It was certainly one of the most numerous with over 50,000 produced – many more than the total of German tanks of all types built. The Sherman was a good, straightforward design which proved adaptable allowing armor, armament, and suspension modifications to be readily introduced with little impact on production. While some of its opponents had better guns and thicker (frontal) armor, none could touch the Sherman in terms of ease of production, reliability and maintainability. The vehicle's speed, good crew observation capability, rapid turret traverse, and stabilized gun often enabled the Sherman to "see first, engage first, and hit first" (although many crews did not how to use the gun stabilizer). And despite exaggerated claims to the contrary, the Sherman had one of the best crew survival rates of any tank during the war with an average of about .6 crew members lost for each tank killed. In terms of casualty percentage, it was much more dangerous to carry an M1 Garand. The 75mm gun, while an inferior anti-tank weapon by the time of the Normandy campaign, was one of the best infantry support guns of the war. Finally, tanks do not operate in a vacuum on the battlefield. Clearly, on paper at least, a Sherman was outclassed by a Panther in a one-on-one fight, but the Sherman brought the priceless advantages of far greater reliability/maintainability, heaps of spare parts, supporting airpower and artillery, plentiful reserves, good tank-infantry cooperation, and an overwhelming superiority in numbers. All this allowed the Sherman during "Operation Cobra" (the subject of this vignette) to enjoy a favorable kill ratio over its adversaries. In the course of my research I found no reliable evidence to support the popular myth that the Panther enjoyed a 4 –to –1 kill ratio against the Sherman or that it took five Shermans to kill a "cat".

The subject of my model is the M4 variant of the Sherman as released by Tamiya. The M4 and M4A1 were the models of the Sherman the US Army initially chose for combat use. By late 1943, the Army decided the M4A3 was superior and changed production focus to that version. However, the type did not become common in the European Theater of Operations until the fall of the 1944, resulting in the M4/M4A1 being the most common types during the Normandy Campaign. The M4 featured an angular, welded hull while the M4A1 used a cast hull. Other than that the two tanks were largely identical—the US Army considered them interchangeable. Other versions of the Sherman (The M4A2, M4A3, and the

M4 Sherman:

Length: 232 inches
Width: 103 inches
Height: 108 inches
Combat Weight: 33.45 tons

Max Speed: 24 MPH
Avg. Road Speed: 21 MPH
Fuel Capacity: 175 Gallons
Range: 120 miles on road
Grade Climbing: 60^0
Trench Crossing: 7.5 feet
Step Climbing: 24 inches
Fording Depth: 40 inches

Powerplant: Continental R 975 Air Cooled Radial. 400 Hp @ 2400 RPM
Steering: Controlled Differential
Drive: Front Sprocket
Suspension: Vertical Volute Spring
Track: Double Pin (T48, T49, T51, or T54E1), 79 links per side, Ground contact length: 147 inches

Main Armament: 75mm M3 in M34 or M34A1 mount.
Turret Traverse: 360^0 in 15 seconds
Elevation: +25 to -10 degrees
Rate of Fire: 20 Rounds/Minute
Capacity: 97 Rounds
Secondary:
- -.30 Coaxial with Main Gun
- -.30 Coaxial in Hull Ball Mount
- -.50 in AA Mount on Turret

Armor: Hull: 2 inches sloped at 56^0 to .5 inches at 90^0. Turret: 3.5 inches to 1 inch

Crew: 5 (Commander, Gunner, Loader in turret and Driver, Assistant Driver/ Bow Gunner in hull)

References:

-Sherman in Action: Bruce Culver/Don Greer
-Sherman: A History of the American Medium Tank: R.P. Hunnicutt
-"The Sherman Tank" Website: theshermantank.com
-"Sherman Minutia" Website: theshaddock.free.fr/Sherman_minutia/

The M4 and the M4A1 were the most common Sherman types used in combat by US forces until the fall of 1944 when it was supplanted in front-line service by the automotively superior M4A3. This vehicle, operating with an infantry squad, is an M4. The M4A1 differed only in having a cast hull instead of the M4's welded hull. This vehicle features the "quick fix" applique armor designed to provide extra protection to the vulnerable areas in front of the driver/co-driver hoods, the side sponson ammunition stowage, and the front right cheek of the turret. It also features the M34A1 gun mantlet. This vehicle is also fitted with a field-improvised hedgerow cutter—a modification that had been made to as many as 60% of the Shermans participating in Operation Cobra.

M4A4) differed primarily in the engine used and the changes this necessitated in the rear deck and engine access. Although largely similar with most parts being interchangeable, how a particular tank was configured depended on where and when it was manufactured. I have neither the time, space, nor inclination to explain all the different possible details on all the various variants. But we can define some of the major features of the M4. Other variants are summarized in the chart on page 7. The M4 was constructed from July of 1942 to March of 1945 by five different factories with a total of 7,584 produced.

The tank had a welded "small hatch" hull with a well-sloped glacis angle of 57 degrees with protruding driver/co-driver hoods and small hatches. Earliest versions had direct vision slits protected by bulletproof glass in the front of the hoods, but these were soon eliminated. The projecting hoods were found to be weak areas and were beefed-up with applique armor plates. Ammunition was stowed in racks in the sponsons above the tracks (dry stowage). These were prone to burning when penetrated. Ammo was the main cause of fire – not the fuel as many urban legends claim, and this was not a problem unique to Shermans. A partial remedy was the addition of applique armor plates on the sides over the stowage racks. The co-driver operated a ball-mounted .30 machinegun mounted in the hull front. This machinegun was intended mainly for suppressive fire – no gun sight was available.

An improved "large hatch" hull was later introduced featuring thicker front armor with

M4 Sherman

only a 47 degree slope, larger hatches. Ammunition stowage moved to the floor in bins surrounded by a water/anti-freeze mix (wet stowage). However, the M4 version of the Sherman saw the use of this improved hull only on the 105mm howitzer armed (which retaining the dry stowage) and the composite hulled (cast front and welded rear) versions.

The transmission, located in the nose of the vehicle, featured an armored cover held in place with bolts for easy access. There were three types of covers. The first consisted of three cast sections held together with bolted flanges. This was the most common type on early M4s. The other two were single cast pieces, one with a rounded soft nose and the other a more pronounced wedge. It was possible to see any type cover on any model of Sherman.

The M4 shared the same 75mm-armed turret with other models of the Sherman. This featured a single large hatch in the roof, a co-axial .30 machinegun, a periscopic sight for the gunner, and an M2 .50 machinegun mounted on the roof. These turrets had a weak spot on the front right due to an area of armor machined away in manufacturing to make space for the turret drive. Once discovered, this weakness was mitigated with the addition of applique armor in this area. Later turrets had thicker armor cast into this area. A telescopic sight, with a new gun mantlet to accommodate it, was added beginning in the Spring of 1943. The turret originally featured a pistol port on the left side. This was later deleted and then reinstated again. This turret is usually referred to as the "low-bustle" turret and is the turret most usually seen on the M4.

Concurrent with the introduction of the "large hatch" hull, a new turret (the "high bustle") was introduced. This featured a slightly higher radio bustle on the rear of the turret to clear the higher hinges on the driver's hatches. It also added a roof hatch for the loader and thicker armor cast over the weak cheek

Top: A dug-in M4. This is a command tank as indicated by the second antenna in the pot on the glacis.

Middle: This photo gives a good view of the rear deck (note the large air-recognition star) and the rear engine access doors.

Bottom: Here we see why many units/crews painted over the side stars. This one has obviously served as an aiming mark for an enemy tank or antitank gun. The vehicle does not appear to have burned, so it may well be repaired and put back in service. Apparent in this photo are the extended "Duckbill" end connectors on the tracks. These served to widen the track improving flotation. These did not become available until the fall of 1944.

MAIN US ARMY SHERMAN VARIANTS

MODEL	PRODUCED	ENGINE	HULL	TURRET	DIFFEENTIAL COVER	NOTES
M4	7,584 produced in five factories from Jul 42 to Mar 45.	Continental radial R975	Small Hatch, dry stowage	Mostly low-bustle	Any	US Army considered the M4 and M4A1 interchangeable
M4 HYBRID			Hybrid hull, both small and large hatch	Mostly low bustle, but some high bustle on large hatch hulls	Any	
M4 (105)			Large hatch, dry stowage	High bustle	Any	Used a special mantlet, did not have gyro-stabilizer, featured an extra turret armored ventilator
M4 (105) HVSS			Large hatch, dry stowage	High bustle	Cast	
M4A1	9,527 produced in three factories from Feb 42 to Jul 45	Continental radial R975	Cast, small and large hatch dry and wet stowage	Small hatch used primarily low bustle turret. Larch hatch had high bustle	Any	US Army considered the M4 and M4A1 interchangeable. This version was produced longer than any other hull and saw all upgrades
M4A1 (76)			Cast, large hatch, wet stowage	T-23	Cast	
M4A1E8 (76) HVSS			Cast, large hatch, wet stowage	T-23	Cast	
M4A2	10,968 produced in six factories from Apr 42 to Jul 45	GM 6046 twin diesel	Small and large hatch, dry and wet stowage	Small hatch used primarily low bustle turret. Larch hatch had high bustle	Any	This variant saw limited US combat use (DD conversions for D-Day). This was the preferred Lend Lease variant sent to the USSR since they used diesel tanks
M4A2E8 (76) HVSS			Large hatch, wet stowage	T-23	Cast	
M4A3	12,596 built in three factories from Jun 42 to Jun 45	Ford GAA V8	Small and large hatch, wet and dry stowage	Small hatch used primarily low bustle turret. Larch hatch had high bustle	Any	This was the primary version used by US forces. This version, with T-23 turret and HVSS, was the type retained in service after the war. 105 versions did not have gyro-stabilizers and featured an extra turret armored ventilator.
M4A3 (105)			Large hatch dry stowage	High bustle	Any	
M4A3E2 Jumbo			Large hatch wet stowage	High bustle 75 (most field fitted with 76mm in T-23 turret)	Cast	
M4A3 (76)			Large hatch wet stowage	T-23	Cast	
M4A3E8 (76) HVSS			Large hatch wet stowage	T-23	Cast	
M4A3 (105) HVSS			Large hatch dry stowage	High bustle	Cast	
M4A4	7,499 made in one factory from Jul 42 to Nov 43	Chrysler A-57 multi-bank	Small hatch dry stowage (lengthened hull)	Low-bustle	Any	Largest and heaviest standard Sherman, little used by US, but used extensively by British

Note that this is not an all-inclusive guide. Different factories often used different, but similar parts, so details may differ factory to factory. Due to parts interchangeable and field maintenance/repairs, tanks with non-standard combinations of components certainly existed.

area. The M4 used this turret only on composite-hull versions and those with the 105mm howitzer. The M4 was not fitted with the later T23 turret mounting the 76mm gun.

By the time of the Normandy campaign most, but not all, M4s had been upgraded with the applique armor and new gun mantlet.

Most M4s used the Vertical Volute Suspension System (VVSS). Return rollers were mounted on top of the bogie units. Initial production saw the rollers mounted directly on top of the bogue units as in the earlier M3. Later types were mounted on the rear of the units, either parallel with the top of the unit or upswept. Several different types of road wheels and idlers, included spoked and pressed, were used on the M4. Four different types of drive sprocket could also be found. All these wheels were interchangeable and it was possible to see more than one type on any given vehicle. A variety of tracks were used with the VVSS suspension including rubber block tracks (T41 reversible or T51 non-reversible), T48 rubber chevron tracks, T54 or T62 steel chevron tracks, or T49 all steel three bar cleat tracks. All VVSS tracks could be fitted with grousers (bars that clipped across the track joints to increase traction) or "duckbill" extensions (for better flotation on soft ground). The duckbills were not available until the fall of 1944.

Near the end of the war, an improved Horizontal Volute Spring Suspension (HVSS) was used on many Sherman variants. On the M4, this suspension was only used on the 105mm howitzer version.

Please note that there were variations. Improvements were constantly incorporated into the vehicles both at the factory and in the field. Many different plants manufactured the vehicle and often used similar – but slightly different – parts, shapes, and methods.

These photos illustrate the constant improvement process the M4 underwent.

The 1942 early production vehicle above features the early three-piece transmission cover, the driver/co-driver direct vision hoods, and the early M34 gun mantlet providing protection only for the rotor. This vehicle had only a periscopic sight for the gunner, which could easily be knocked out of alignment with the gun.

The derelict vehicle at right, produced in 1943, does not have direct vision (it had been fitted with applique armor at the front of the hoods, but the driver's piece has been removed). It also features the M34A1 mantlet introduced concurrent with the co-axial telescopic sight. This mantlet protected the gun, sight, and co-axial M1919 machinegun. This vehicle also features the single piece cast transmission cover.

Below: A platoon of M4 tanks with a single M4A1—the Army considered the vehicles interchangeable. Note the various arrangement of stowage. If tanks of various nations had a unique characteristic—such as Zimmerit on German tanks and political slogans painted on Russian tanks—it would be piles of stowage for the (relatively) lavishly-supplied American tanks. There are also at least three types of tracks fitted to the vehicles in this picture. Note also the heavy layer of dust, mud, and grime on the vehicle. Most appear to be painted in Olive Drab and Black camouflage, but it is hard to see through the dirt. Note also the heavy steaking near the caps for the fuel/oil/water tanks.

A rear view of an M4. It features the usual heaps of stowage. The tow pintle has been removed—something fairly common as indicated by a study of photos. The tank wears rubber-chevron tracks; the most common type on U.S. tank in the summer of 1944. It is difficult from this photo to tell if the vehicle is camouflage painted or simply heavily weathered. Note also the pioneer tools are not present. In fact, these were often concealed in the stowage to protect them from theft by infantry—the tank shovels and picks were much better than the entrenching tools the average G.I. carried!

Two M4s. While neither has direct vision, they feature different types of driver/co-driver hoods. Neither vehicles as the "quick-fix" applique armor applied. The bottom vehicle has the M34 gun shield while the top vehicle has the M34A1 shield protecting the entire mantlet including the telescopic sight and coaxial machinegun. The top vehicle has the pistol port welded shut. The lower vehicles features unusual camouflage and appears to have been captured by German forces. The top vehicle has bar cleat tracks while the bottom vehicle has rubber track blocks.

An M4 of the 4th Armored Division carrying infantry and sandbag armor on the glacis. Again, note the streaking on the hull side behind the fuel/oil/water fill ports.

Engine maintenance (note the crew member in the rear engine access hatch). This vehicle carries early war markings and T-51 rubber block tracks.

An M4 being used as artillery firing in the indirect fire mode. Note the ammo stacked on the rear deck and the piles of empty ammo cases beside the vehicle.

M4 Sherman

A knocked-out M4 with apparent suspension damage being drug by two recovery vehicles. It carries a motorcycle on the rear deck and features metal bars welded to the turret to tie on stowage or for riding infantry to use as handholds.

A heavily-stowed M4 moving through a village. In the background is a recovery vehicle based on the earlier M3.

A column of M4s moving down a road. Note the large stars on the glacis. The M4/M4A1 was by far the most common type in US service until the M4A3 began to supplant it in the fall and winter of 1944.

The photos on this page show two composite-hull M4s operating in the Pacific. These featured cast full hulls mated to welded rear hulls. These vehicles also feature the later high-bustle turret with loader's hatch. The M4 composite and the M4 mounting the 105 howitzer were the only types of M4 to carry this turret. In the top photo note the stowage (including a bazooka) and the liquid streaking on the flanks. The bottom photo gives us a good view of the rear deck.

The Kit

The box art of Tamiya's M4 Sherman (Early Production), kit #32505.

The kit features typical Tamiya detail, engineering, and ease of assembly. But while it can be built into an attractive, reasonably accurate kit straight from box, it is not without flaws. Perhaps more so than other 1/48 Tamiya kits I've built, this one can benefit from a little extra work, extra detailing, and/or aftermarket accessories.

The model features three piece transmission cover, pressed solid spoke idler, open spoke road wheels, straight arm bogie unit with raised roller, T48 rubber chevron track, small-hatch hull, low bustle turret, improved M34A1 gun mount, and the early style split commander's hatch - all correct for the early/mid M4. Applique armor is also provided. The model matches drawings of the M4 in the Hunnicutt Sherman "Bible" almost precisely.

The kit contains 130 plastic parts, a cast-metal hull tub, and poly caps for the gun and drive sprockets. Typical of Tamiya kits, the molding and engineering are excellent and detail is good. It is easy to build. It is a good kit for both the novice and experienced modeler. Fit is generally quite good, as is also typical for Tamiya, but there were a couple slight gaps where the transmission cover fits to the hull. However, in fairness this will be invisible behind the drive sprocket. Most ejector pin marks will be hidden on finished model, but some have to be dealt with.

I like the link and length tracks and bogie units - follow the instructions and these go together easily and fit perfectly. The upper track run fits to a pin on the front return roller to ensure exact placement. The bogies on both sides use the same parts, with the track skid/return roller piece being reversed – make sure you assemble three left and three right and not six of the same, and that you have a front bogie unit with the track mounting pin for each side.

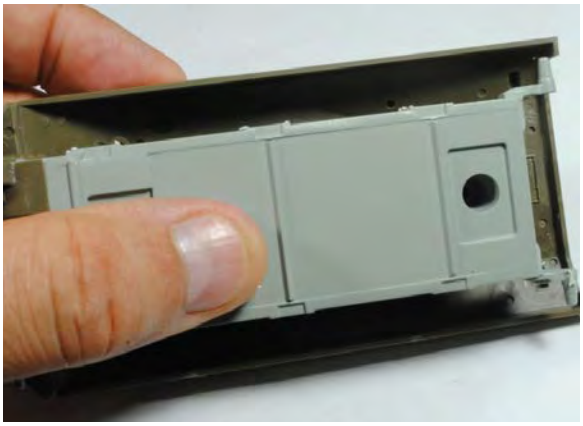
It is a good kit, and can make an attractive model straight from the box, but there are many areas where it can be improved. Some of these are problems with the kit, most are just opportunities to add more details.

I like the strength and weight the metal tub provides. But in this case the missing bolt detail is visible. The upper plastic hull attaches to the lower metal hull tub with two self-tapping screws applied up from the bottom of the hull. This is fine unless you wish to add an interior or an engine, in which case there are two large metal posts you have to deal with.

There is some missing bolt detail that can be added to the plastic bogies—you can also add really tiny grease plugs on the wheels if you wish. The pressed-spoke idler wheels are hollow on the reverse face. This is a problem as the wheels overhang the rear of the hull making this omission obvious.

The kit's most glaring omission are the open sponson bottoms. It's an easy fix, but one I should not have to make.

Look up under the rear hull overhang. There is nothing there. There wasn't much there on the real tank, either – exhaust pipes and mufflers (part of which are in the kit). But there was a screen blocking this area on the real vehicle that is absent in the kit. On the actual tank, the small air intakes are the top rear of the sponsons was screened. On the kit they are open.



The kit shares many features from Tamiya's older 1/35th scale kit. Thankfully, this is not just a scaled-down version. Some of the issues with the larger kit have been addressed. However, perhaps the most glaring omission still remains—The open sponson bottoms. While this is a major flaw, it is easy to correct.

The idler wheels are also molded hollow on the reverse side. As they slightly overhang the rear of the tank, this omission will be visible and should be correct.

There is no (or very little) cast-texture on the transmission housing and turret. US casting wasn't rough and in this small scale wouldn't really be apparent anyway, but it can still be easily added to make a bit of contrast with the non-cast components.

The actual vehicle featured raised weld seams, while on the model they are indented. While is there actually some weld texture in the trenches the weld beads should be raised.

I've not seen it mentioned in any review, but it appears to me the weld pattern on the glacis is a better match for the M4A4 than the M4, and the projecting hoods for the driver/co-driver should be more rounded in front. These issues can be fixed or not as you choose: the weld lines aren't that significant and the shape of the driver hoods will likely be obscured by the applique armor.

All periscopes are molded closed. If you are making a static display model, this is no issue. But for an action vignette/diorama like I plan to build, the molded-on covers should be removed, periscopes added, and new covers put in place.

Most tools are molded in place. The tie down straps either lack detail or are missing.

Some small details can use attention. Some parts, such as light guards and the commander's vane sight for the main gun, are too thick. They are correctly designed, they just appear thick due to the molding process. Some details are absent or only implied. Grab handles and tie-downs are either just nubs (very common in this scale) or non-existent. Periscope guards (optional anyway) are not included in the kit. The vehicle should have sand-shield mounting strips (with mounting holes) on the bottom of the hull. The hatches also lend themselves to extra detailing, especially if they are modeled open (grab handles, springs, and periscopes). The tow cable attachment clevises are molded solid, but they can be drilled out easily. None of these gripes are knocks on the kit – they are what you get with small-scale injection-molded kits. But fixing or replacing these details – either with Photo-Etched (PE) parts, very thin styrene, or wire as appropriate will yield a vastly improved appearance to the finished kit. I generally am "lukewarm" toward PE as it usually doesn't, in my opinion, offer that much of an improvement over the kit parts in the painted model, but this kit can certainly benefit from some PE replacement parts.

The barrel is one piece with the muzzle cast as a separate piece. If the whole thing were one piece (like the real one), it would be a simple matter of removing the model seam line. But as it is you have to deal with a part joint just aft of the muzzle. This is not hard to do, but does make this kit a good candidate for an aftermarket barrel.

The .50 is not bad for its size and can certainly be used as is. But as it is in such a prominent location on the model, it can benefit from some extra detailing work, PE details, or aftermarket replacement. This is especially true as it is in such a prominent location on the model.

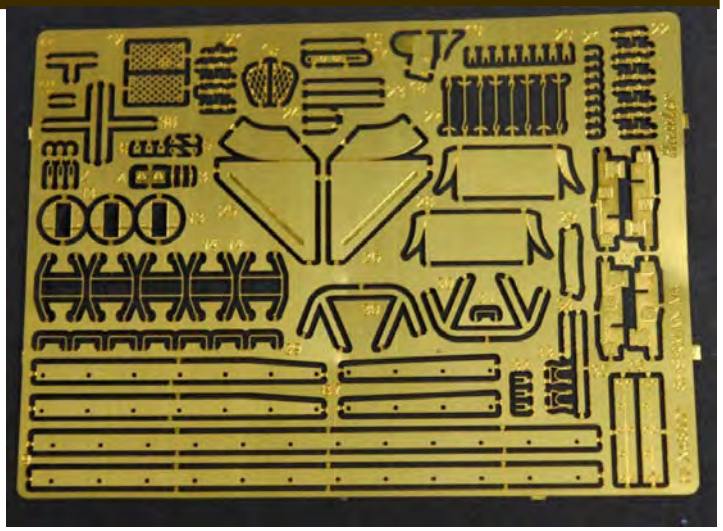
There a couple painting/decal options for the kit. One option, Hurricane" of the 2nd Armored Division, according to a review I found on the Perth Military Modeling Site, has some errors. That site claims that particular vehicle should have a cast nose, different drive sprocket, and the camouflage should be Olive Drab and black. Again, I can neither confirm nor deny.

Please don't let this litany of minor detail issues give you the impression this is a bad kit. It isn't. It may not be an outstanding kit, but is good and can give you a very nice model straight from the box. But for those who want to go the extra mile with detailing and realism, this kit offers ample opportunity. I recommend this kit to modelers of all skill levels.

For this build, I did turn to the aftermarket for help improving or correcting the details. Some of these were kindly provided by Chris Schwach (a Track 48 discussion forum member). Others I acquired or made myself. While all the parts and sets I used are nice they are not required to create an attractive model. When it comes to PE sets, I have discovered they often go overboard on what they provide. The good news is that you can "cherry pick" which parts you wish to use and which you do not. As always, the choice is yours. Basic review information on the parts I used can be found in the captions on the next page.

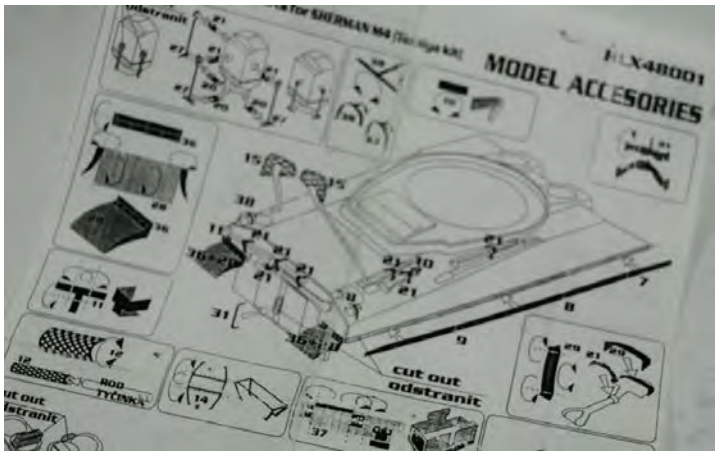
Use car when assembling the bogies. While the fit is perfect, and they really cannot be assembled incorrectly, they use the same parts for the both the left and right bogies assemblies. The only difference is that the upper piece—the return roller/track skid assembly—is reversed from left to right. These two complete bogie assemblies were made using the same parts. Also, the front bogie on each side (not shown in this photo) includes a mounting pin on the return roller to ensure correct fit of the track pieces. So make sure when building that you create three bogies for left and right (not any other combination) and that the appropriate front bogies include the appropriate pinned return roller piece. Take care and follow the instruction and you will not go wrong.

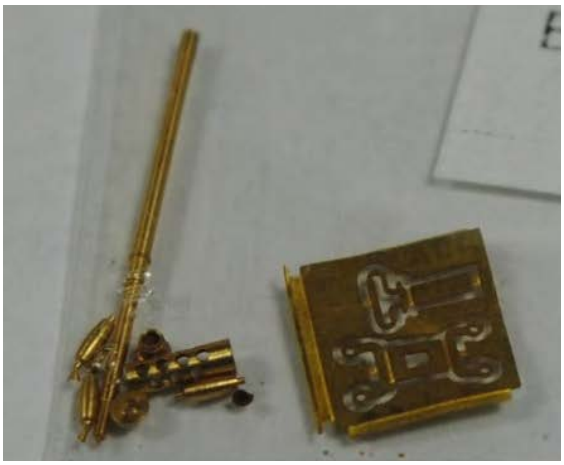
Right: A photo of the Hauler's #48006 M4 detail set (minus the parts for the M2 .50 machinegun contained on a second fret). This is a very nice set containing many useful parts such as the light guards, periscope guards, sand-shield mounting brackets, sponson intake screens, grab hangles, etc. It also includes replacement front and rear fenders if you are so inclined. In addition to these, it contains many other parts. A photo of part of the instructions is shown at below right. This are basic but sufficient, showing kit parts to be removed in shaded colors and indicating the PE parts that replace them



Below: A replacement barrel given to me by Chris. I do not know the manufacturer. It is shown by the assembled, but not yet cleaned-up kit barrel for comparison purposes.

Bottom: Hauler's US tank tools, #48022. While a nice set, the shovel handle in my sample was broken off and missing. The tools themselves are nicely-detailed (and scale fine) resin parts. PE attachment fittings and straps are included. Note that Tamiya's M-10 and Achilles kits also have separate tools.





At right we see RB's exquisite detail set for the M2 (#48B48) and replacement barrel for the M1919 machinegun (#48B34). These tiny, but gorgeous and inexpensive parts will really improve the look of the tank's machineguns.

Composition

Shep Paine is regarded by many as the father of our hobby. He was the inspiration for an entire generation of armor, aircraft, and figure modelers, including me. His book, "How to Build Dioramas" is still considered the "Bible" by many. Other books by Shep include "Building and Painting Scale Figures", "Modeling Tanks and Military Vehicles", and "Photographing Scale Models". Shep is also famous for the fantastic "Tips on Building Dioramas" pamphlets that appeared in Monogram models back in the 70s—I still have many of these amazing little documents including the one at right. Shep was a master modeler in the days before the large aftermarket and vast kit selection we see today, and he had to rely largely on detailing and scratch-building skills. Although the hobby has advanced beyond the methods he introduced, it was in part his pioneering work that made all that possible. I consider myself blessed to have met him on several occasions and to have had the opportunity to attend some of his seminars.

COMPOSITION

"The Rhinos churned through the enemy to a depth of 300 to 600 yards (275-500m) and returned without a single casualty due to enemy action. Interrogation of prisoners taken later indicated that the sortie had considerable shock action; the enemy was evidently unprepared for an onslaught of this type. In many instances the enemy relying on thick hedgerows for protection, were ground under the tanks as they smashed through hedgerow after hedgerow; while others were buried in their slit trenches… After breaching the static enemy defenses and creating as much shock and damage as possible, the rhinos would return to the line of departure and repeat the attack as part of the infantry-tank team. Employment of the rhinos in this controlled-stampede fashion {exploited} the rhinos to their fullest extent and effected maximum surprise".

-Excerpt for a 3rd Armored Division After Action Report

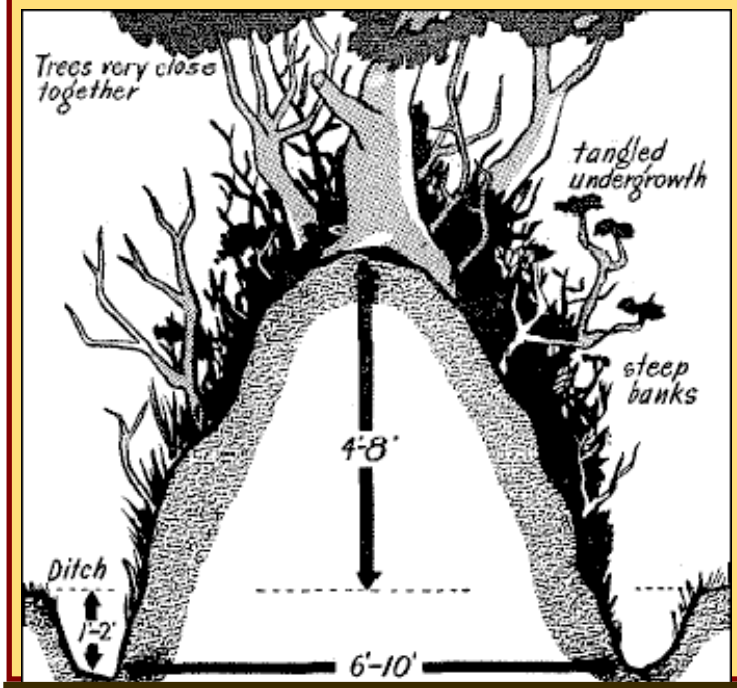
As quoted in

Steven J. Zaloga's book, "Panzer IV vs Sherman: France 1944"

BATTLING THE BOCAGE

After the allied landings, American soldiers encountered the jumbled bocage country of thick, tall hedgerows—berms which Norman farmers used to enclose their fields. Germans turned these into deathtraps with concealed automatic weapons, mortars, and anti-tank weapons. The determined defense by an average of only eight understrength grenadier and parachute divisions help up four U.S. Corps, prompting concern a stalemate might develop. Bitter fighting, during which regiments and divisions developed tactics to reduce the hedgerow fortifications, gradually yielded enough ground for the buildup of supplies, troops, and material for the breakout and race across France. While the British second army in the east continued to attract the majority of German armored forces, the U.S. breakout—Operation Cobra—was launched on 25 July, 1944, and quickly broke through German lines. The German army, stretched to the limit by losses thus far in Normandy, had nothing left to stand in the way.

Prior to the breakout, in an effort to restore battlefield mobility in the hedgerows, various devices and methods were tired to allow the tanks to better negotiate the terrain. Tankdozers were very effective, but were available only in limited numbers. Engineers could breach the hedges with explosives, but the amount needed for any meaningful advance made this impractical. One of the more promising inventions was the fitting of improvised hedge cutters to the front of tanks. These devices were locally manufactured from scrap metal and abandoned German anti-invasion beach obstacles. Designs varied from unit to unit. Tanks fitted with the devices were called “Rhinos”. While variations on this theme were developed pretty much concurrently in several units, the invention has generally been credited to Sergeant Curtis Culin of the 2nd Armored Division. Culin gave the credit to a man named Roberts who had jokingly quipped, “Why don’t we get some saw teeth and put on the front of the tank and cut through the hedges?” Culin recognized the merit in the joke and directed the



Top: A good view of the bocage showing tanks moving through the hedgerows on the outskirts of a village. This photo shows some of the difficulties in moving through this terrain.

Bottom: A cross-section of a typical Normandy hedge.

Top: There were various designs of the hedge cutters. This design was very common in the 2nd Armored Division.

Below left: Most, if not all, the hedge cutters were manufactured from scrap metal, mostly abandoned German anti-invasion obstacles.

Below Right: Here another design commonly used by the 3rd Armored Division (sometimes called a "Richardson Device" is being manufactured.

creation of a prototype. The teeth dug into the berms and helped prevent the lightly-armored underside of the vehicles from being exposed as they crossed the obstacle. General Bradley was favorably impressed during a demonstration and ordered the cutters mass-produced. By the time of Operation Cobra, nearly 60% of 1st Army's Shermans (and nearly 75% of Shermans in the 2nd Armored Division) had been fitted.

Although this device has been credited with restoring battlefield mobility and has even been described as decisive in some works I've read, there is actually very little supporting evidence. Some historians claim the devices were not as widely used as legend would suggest, which is backed by testimonial evidence from the crews themselves. Communications and improved tactics were usually more effective, and once the crust of German defenses were penetrated, the rapid advances which followed primarily followed the roads. Thus the cutters appear to have had more morale value than tactical value. But morale value should not be understated. The cutters were tested, and had they not worked, they would likely not have been mass-produced. The cutters were one more tool in the toolbox, and they did provide more options for the attacking force. So while I believe their usefullness has probably been overstated, they were certainly valuable additions to the arsenal.

In vignettes and dioramas the story the compositions tell is often as important—if not more so—than the models and figures. When planning these pieces, I use a compositional tool I call my "Ten Commandments of Effective Composition". Far from carved in stone (merely etched in soft Jello), these provide a good guide, making sure I consider all vital points. A brief description is included at right. For a more in-depth discussion, refer to my works detailing my Sd.Kfz 251 project.

My goal in this project was to create, in as small a package as possible, a nod to the great Shep Paine that also illustrated many of the salient features of combat in the bocage as illustrated in the quotes on pages 3 and 17.

To accomplish all this several elements were necessary. Clearly the tank fitted with the cutter is the primary focus and the main story. It is by far the largest element and what the viewer will notice first and will likely focus most of his or her attention on.

The next most important element is undoubtedly the hedge. Without this, there is no reason for the existence of the hedge cutter and no depiction of its use. The hedge also provides setting and context—its very existence screams "Normandy". The tank cutting through the hedge shows both the difficulties of operating in the terrain and one novel method used to overcome them.

The next things the viewer will likely turn their attention to after taking in the vehicle and hedge are the tank commander and the supporting infantrymen. In addition to providing a sense of scale, they show the tank-infantry cooperation that was key to the U.S. breakout. Their poses and actions provide the drama and emotion of the event.

Not immediately noticeable, but something the viewer will find on closer examination, is the abandoned German fighting position and casualty. This clearly shows a battle is in progress—this is no training action. It also points towards the effectiveness of the U.S. tactics.

I chose an attractive round base as this vignette has no clear "front" or "rear". There is no one single viewing angle that allows a clear view of all elements and action without at least some being masked by the hedge. At shows I plan on displaying this vignette on a slowly rotating "lazy susan" allowing the viewer a 360^0 viewing experience. However, I did attach a nameplate (created on my computer and attached with double-backed tape) on what I considered the best viewing angle.

The small base and compact scene serve to keep the composition balanced and tight.

This composition, with the number and poses of figures, the angle the vehicle strikes the hedge, and placement of the various others elements was arrived at only after trying several variations. Good compositions usually don't just "happen". Rather they are carefully planned. They may look random, but they are anything but. Time spent in this process is never wasted. While this can be done at any time, I usually compose my scenes using the partially built, but still unfinished, model and finalize figure poses during the process.

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.

Once the basic tank was assembled and the figures posed, the final composition could be worked out. The US soldiers will be clearly visible. However, the wounded German is low, next to the hedge, and under the front of the tank. Finding him will be the viewer's reward for careful viewing.


U.S.A. 3033434


U.S.A. 3033434

BASE AND GROUNDWORK

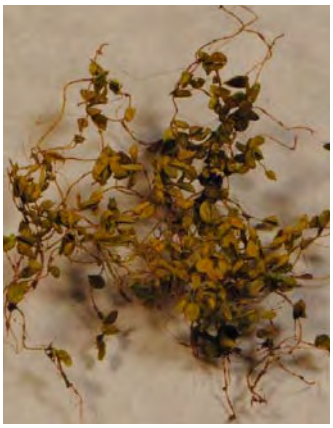
The groundwork after construction and painting, but before the attachment of the tank and figures (the paperclip pins marking the holes for the figures' mounting pins are visible). The tape protects the base during the creating and painting of the groundwork.

Note that although most model plant material, such as the static grass and leaves used here, come in green colors, they usually do not appear natural as is. Some painting is usually required to obtain a realistic look.

With the composition, base, and posed figures in hand, we can proceed. The groundwork interacts very closely with the vehicle—the tank doesn't just sit upon it, it moves through it. As this will require a good deal of handling, I built the ground as soon as the basic vehicle was built but before the addition of small details or fragile finishing and weathering. This ensured I could use the tank without worrying about damage.

My groundwork methods were detailed in my StuG III Ausf G build booklet, and those same techniques were used here. In summary, I use Cellucly—an instant Paper Mache product—to create my groundwork. This is mixed with water per the instructions. I also add a generous dollop of white glue to help it stick to the base. I pre-color the Celluclay be mixing in acrylic paints—browns and black in this case as I wanted dark, damp earth. Once in place, but before it cures, grassy areas are painted with a water/white glue mix and Woodland Scenics "Static Grass" sprinkled on. Other vegetation, included pre-made clumps of grass and various dried plants and other materials can be put in place.

The primary difference in this vignette is the berm and hedge. Let's look at how these were created.



I made small shrubs using a rubberized horsehair product (Hudson & Allen "Ivy") and loose leaves from Joefix's "Foliage" - a natural plant material. The horsehair was teased into the shapes desired, sprayed with hairspray, and dipped in a pile of the leaves. I made about a dozen of these in various sizes

Above: For trees and hedges there are various options. The two I used are shown here. At far left is a natural material sold by Joefix called "Seafoam". As you can see, it has a tree-like structure. I also like to use pieces of root. The one shown above has additional horsehair branches glued in place. For foliage, I used the Super Leaf product shown above. This is a paper product that looks like small leaves. While it may not look great in large scales, it looks very nice in 1/48th.

Above: Various sizes and shapes of seafoam were selected and stuck into a piece of Styrofoam. They were air-brushed an appropriate color (a dark grey-brown color). To add the foliage to the Seafoam and the root trees, I sprayed them with hairspray and sprinkled on the foliage material. I added multiple layers until I got the thickness I desired. A final layer of Dullcote helps lock everything in place and kills any shine. The result is seen at right. Although it looks good, it is a very uniform color giving a somewhat unrealistic effect.

Using thin paint and low pressure, I airbrushed the trees in various colors. I used various mixes of Vellejo Model Air German Green, US Dark Green, UK Light Stone, and Yellow. The lightest colors were sprayed from the top to create a highlight.

To create the berm, I used Styrofoam. Parts were cut away where the tank is pushing through. The tank and wounded German were used in this step to make sure everything fit well together.

The pre-colored Celluclay was put in place on the flat ground areas and the static grass added. Then, using a spatula, the earth was torn up where the tank tanks ran though it.

Above Left: Next, the area where the berm has been dug up and pushed over were added. Many bits of small roots and rocks (kitty litter) were added. Again, the wounded German was used to ensure everything fit. Above right: The rest of the berm was added, including higher grass and weeds at the base (pieces of 6mm pull-apart static grass mat by Scene Scapes).

Left: As a final assembly step, the finished hedges and trees were glued into holes punched into the berm with a toothpick. Gaps were fleshed-out with the various small shrubs I made earlier. Various sizes, shapes, and colors of pre-made grass clumps were also attached. Above: Using the same materials and methods, pieces of the breached berm and hedge were fitted to the hedgecutter on the tank. A piece of plastic wrap ensures they do not stick and can be removed for painting.

Once the groundwork cured, additional painted was done as detailed in my StuG III Ausf G build booklet. Earth areas, although pre-painted, were given various washes of dark colors and light dry-brushing with light colors. The somewhat garish and uniformly-colored grasses were dry-brushed with yellow-green, yellow, and tan colors. Finally, some light dustings with pigments were done to selected areas.

Construction and Detailing

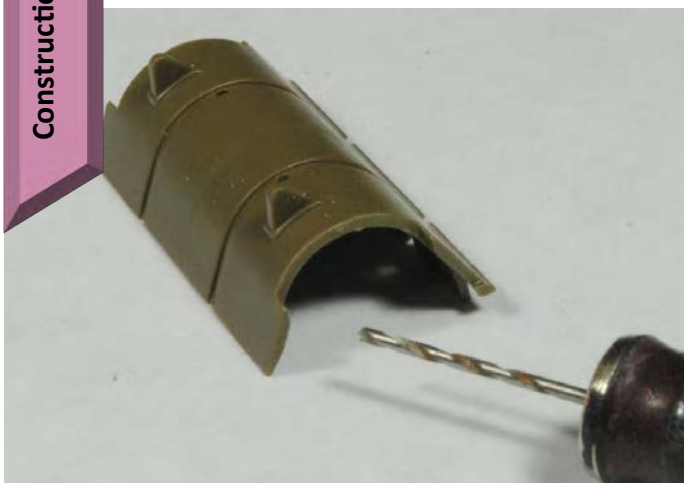
Here we see the model completely assembled and ready for painting. The wheel/track assemblies, and stowage, and the .50 machinegun ore removable for painting. Stowage tie downs will be added only after all painting is complete and the stowage is permanently attached to the vehicle. This photo shows all the various changes and bits added to the vehicle including replacement resin and metal parts, photo-etched, added stowage, casting texture, and styrene details. These changes served to correct some minor detail issues with the kit and add or improve other details.

My model building methods, including the tools I commonly use and some basic plastic model building tips, were detailed in the booklet on my StuG III Ausf build and will not be repeated here. What we will do is take a detailed look at how this particular model was built and the order the various tasks were undertaken. While this kit can be built into an attractive model straight from the box, it is a super-detailer's dream, lending itself very well to some extra TLC. I do not consider myself a rivet-counter (I have nothing against those of you who are), and I do feel there is such a thing as "close-enough". Still, I like to make my models as accurately as practical without too much pain. In the case of Tamiya's Sherman, this necessitates some changes and additions. Of course you are free to build your model as you wish.

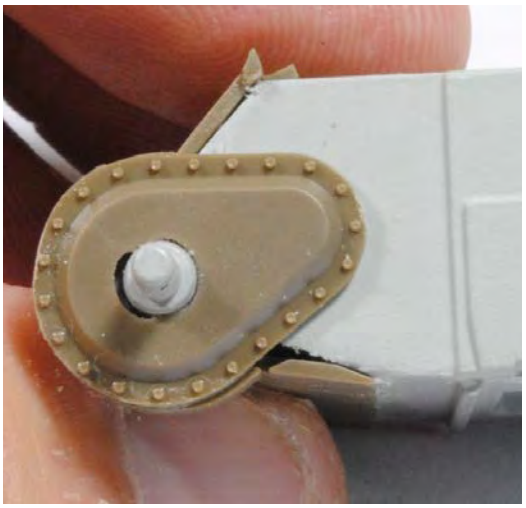
For this model I used more aftermarket parts and did a good deal more detailing than was needed for the StuG III. While both are Tamiya kits, the Sherman has more omissions and takes more work to create an accurate rendition. I normally do not use aftermarket photo-etched (PE) detail sets as they, in my opinion, rarely add an amount of improvement commensurate with the work involved. However, in this instance I found the Hauler detail set both improved some existing detail and added a good deal of missing detail. This made its use worthwhile. Some of these parts replace kit parts, others add detail to kit parts, and still others fill omissions and voids in the kit provided parts. Still, I did not use all the parts and pieces in the Hauler set. Some pieces are either too fidely, in low-visibility areas, or offer little improvement over the kit parts. As we walk through the assembly process in the following pages, I will highlight areas where they were used and where they were avoided. That you can "cherry pick" the parts you use is an advantage to the PE detail sets.

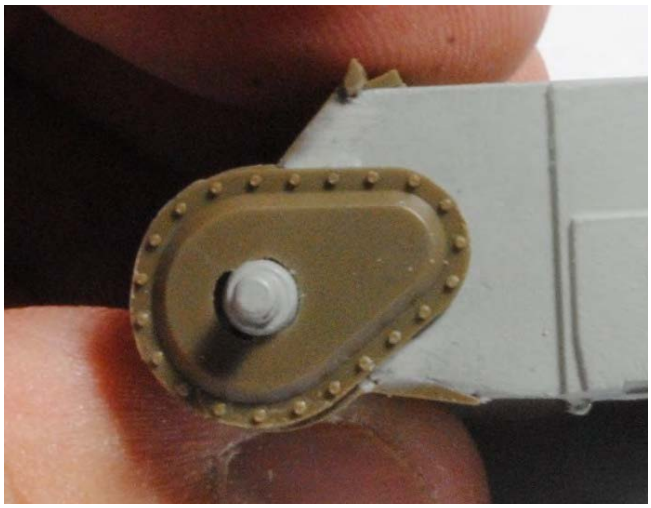
In the StuG build, we replaced the kit tracks with aftermarket resin offerings and added the excellent Monroe Perdu Zimmerit to the vehicle. Here, we will use the Tamiya tracks as it would be difficult to better them. And, of course, Allied tanks did not use Zimmerit, but we will look at various methods to add casting texture to the large cast armor items. Finally, as we have already done with both the StuG and 250/10 in this series, we will create stowage to place on the vehicle.

So, without further ado, let's get to it.

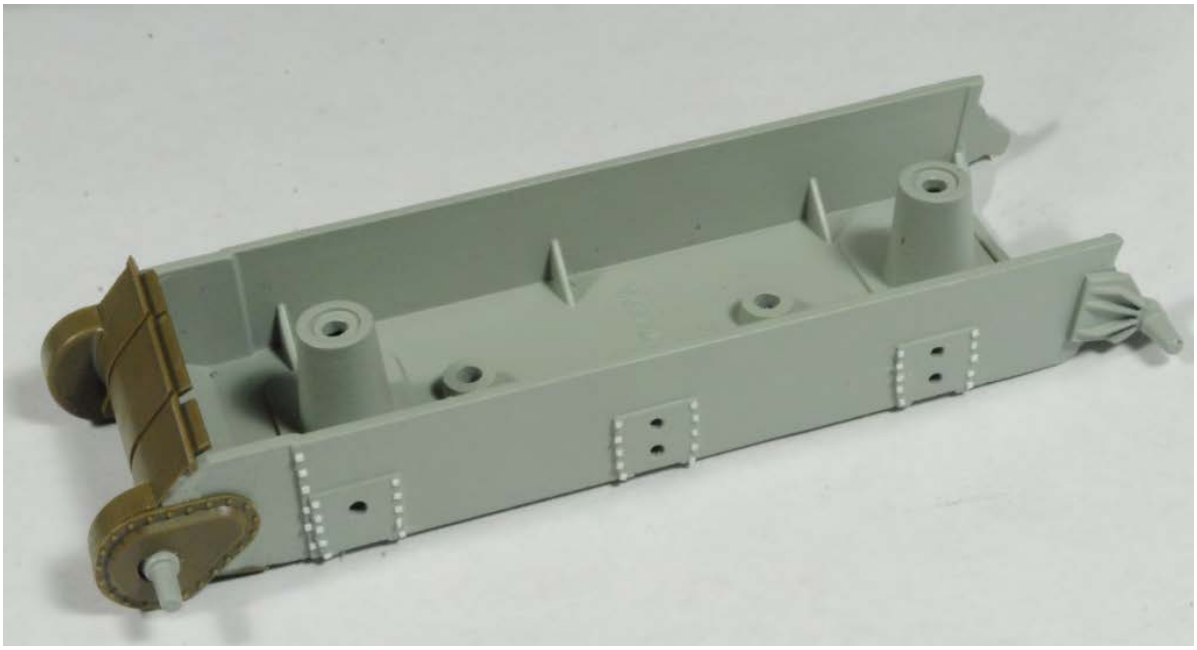


The clevises on the transmission cover for the front tow cables are molded solid. It's quite easy to drill these out. This should be done prior to attaching the piece to the hull as they would be difficult to reach after.

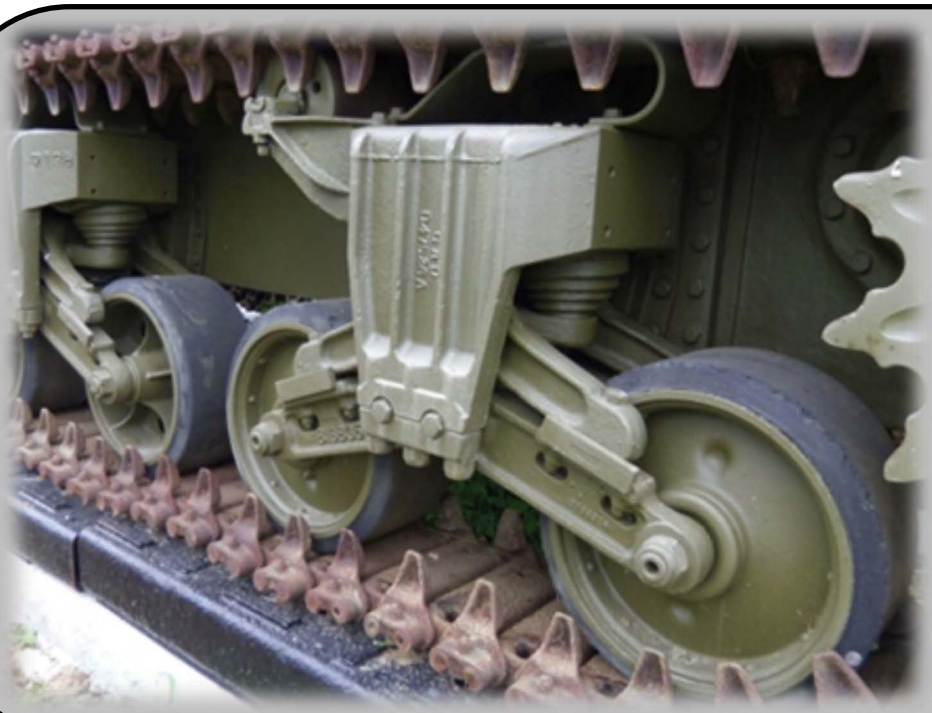




Fit is very good generally, but fitting the transmission and final drive covers to the cast metal hull leaves slight gaps as seen as far left. While these will likely be invisible behind the drive sprocket, I filled them with Magic Sculpt epoxy putty. The putty is water soluble, so a swipe with a damp finger is all that is needed to smooth the putty.



Missing bolt detail on the metal hull, most noticeably where the bogies attach to the hull, was added with salami-slices of Evergreen Styrene bar stock. Note that plastic cement will not adhere to the metal hull tub. Superglue must be used.

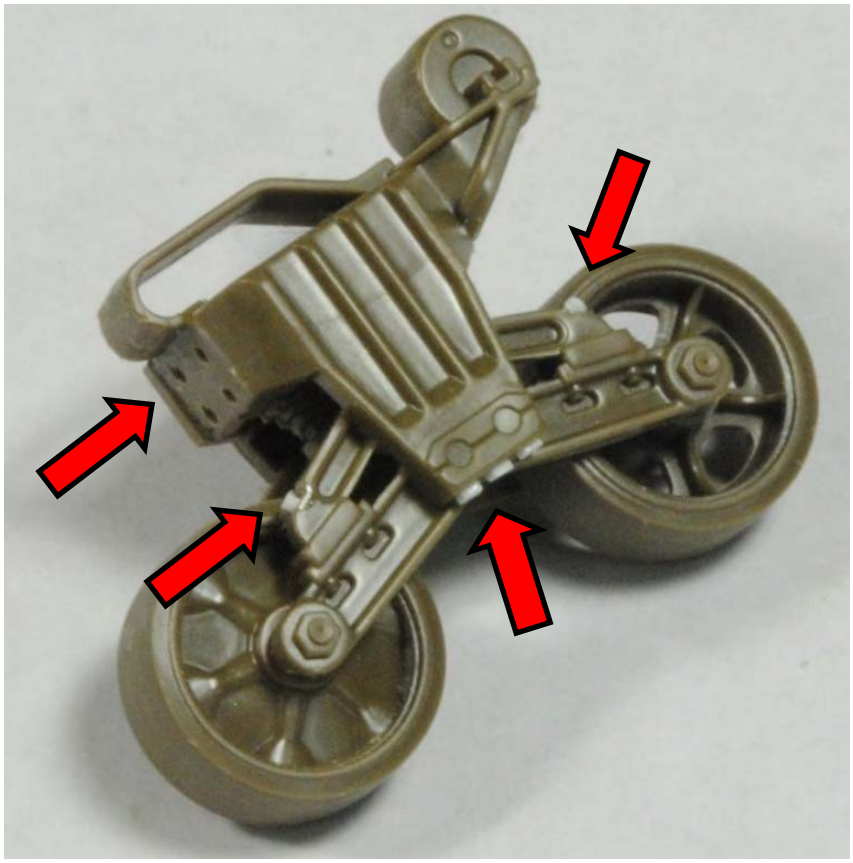


THE REAL THING

A photo, from the "Sherman Minutia" website, showing the bolt detail missing in the kit from both the bogie units and the hull. These bogies use different type road wheels than those I used on my model.

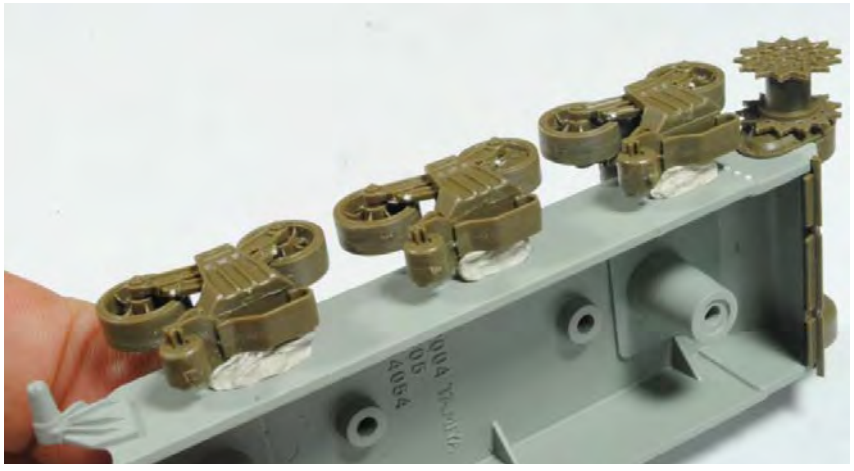
An easy way to remove mold seams on road wheels! I simply chucked the wheels in a Dremel spindle designed to hold cutting and grinding wheels and disks. Once secure, the wheel was spun (at a low speed to avoid melting) against a sanding stick to quickly remove the mold seam. The photo at left shows a wheel before treatment (farthest) and after (nearest). The process is seen below.

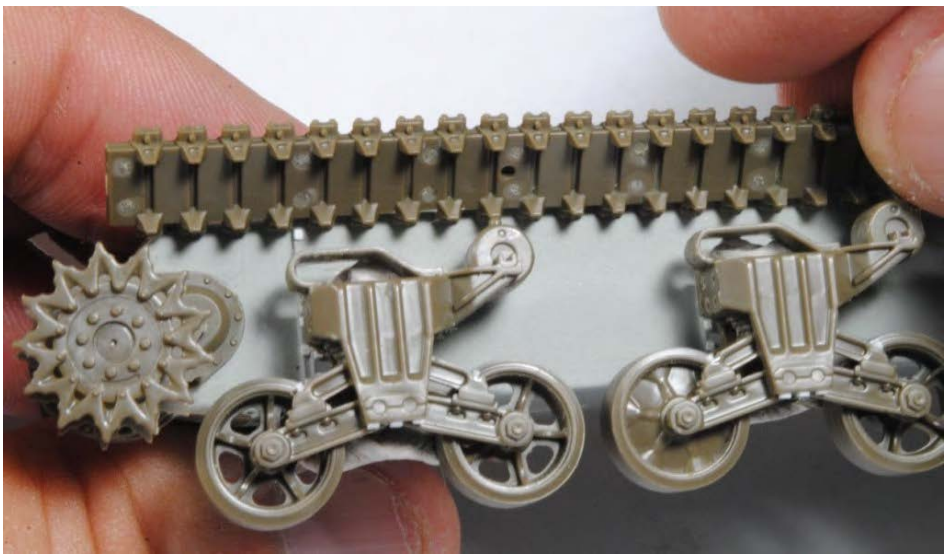
Right: Minor detailing was done to the bogies. Three bolts were added from styrene stock on the bottom of bogie bogie. A smaller bolt was added to the top of each arm (front and rear). Finally, as the return roller assembly was reversible (in a way similar to the kit part), four bolt holes for this were added to the front of the bogie.



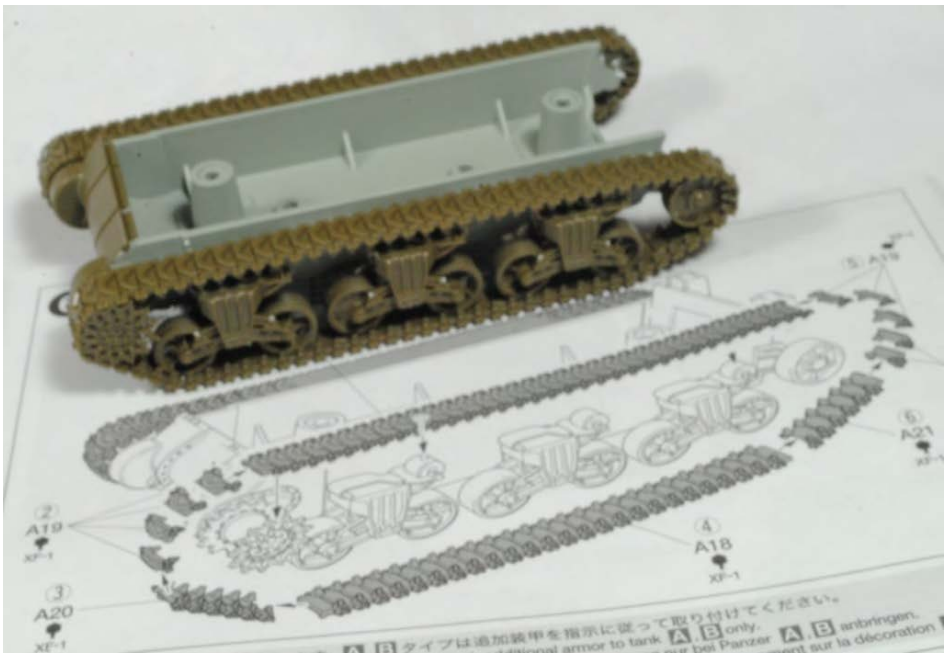
Below: To provide some detail to the rear of the idler wheel, the hollow space was filled with epoxy putty. This was smoothed using a rubber cone brush and a paintbrush moistened with water. Spoke detail was created by pressing lengths of styrene rod into the soft putty. It's not an exact match, but it will not be too visible.

Below right: I wanted the track assemblies to be removable for painting. The drive sprockets have ploy caps and can be simply pressed in place. The bogie assemblies were temporarily mounted using poster putty. If doing this, make sure the bogies are fitted properly or you will have difficulty with the tracks and the tank will not sit properly





The tracks are very easy to fit. Starting with the long top run, a hole in the track mates to a pin on the front idler wheel. The small ejector pin marks in the track were filled with superglue.



Once the top run is in place, simply follow the kit instructions to fit the remaining lengths and links. It takes only a few minutes per side and the fit is perfect.

Once the glue sets, the track assemblies can easily be removed for painting and weathering.

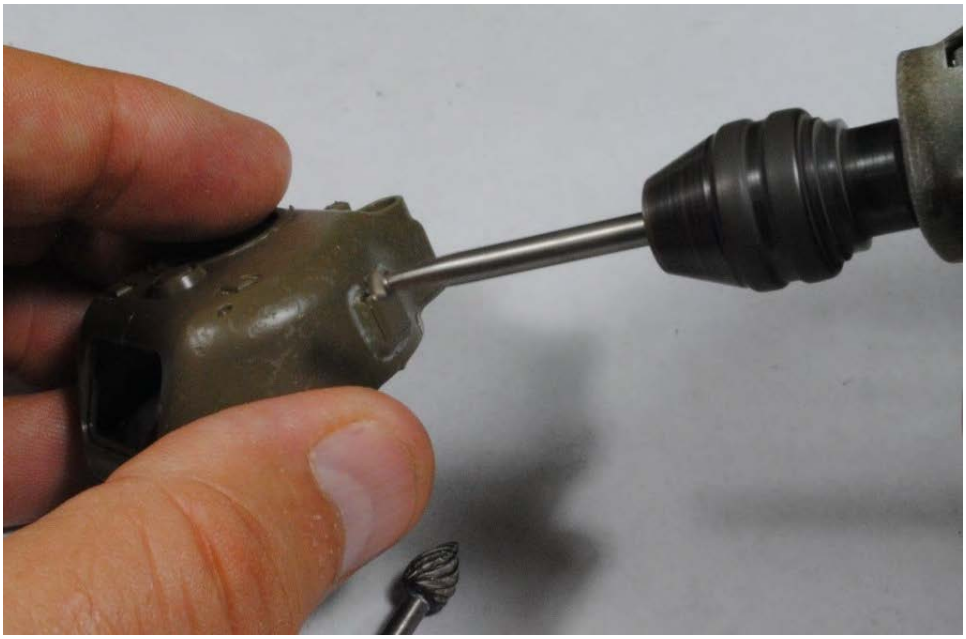
Next, I decided to add the cast texture to the turret and transmission cover. The latter is already assembled and attached to the hull. The basic turret form consists only of three parts—the upper and lower turret pieces and the pistol port. Also needing perhaps a bit more texture is gun shield.

Below we the turret assembled. Note that I removed the molded co-

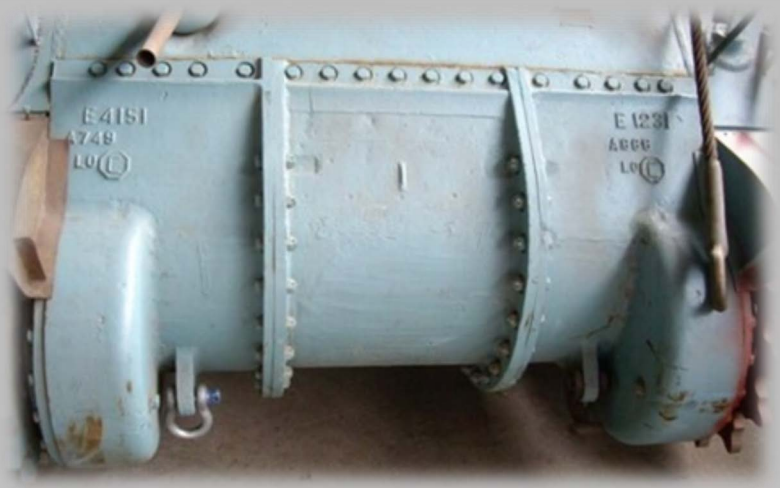
axial machinegun and drilled out the opening. I plan on later replacing this with an aftermarket part.

Below: The "flange" around the pistol port is cast as part of the turret on the actual vehicle. Here it is a separate part so it must be blended into the turret so the whole assembly looks like one piece. I did this with Magic Sculpt epoxy putty. A thin string of putty was rolled-out on a piece of glass using my finger. This was then put in place around the border of the pistol port piece. Finally, using a damp finger as the putty is water soluble, it was smoothed out, blending the part into the turret casting.

With both the main cast pieces of the hull and turret assembled, casting texture could now be added.



I started the cast texture process by using a couple different sized round cutting burrs in my Dremel Stylus motor tool. On a fairly low speed, I just lightly tapped the tool to the surface, sometimes allowing it to skip and bounce. This takes a good deal of care to ensure only the cast areas are gouged. This part of the process represents some of the deeper gouges and surface irregularities often seen in cast metal parts.



THE REAL THING

Top: A photo, from the "Sherman Minutia" website, showing the closed pistol port. Not that it is not a separate piece, but is rather an integral part of the turret casting. Note also the texture of the turret casting is very smooth. U.S. castings weren't as rough as those of some other nations. In this scale, the modeler could easily get by without adding any texture at all. Adding it can almost be considered "artistic license" done simply to show the different manufacturing methods used on the various bits of armor.

Bottom: Another photo from the "Sherman Minutia" website showing the three-piece differential cover. Again, note the relative smoothness of the cast texture. Note also the casting numbers. The right hand piece normally carried the part number E4151, the center was E1232 and the left side was E1231.

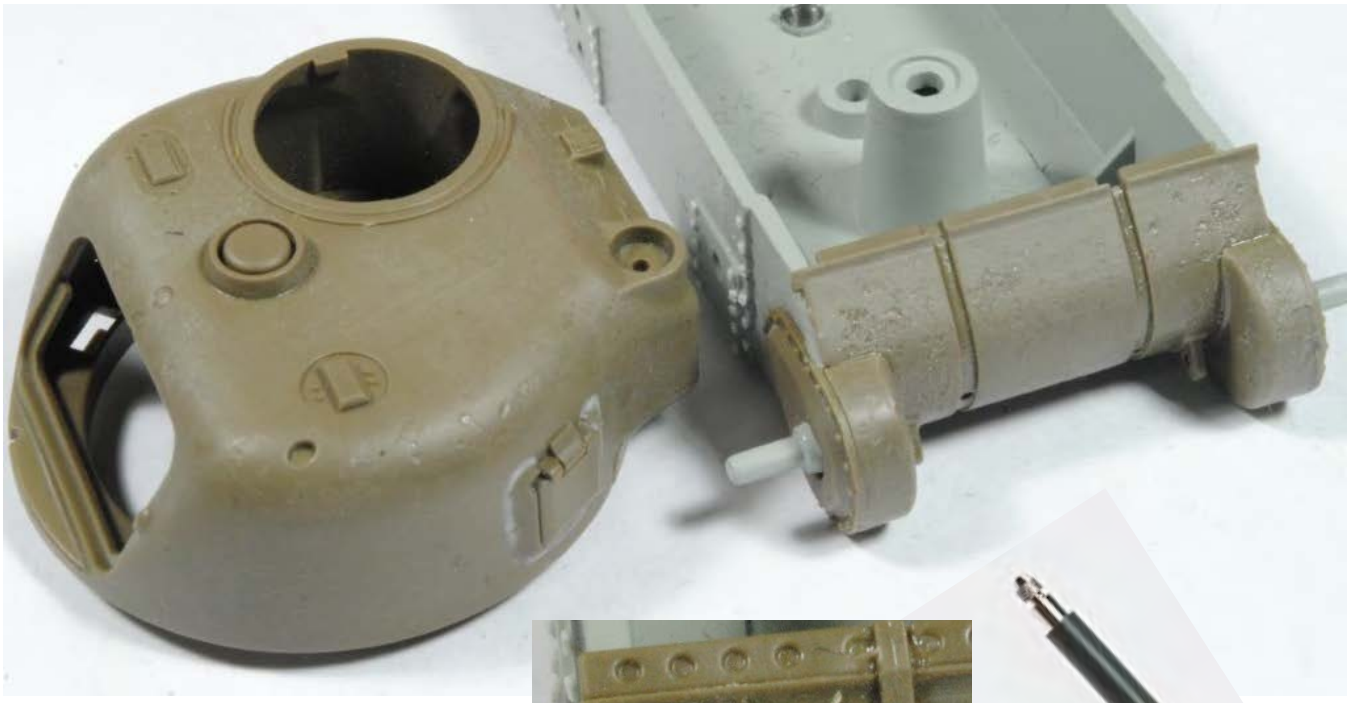
This process was applied to both the turret and hull pieces. Here we see the result on the turret.

The next step created minor pitting and surface texture using liquid cement. The cement evaporates quickly, so I worked only in small areas at any one time. First, the glue was painted onto the surface. This will slightly soften the surface.

After the glue was put in place, the surface was jabbed and stippled with a stiff brush, creating the texture seen.

While this process results in a nice, rough surface texture, it is likely a bit too rough for U.S. castings in this small scale. The effects were blended and toned down with a light sanding using fine steel wool.

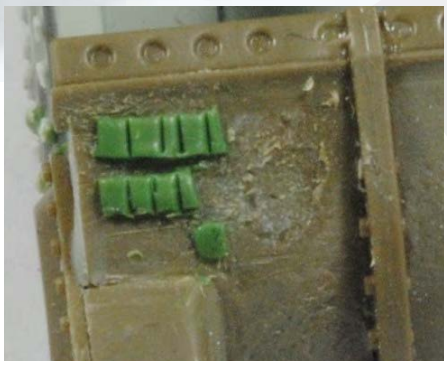
The photo below shows the final result—a pitted, rougher surface than the original smooth plastic, but not unrealistically so.

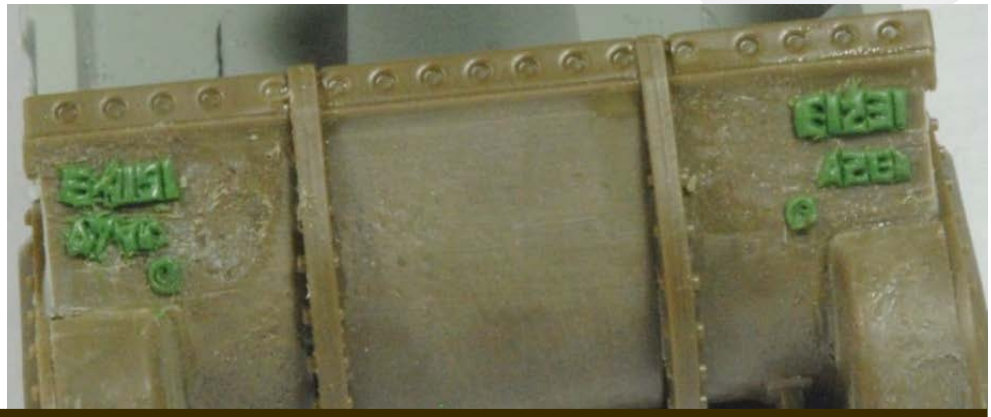


I used Kneadatite (the green stuff) epoxy putty for the prominent casting numbers on the transmission cover. I used this because it is both very sticky and small bits hold their shapes better than Magic Sculpt.

I started by pressing small bits of putty into place and trimming them to the appropriate size. Using a sharp hobby knife, I separated each letter and number (above right).

Then, using a dollhouse wiring pilot hole punch (basically a needle with a handle—seen at far right), I detailed the letters and numbers by pressing the numbers into the putty.





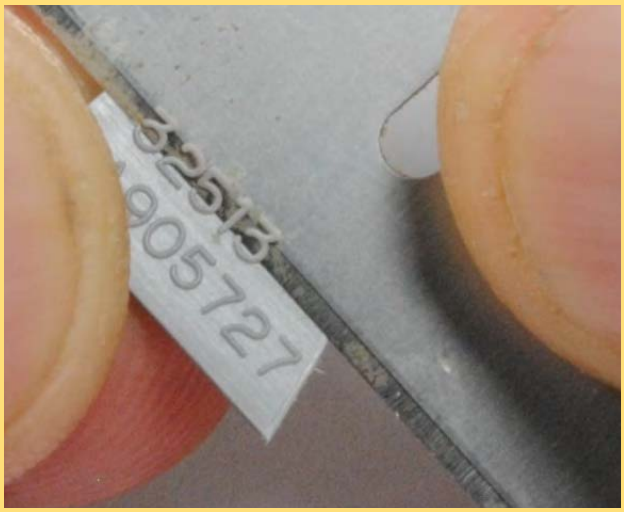
Alternate Methods for Adding Casting Texture

If the thought of attacking your parts with motor tools and glue makes you nervous, there are other methods you can use.

At top we see Magic Sculpt epoxy putty which has been thinned with water into a paste. This can be dabbed onto the surface with a stiff brush creating a similar texture.

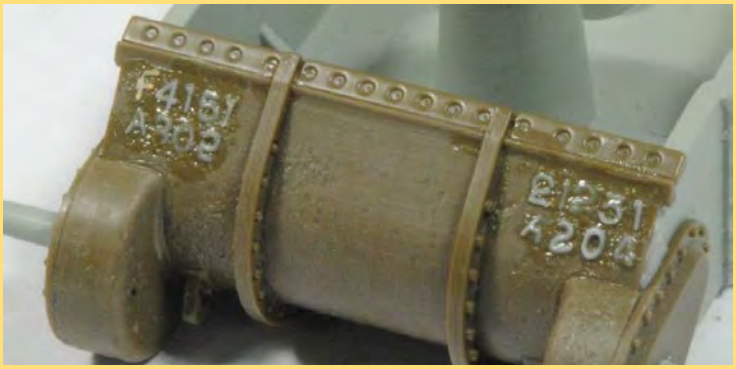
You can achieve a similar effect in the same fashion using a thick paint—something like Gunze's "Mr Surfacer 500" or even a thick acrylic medium like we see at the left. Again, these can be just stippled and jabbed onto the surface.

Below we see the results of these two methods after painting. The putty methods is to the left and the matte medium is to the right.

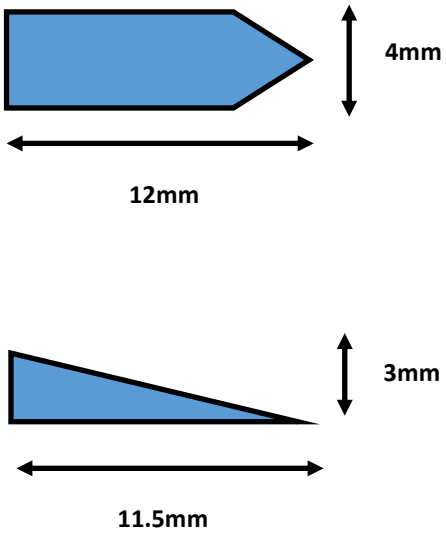


For the first attempt at casting numbers, I used a razor blade to slice lettering off Tamiya sprues. I used the grey sprues from their 1/48 figure sets simply for the contrasting color—these letters are so small and thin that the lettering from the olive drab Sherman sprues would be very difficult to see against the plastic parts of the kit and thus harder to put in place. The letters were affixed using liquid cement. While this method worked, I thought the numbers were too large and removed them.

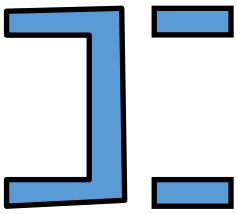
You could also use resin 3D decals from Archer to add the numbers if you wish, but this is added expense and the tiny numbers can be difficult to work with.



Alternate Methods for Adding Casting Numbers



The next major step in creation of the lower hull was the making and fitting of the hedge cutter. As we have seen, there were various designs of these cutters. I based my design on the one seen in a You Tube video that showed the device being fitted (https://www.youtube.com/watch?v=iWxt7b2zXtY). I made five cutting blades following the templates seen above right. The basis of the cutter was a "U" channel 32mm long made by cutting an Evergreen "I Beam" into a "U" channel. Index marks were made starting 2mm from each end with marks every 7mm. These marked the center of each blade.



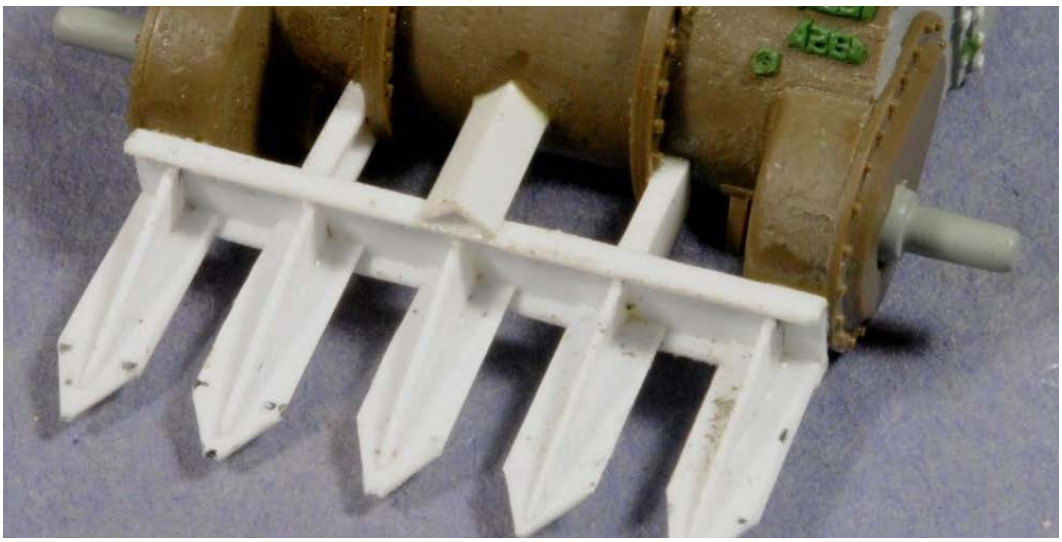
Evergreen I Beam (4.8mm) cut into a "U" channel 32mm long

THE REAL THING

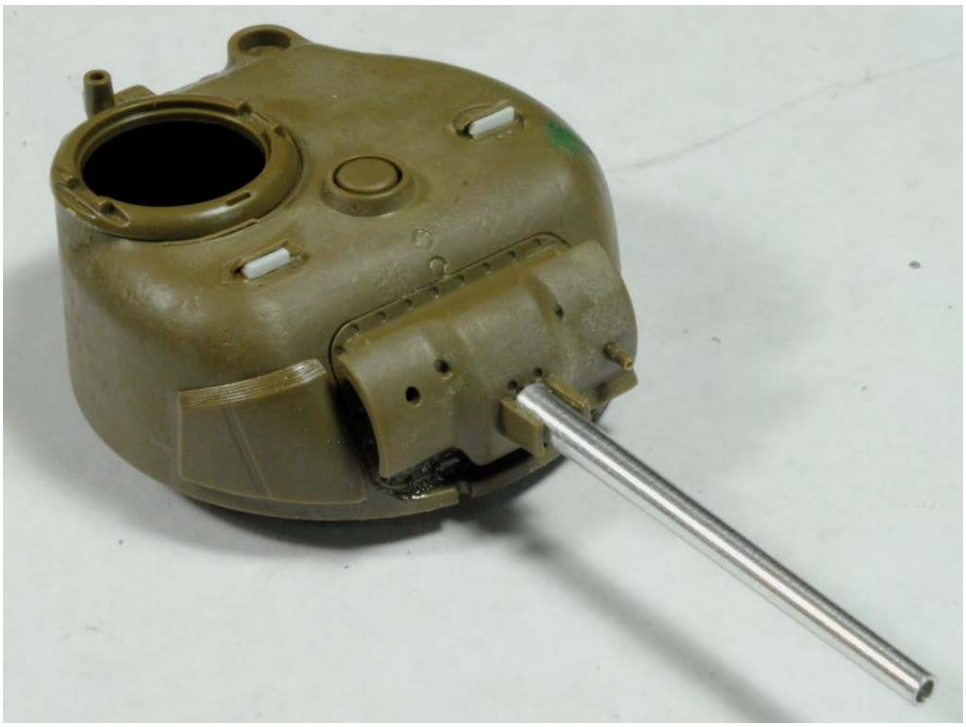
In addition to the samples we looked at earlier, here is another vehicle with the device, similar to the one I built. It seems to have used its cutter as evidenced by the bent and twisted metal.

If scratch-building one of these items, it's probably best to work from photos. While it is apparent there was no one "approved" design, it seems each unit had a design that was fairly consistent from tank to tank. Even then some variation is possible based on materials available and the team making the device. A lot of these were made—by the time of Cobra, 3 of 5 of the tanks in the 1st Army were so equipped.

To complete the basic structure, the tines were glued into place on the main beam.



The previously mentioned YouTube video shows the device being mounted to a tank. Using that as the primary reference, I fitted the device to the model using two short lengths of smaller "U" channel and a length a "L" strip. Welds will be added later at the same time that I add them to the overall vehicle.

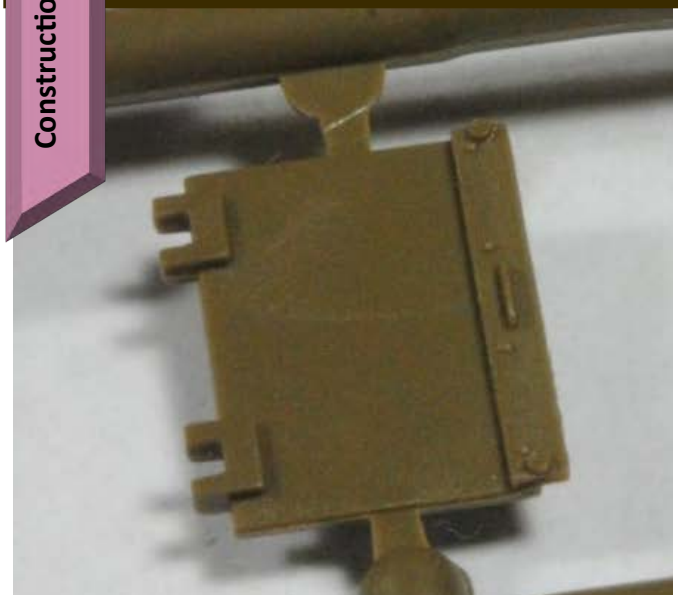


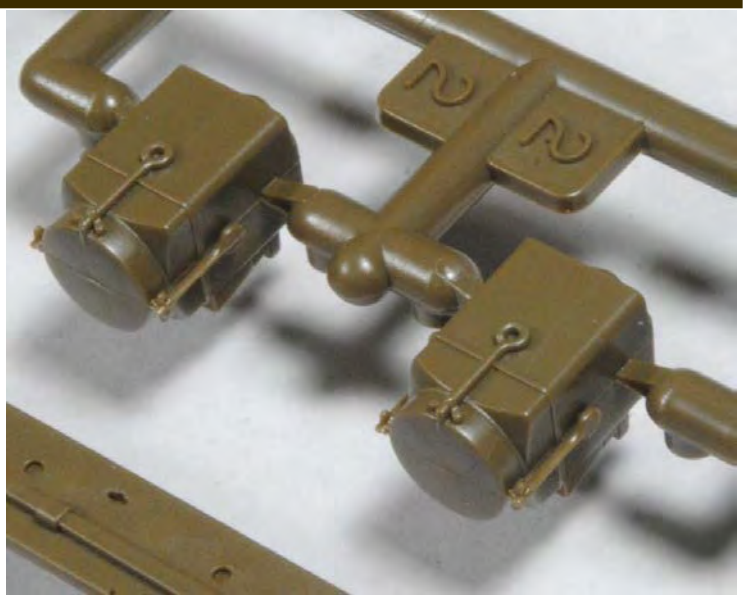
As stated in my kit review, all the periscopes on the vehicle are molded closed, leaving the crew blind. At a minimum, the driver and co-driver's periscopes should be deployed. I chose to open the gunner and loader's periscopes, too. To do this, start by simply removing the molded-on periscope cover. If you are careful, you can reuse this cover. Otherwise, new covers can be made from .30 x .60 strip with the edges slightly beveled.

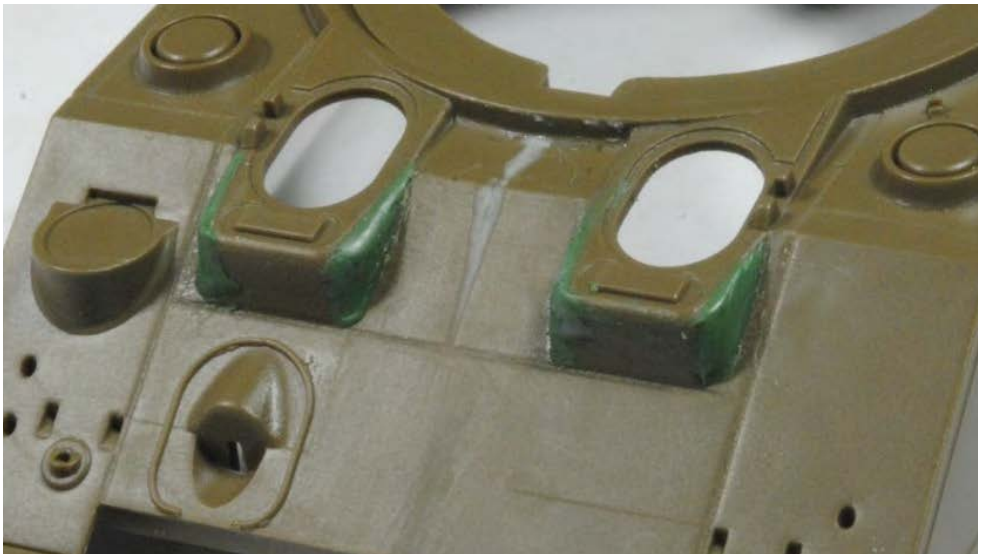
Periscopes are 3mm strips of 1mm triangle styrene stock. The hinged covers were then glued back in place. In this photo we see the gun mantlet and gun have been added. I replaced the plastic "nub" co-axial machinegun with the more detailed hull machinegun (which, in turn, will be replaced with the brass RB part). Only the muzzle is visible, so the kit part offers enough detail. For enhanced realism, I drilled out the end of the gun barrel.

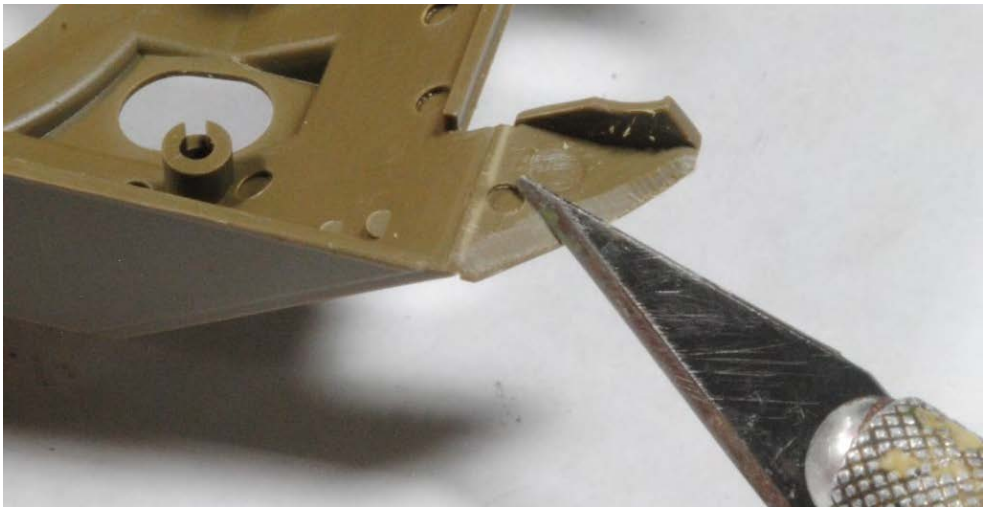
The cheek armor and commander's hatch ring have also been added, completing the main turret forms. Only the hatches, M2 machinegun, and small details remain to be fitted to the turret.

Many of the kit's tools are molded onto the vehicle. While this is not a great disadvantage, and they can still look good with proper painting, I chose to remove and replace the tools. To remove them, I used a chisel, hobby knife, and sanding sticks. Take care not to damage or destroy nearby detail.





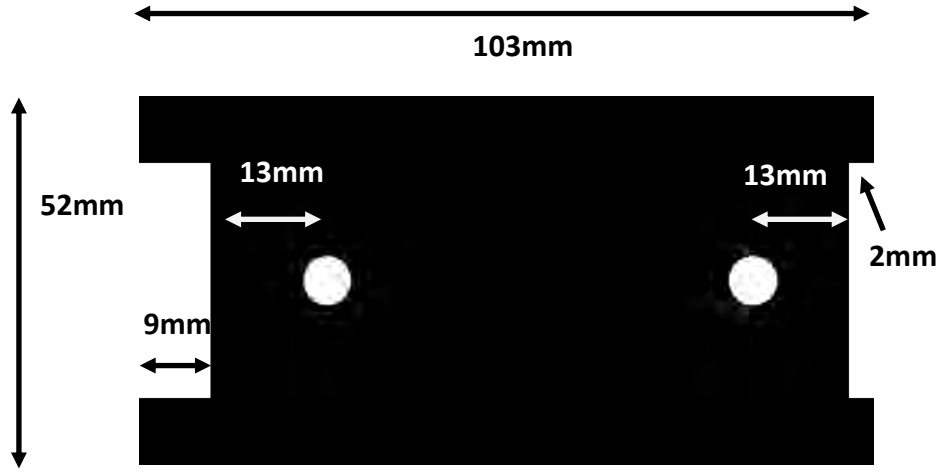




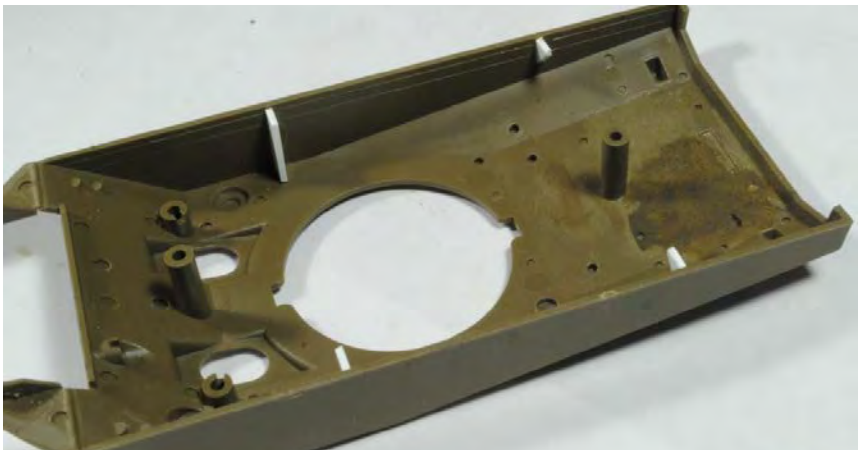
Above: To finish the hull, the rear wall with engine access doors was assembled and attached. The photo above left shows one of the engine access doors with only a plastic nub for a handle. This was cut off and will later be replaced with a PE part from the Hauler set. The PE set also includes parts to replace the latches on the air cleaners (above). I chose not to use these as the kit parts are fine, and most of this area will not be visible behind the rear plate.

The driver/co-driver hoods taper somewhat at the front rather than remain parallel as is proper for the hoods on the M4 (the kit hoods are a better match for the M4A4). The basic shape of the hoods were corrected using Kneadatite epoxy putty. I did not bother re-working the front of the hoods as they will be covered with the applique armor.

The Hauler set also includes replacement fenders. I also chose not to use these parts as the kit fenders are fine. I simply used a hobby knife to shave the leading edges down to a more scale appearance.



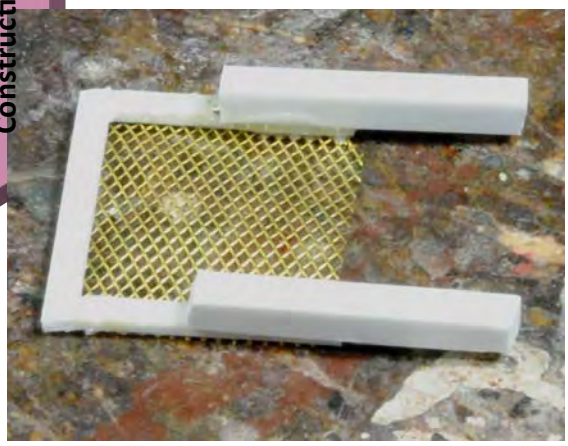
The biggest issue with the kit are the open hull sponsons. I used a piece of sheet plastic to close this. My template is shown here. This template is about a 95% solution. While some additional trimming was needed to get a perfect fit, this is a good starting point.

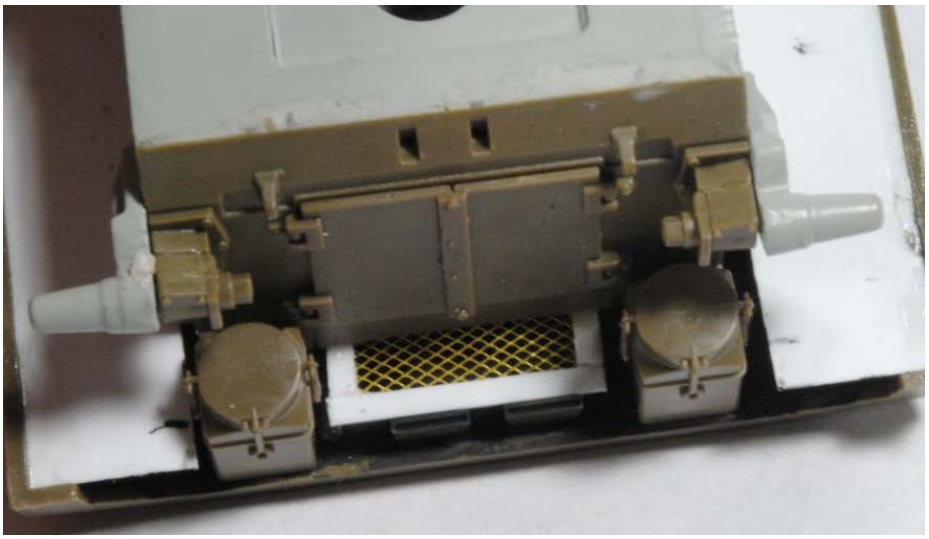


To provide some additional support for the sponson cover, I glued some wedges of plastic in place inside the hull.

Here we see the hull with the plastic sponson cover glued in place.

All hatches but the turret hatch will be closed, and the commander will fill most of that hatch. Still, I did not want the viewer to see any of the white plastic or lack of detail inside the vehicle. To prevent this, I painted the inside of the upper hull and turret in black.

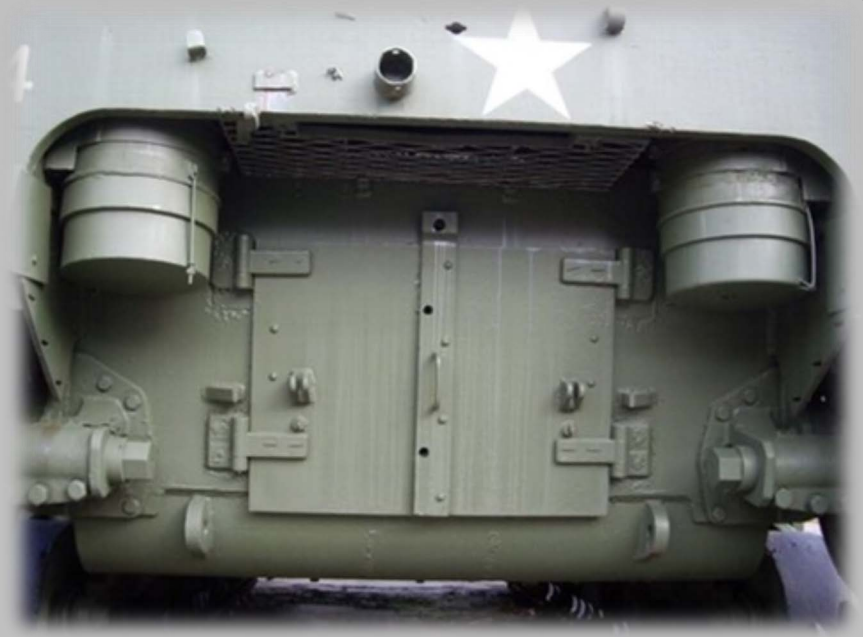




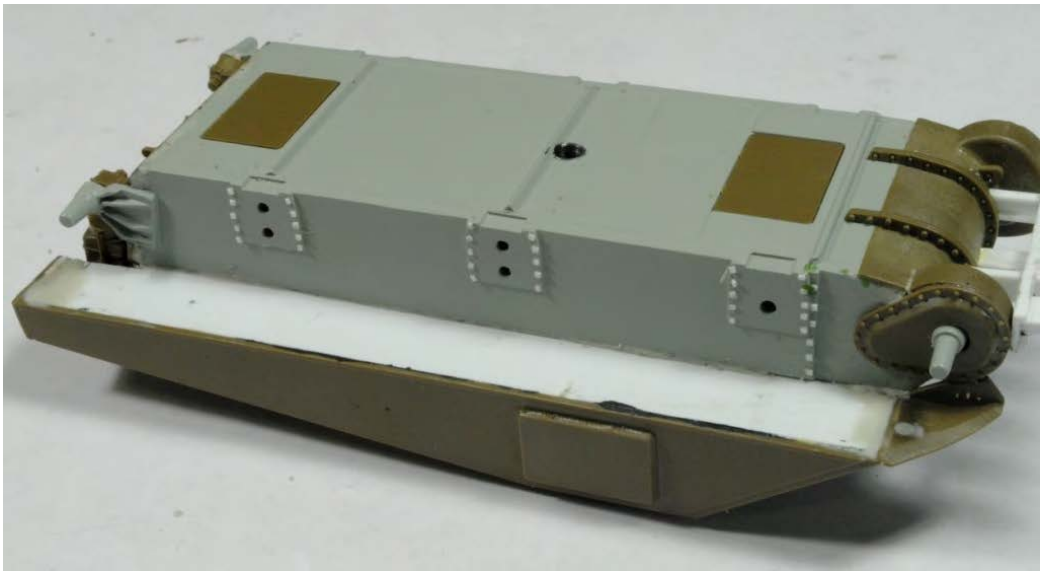
A screen to block off access into the engine compartment from up under the rear of the vehicle was added. A frame was made of plastic strip while the screen was cut from a piece of fine brass mesh. As the rear hull wall sits higher than the sponson cover I glued the screen to, spacers were added so the screen sits level. It was glued in place and the hull halves were test-fitted together to make sure the screen sat level and did not interfere with the exhaust pipes or air cleaners.

THE REAL THING

In this photo of a surviving vehicle (without round air filters as opposed to the square filters in the kit) we can see the details of the rear lower hull. This includes the engine hatch handle we've already discussed. Also apparent in this photo is a screen covering access up into the engine compartment.



The driver and co-driver's periscopes were also opened. The side applique armor and the vent cover were attached. The upper hull was attached to the lower. This completes are the basic forms and shapes of the hull.



The sponson cover fit very well, but some slight amount of putty work was needed to fill a few small gaps at the rear and along the hull sides.

With the track assemblies and turret temporarily fitted in place, the model is starting to look like a Sherman. In this configuration, I will use the model to finalized the composition and complete the groundwork. This allows me to use the model as needed without running the risk of damaging small details or fragile painted surfaces. The composition and groundwork processes were covered earlier in this booklet.

A board was often mounted between the fenders to hold stowage on the M4 tanks. This was added was a piece of plastic strip. Woodgrain was created by dragging a coarse sanding stick along the plastic.

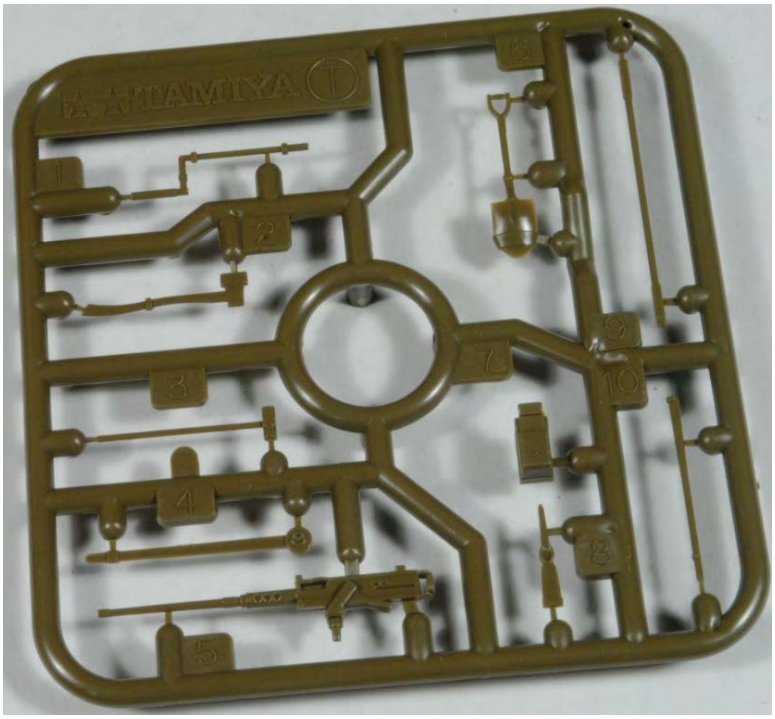
One of the bigger flaws with the kit is that the weld beads are often represented with trenches rather than raised beads. To rectify this, I added weld beads using strips of Evergreen .010 plastic rod. Stretched sprue would also work fine.

To add the rough weld texture, soak the rod with liquid glue and, once it is soft, press in the texture using the tip of a hobby knife.

One of the nicest available upgrades (and inexpensive at less than $2) is the RB barrel for the M1919 machinegun. To attach this, I glued on the kit ball mount and, once dry, sliced off the undetailed kit machinegun barrel. A hole, just large enough for the RB barrel was then drilled through the mount.

A bit of epoxy glue was placed in the hole and the RB barrel slide into place.

Below: As we have seen, most of the tools are molded onto the tank hull. We shaved these off earlier. There are options for replacement. Hauler makes an excellent set with includes resin tools and PE mounts. The Tamiya M10 and Achilles kits also come with separate tools as seen here. I used a mixture of these parts to replace the tools on my model.



Working with Photo-Etched Parts

One readily-available upgrade for many kits are PE detail parts. While good for small and scale-thick details, I am generally not a fan: for the effort and price, they are not a great improvement over stock plastic parts —especially if the latter are carefully assembled and painted. I believe that painting and weathering account for at least 80% of the final effect. This is just my opinion, and many modelers swear by PE. So you make the choice to use PE parts or not. In this instance, I had a couple PE sets designed for the kit, and some of the kit parts (such as the light guards) are over scale thickness, lack detail (such as tool tie-down straps), or are missing detail (the intake screens on the rear sponsons). The good thing about the detail sets, is that you can choose which parts to use.

To cut them from the fret, I use a sharp hobby knife and an old CD as a cutting surface—it is hard enough but will not significantly blunt the blade. For very small parts, I like to place the whole fret in a Ziploc bag and cut them out through the sides of the bag to capture parts that try to fly away.

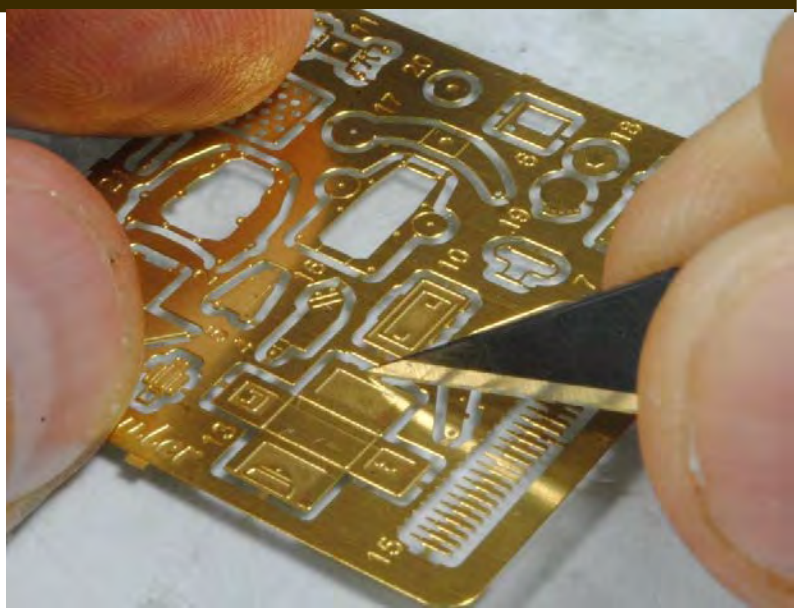
Often, the parts need bent into shape. While this can be done with pliers (or an improvised bending tool or some sort), specialized bending tools are also available. Be careful—the parts are thin, and if you don't get it right the first time, they may break when re-bending. I use a set of metal billets and a razor blade as seen in the accompanying photos.

Model glue will not work with metal. Epoxy is usually too thick. Super glue is the best choice. For very small parts, a bit of clear paint (or Pledge Future floor polish) can be enough to affix them to the model. For parts that welded on, tiny beads of Kneadatite epoxy putty can both attach the part and serve as the weld-bead.

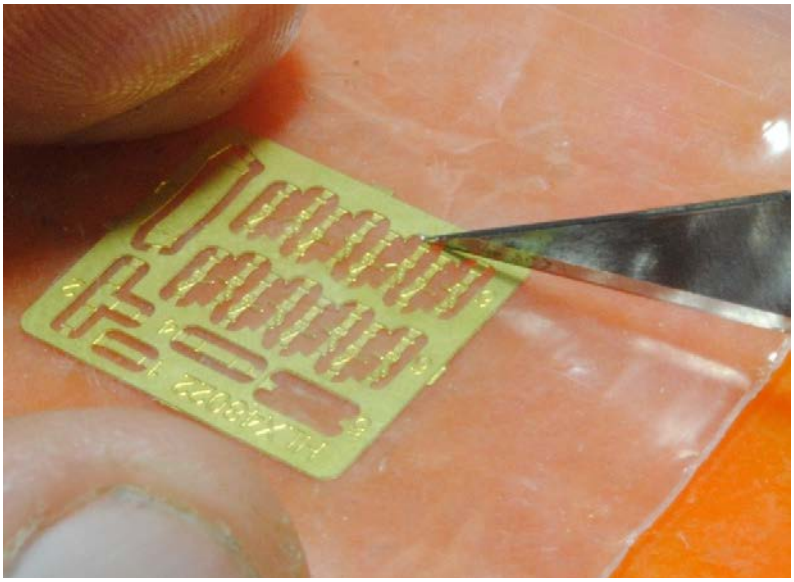
Be careful handling a model with photo-etch parts attached—they are be fragile and easily damaged.

The tools, either the Tamiya plastic tools or the Hauler resin ones were glued in place on the model. The various brackets and straps were added using the Hauler PE parts.

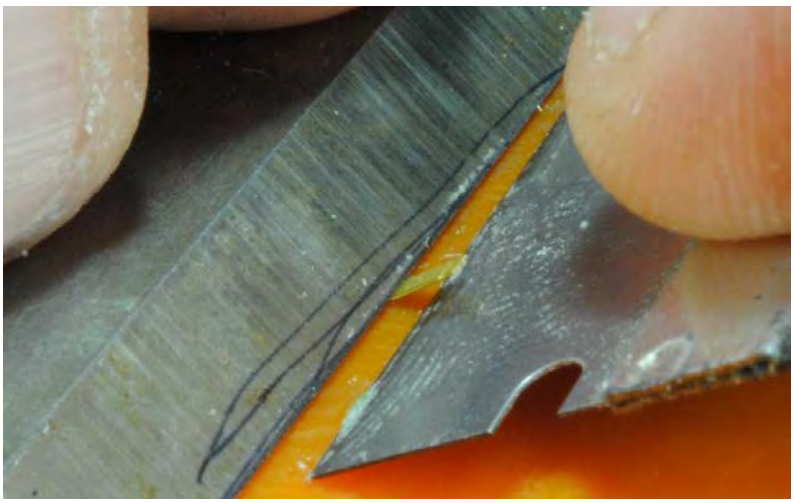
To remove PE parts from the frets (the .50 ammo can is shown being removed here), I place the fret on a sheet of glass and cut the part free with a sharp hobby knife. If there is any extra material to be removed, I used a small file to clean it up.



For tiny parts (such as these tool tie-down straps) that could go flying, never to be found again, I often put the fret in a Zip Lock bag before cutting the part free. Than ensures the parts remain in captivity.

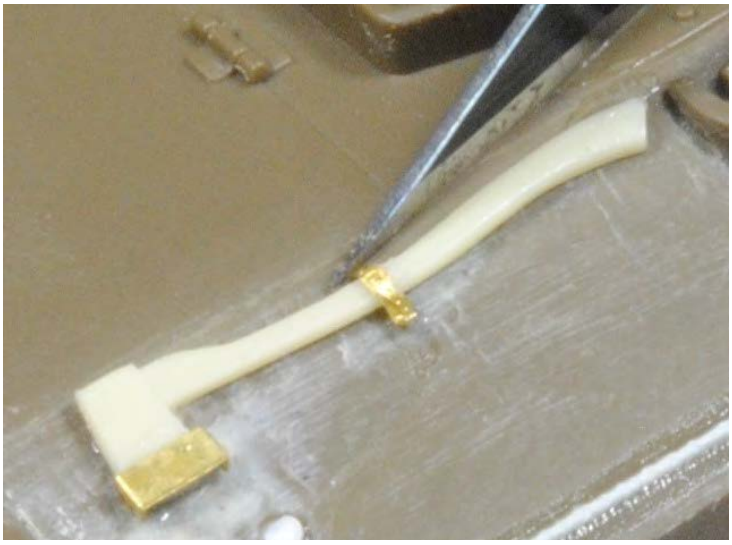


I have a tool designed to bend PE. In truth, I never use it. I have a set of stainless steel billets I use to hold the part down on a piece of glass, and then use the edge of a razor blade to bend the part into position.



To apply the small parts, I use a homemade tool—a toothpick with a small blob of poster putty superglued to the end of it (I glue it to the toothpick rather than just stick it on so it does not come off with the part). I use this tool to pick up the part, dip the attachment point in a tiny bit of superglue, and then place it on the model. This tool bracket for the axe is the same part we saw being bent in the last photo.

Note—the plastic disks in this photo are replacement mounts for the lifting eye—the originals were shaved off with the tools. The putty is a repair made where the chisel cut too deep when removing the molded-on tools—a hazard when doing this kind of work.



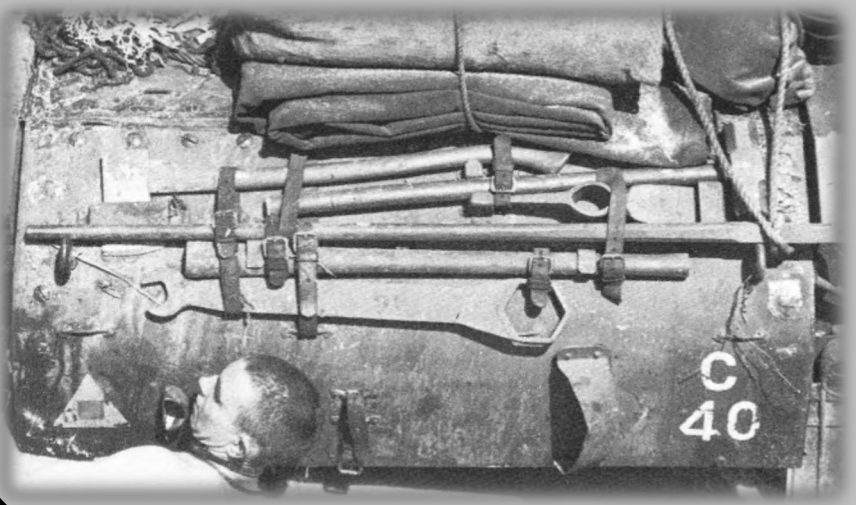
The tiny straps were superglued to the center of the tool handles and then bend into shape using the tip of a hobby knife.

Below: Here we see some of the sponson-mounted tools with their brackets and straps in place.

TIP: Note also the lifting eye and tail light. When attaching small parts such as this, I often leave a bit of the sprue tree attached to the part. This makes it easier to hold and attach the small piece without dropping and losing it (and if it is dropped, the added bulk of the sprue makes finding it easier). Once the glue is dry, the remaining nub can be cut away.

The Advantages/Disadvantages of Separately Molded Tools?

Every review I have read of the Tamiya M4 Sherman mentions the molded-on tools as a problem and recommends replacing them. Nearly every build article I've found of the model states the same. After building the kit—and making the "correction"- I have to disagree. If I were building it again, I would leave the molded-on tools in place, and simply use the Hauler parts (or a home-made alternative) to represent the tie-down straps. Why? In my opinion, there is no difference (zero) between molded-on parts and separate parts glued in place. In other words, the modification adds cost, effort, and time to the building of the kit but yet adds no appreciable additional detail or other improvement. Other than the tie-down strap parts, I cannot recommend this option. On your model, the choice is of course yours. But molded-on parts, carefully painting, will look just as good as separate parts glued in place.—in fact, I content it would be difficult to tell the difference.



THE REAL THING

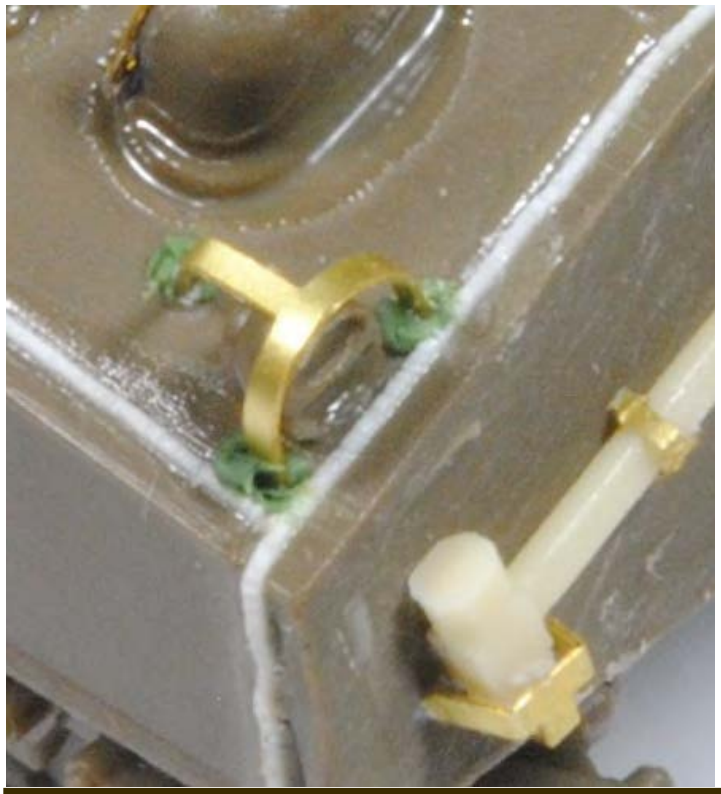
US tanks were fitted with various brackets and clips for mounting tools. Many of these were supplemented by straps threaded through tie-downs. Your best bet is to refer to photos of actual vehicles in action (not museum restorations) to determine how a particular tool was fitted to a particular vehicle.

Photos will sometimes show the tools apparently missing. These were pilferable items and accompanying infantrymen were known to help themselves as the tanker tools were superior to their own entrenching tools. Therefore, the tank crews often kept the tools hidden—rolled up in a stowed tarp, for instance.

I have seen some debate on various forums as to what color the tools were. According to Steven Zaloga (an expert I trust), tools were supposed to be the same olive drab as the vehicles. Reality did not often match this ideal. Tools were supplied in both OD and Black. Sometimes tools came in their "natural" finish, with metal areas being bare metal, varnished metal, or black while wooden areas were left bare wood. When modeling, the choice is yours. I prefer the natural finish simply for aesthetic reasons.

Here we see two examples, an M4A2 at top and an M5 below. While difficult to tell in black and white, it appears to me the tools in the top photo are the same color as the vehicle, while those in the bottom photo appear to be natural finish.

The fittings on the rear of the hull. Again, the tools are a combination of Hauler and Tamiya pieces.



Above left: To make curved bends in PE, I use a metal rod of the correct radius and bend the part around it. Here we see the curve being put into the rear taillight guard using a needle file handle.

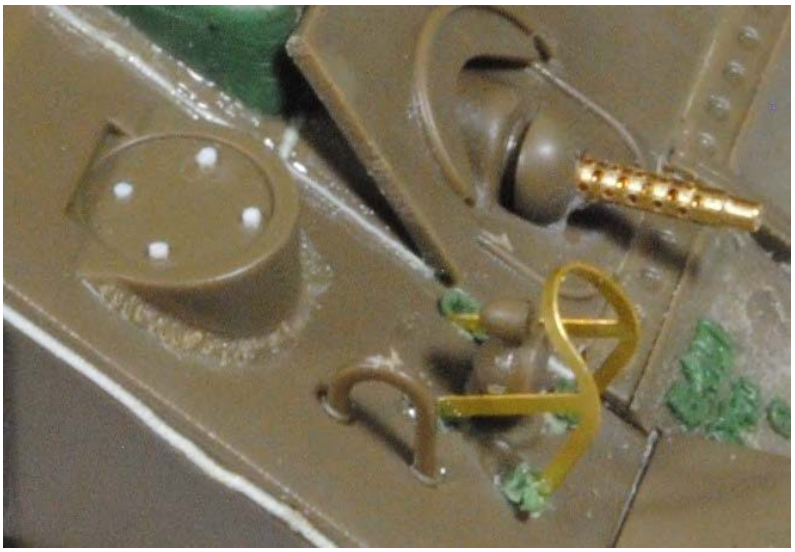
Above: The taillight guard compared to the kit part. Pieces like this are where the PE sets in 1/48 scale really shine. The kit part is significantly over scale thickness.

Left: The guards were welded into place on the vehicles. To both attach the part and simulate the weld, I use tiny blobs of Kneadatite epoxy putty. Once the putty cures, it can be trimmed down to the appropriate size and shape with a hobby knife.

THE REAL THING

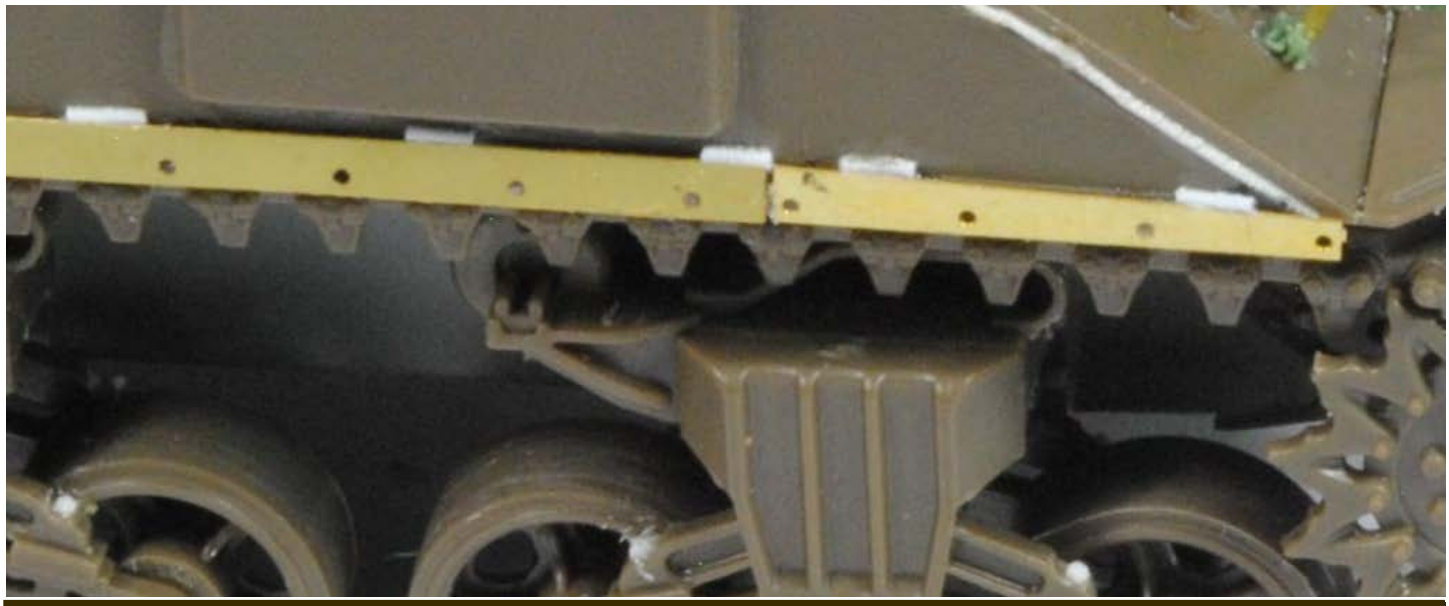
The taillight guard on a surviving vehicle is seen at left. Also visible is a bit of the lifting eye. Note that several methods were used to attach the lifting eyes to the vehicle—this one is different from that in the kit. Both are correct. The hole is for the sponson air intake which is missing on this vehicle.

I have measured the light guards on several surviving vehicles. They are NOT wafer thin, ranging in thickness from about 1/4" to just under 1/2" (about 6-10mm). Thus, the paper-thin PE part works in 1/48 scale. However, if modeling in the more bloated 1/35th scale, the commonly-used PE parts are often (usually) too thin, and the kit parts are a better match for reality!



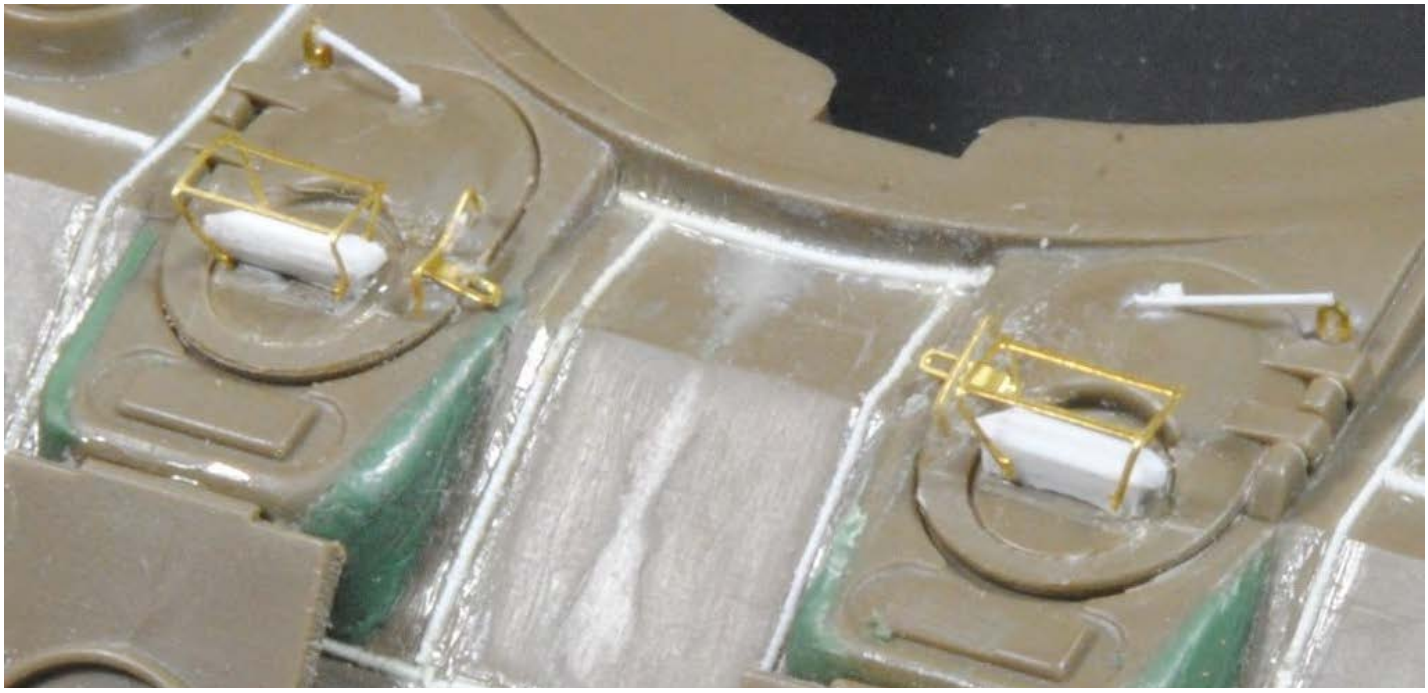
Left: This photo shows the front headlight guards before excess attachment putty was been trimmed away. It also shows the outstanding RB ball MG barrel to good effect. I added four bolts, made from sliced of plastic rod, to the inside of the glacis antenna pot. Note the weld bead around the antenna pot. While this is molded onto the kit part, it lacks any texture. Texture was added using the same technique we saw to add texture to the styrene rod weld beads. The nub of leftover styrene from cutting the lifting eye from the sprue also still needs removed in this photo. As we saw with the rear end, cleaning these tiny parts is often left until after they are attached to the model to avoid loss or breakage.

Below: The sand shield mounting strip from the Hauler detail set was attached. Weld beads were created with tiny lengths of .010 styrene rod as we have seen previously.

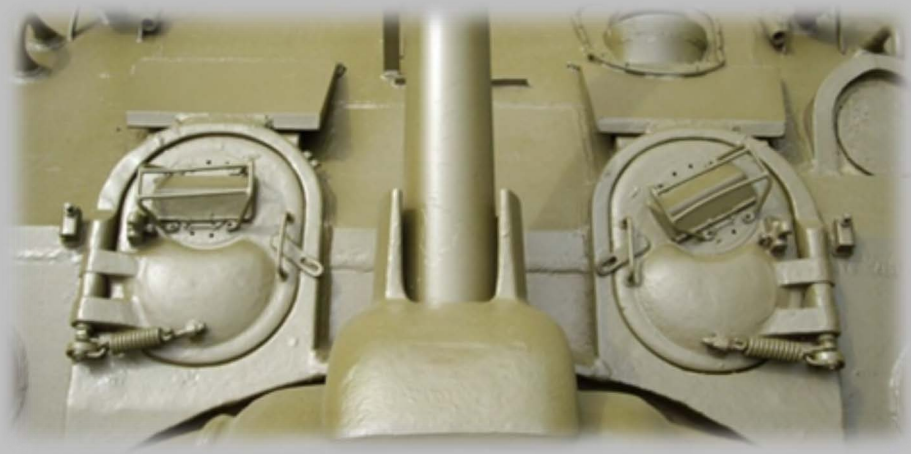


THE REAL THING

This vehicle, although in an unfortunate position, shows to good effect many of the alterations we made to the model. Clearly visible are the applique armor, the weld bead on the sloped glacis, and the sand shield attachment strip. The photo also shows the return rollers and skids very well. Please note when painting that the return rollers and idler wheels are solid steel—they do not have rubber tires like the road wheels. This photo also offers an underside view of the hedgerow cutter (yet another slight design variation from those we looked at previously).

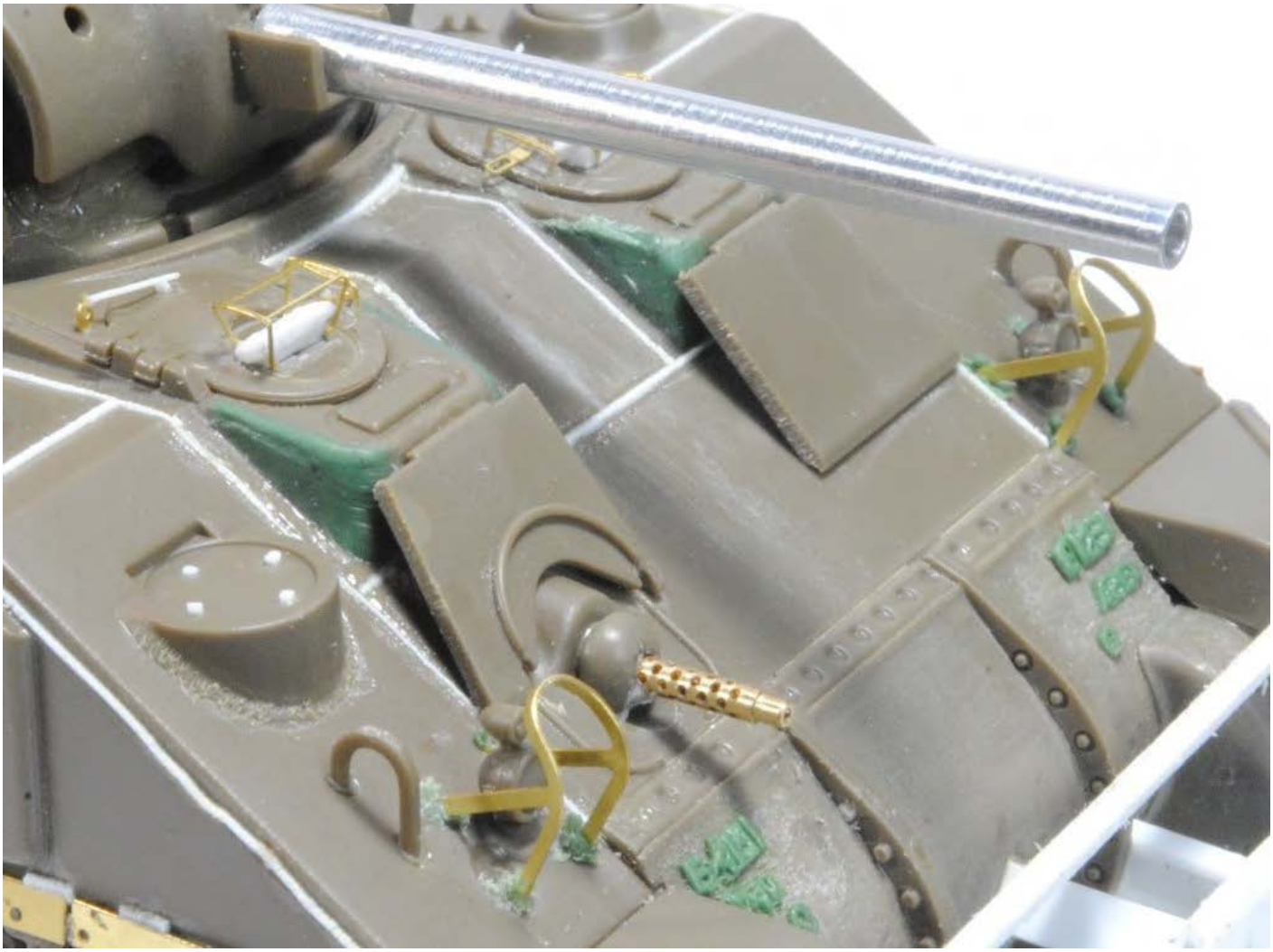


This shot shows the driver/co-driver hatch areas. In addition to the slight shape change, weld beads, and the opening of the periscopes, some of the Hauler PE bits were added including periscope guards and the latches. The molded-on handles were shaved off and replaced with PE parts. I also used small lengths of styrene rod to replicate the springs which assist with opening the hatches. Spring detail (coils) will simply be painted on during the painting phase—for a piece this tiny, that more than suffices. Don't forget, this photo is several times actual size.

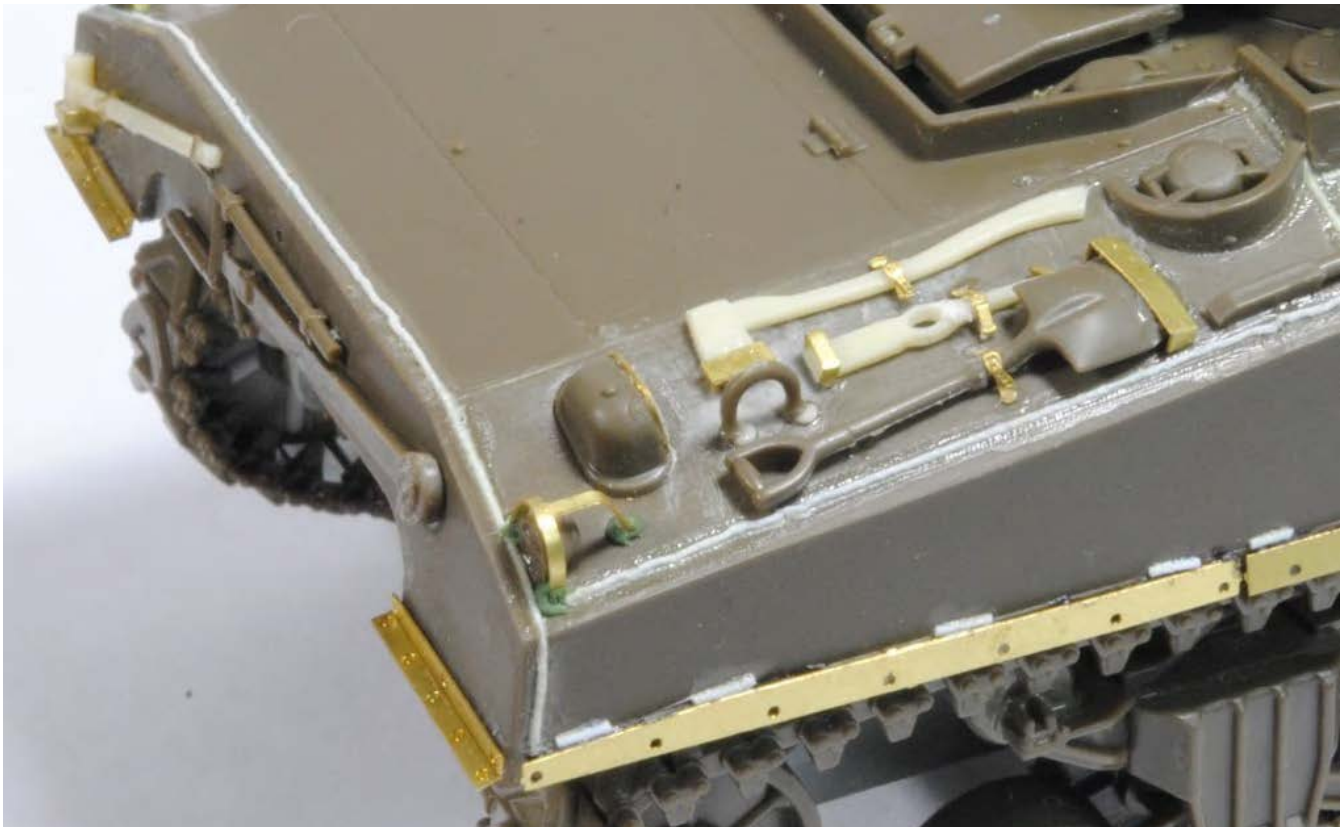


THE REAL THING

The same area on a surviving vehicle (from the Sherman Minutia website).



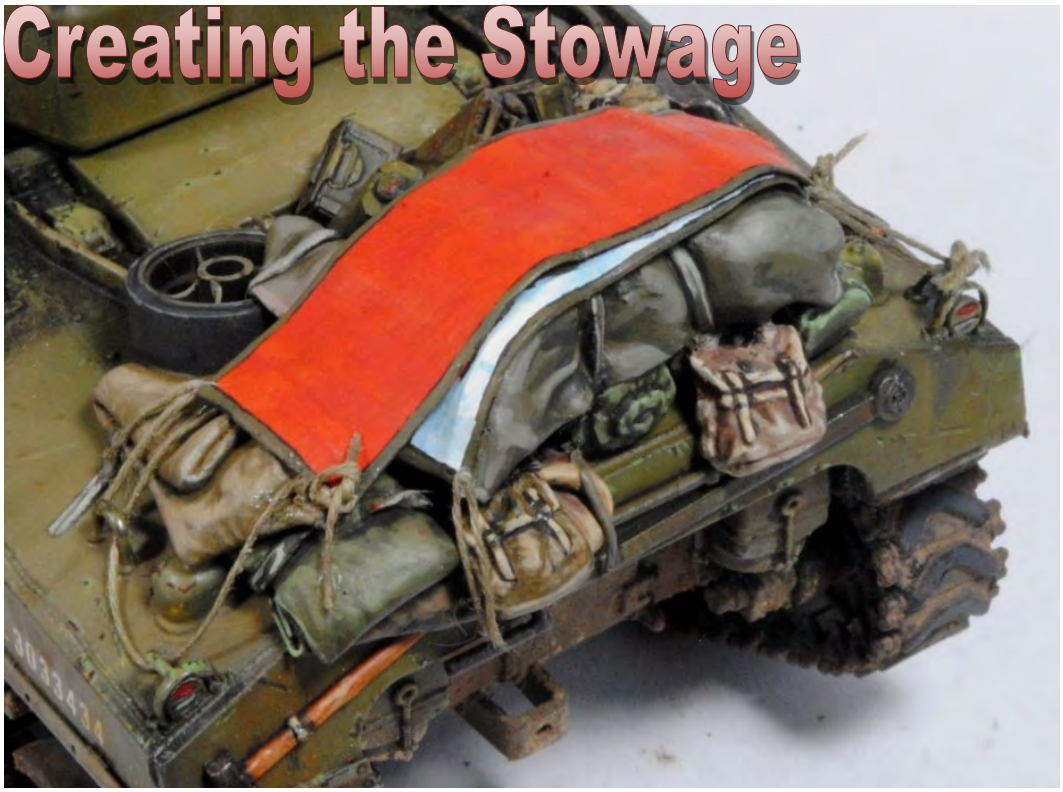
The remainder of assembly is straightforward—adding either the kit parts or the Hauler PE parts as needed, both according to manufacturer's instructions. Above we see the glacis area on the vehicle. This shows the new gun, work on the driver/co-driver hoods and hatches, the PE light guards (with putty welds trimmed to shape), added bolts in the radio pot, weld seams, casting marks, the attachment of the Rhino hedge cutter device, and the outstanding RB .30 machinegun barrel.



Top: This photo shows the additions and changes made to the turret roof including the open periscopes and guards, commander's vane sight, and detail additions to the hatches—including a homemade latch made from bits of styrene and wire. The piece to the right of the vane sight is another sight used to assist with indirect fire. Bottom: This photo shows the tools, rear light guards, sand shield mounting bracket, and mounting brackets for the rear fenders.

In my opinion, one of the biggest enhancements made to the kit is the detailing of the M2 .50 Heavy Barrel Machinegun—primarily because it occupies such a prominent place and the improvements are so dramatic. At top we see the stock kit part. To this I added the RB detail set which replaced the barrel, cooling jacket, cocking handle, and spade grips. The new sights, feed tray cover, ammunition box, and gun cradle are from the Hauler set. These additions and changes turn the gun from being merely acceptable into a little gem—a kit in its own right. Still to be added is the carry handle on the barrel, but I will wait until last minute to protect this tiny, fragile part from damage.

Creating the Stowage



Stowage on the rear deck. Note the variety of different colors—not only realistic, it also adds visual interest. Note especially that the items are secured to the vehicle—not haphazardly perched or worse—magically stuck to the vehicle with some sort of invisible glue. This last bit is a vital, but often overlooked, aspect of modeling. We should always make sure—in all aspects of our builds—that we pass the "sniff test". In other words, does it make sense? Thi

The painted stowage piece for the glacis plate prior to attachment to the vehicle. Again, note that the wooden ration cases show some variation in color. Note also that the spare track links, not being worn by constant contact with the ground, are rustier than those mounted on the suspension.

Play a word association game with "American Tanks", and the word likely to come to mind immediately after "Sherman" is "Stowage". Loads of stowage on vehicles is a distinguishing feature of American armor in the same way that Zimmerit is for German tanks and Political Slogans are for Russian AFVs in WWII. Photos of Sherman tanks often show stowage piled on the rear decks, and sometimes on the glacis and hanging from the turret. Probably the primary reason for this phenomenon is that American soldiers were richer in materiel than their Allies or adversaries.

Those familiar with my work know that I like my model vehicles to have a lived-in appearance. I like battle damage, I like heavy weathering, and—most of all—I like stowage. Stowage provides more than just an opportunity to add more detail and more "stuff". The various textures, shapes, and colors can also add a great deal of visual interest. Even in the case of American armor where most everything is some shade of Olive Drab, Olive Green, or Khaki, there is still a great deal of leeway in the colors you can use. Who says a monotone model has to be boring?

In my previous works on the StuG III Ausf G and the Sd.Kfz 250, we've already seen my methods for making various types of stowage and or working with epoxy putty. Here we will apply those methods—along with some new ones—to the addition of stowage on an American tank.

THE REAL THING

On this and the next page we can see several examples of stowed Shermans. One problem I often see with models is stowage that is somehow "magically" attached to the vehicle—simply stuck or lain on the model with no visible means of attachment. Note that in these photos, the stowage is secured tied down, wedged in place, or placed in a secure location where it won't fall.

Top: This M4A1 in Normandy carries a large amount of stowage on the rear deck including camouflage nets and rolled tarps. The crews' musette bags and helmets hang from tie downs on the turret. A bucket hangs from the rear of the tank, and it appears a jerry can is being carried in a field-installed rack on the right rear corner of the vehicle.

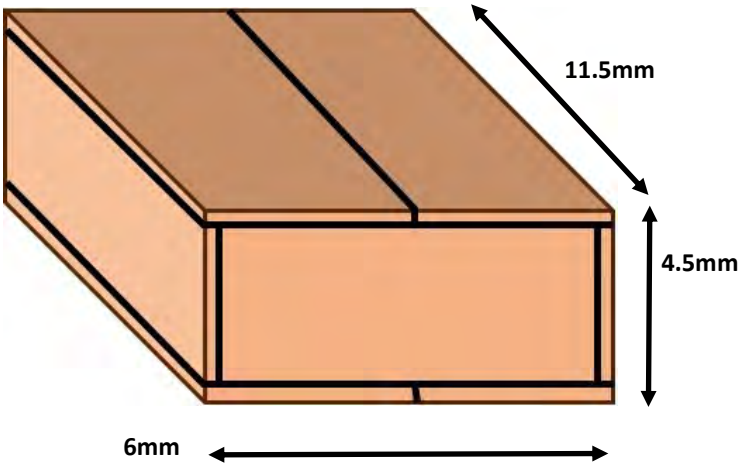
Middle: This M4 of the 6th Armored Division also carries stowage on the rear deck and hanging from grab handles on the turret. It also features a board crossing the front of the vehicle attached to each fender. On this is piled additional stowage.

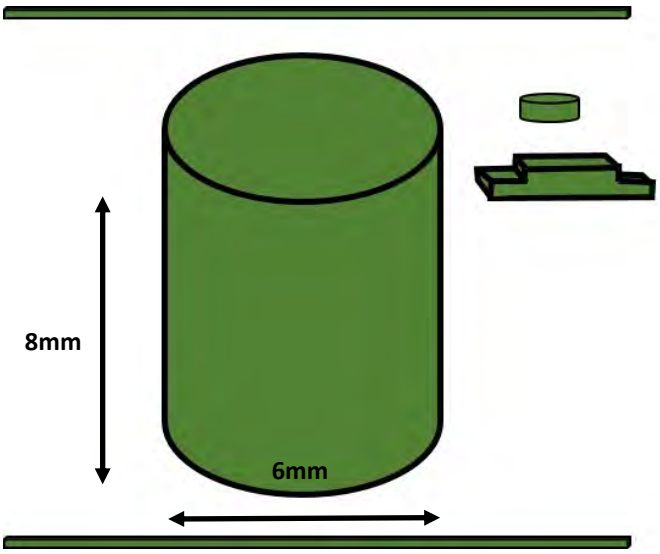
Bottom: As is often seen in photos, much of the rear deck stowage is covered by the tank tarp. Several boxes, crates, and a gas can remain uncovered. Note that the white star on the turret side has been painted over, but the paint is starting to flake off revealing the star underneath. This tank is fitted with the "Duckbill" extended track connectors which served to widen the track reducing ground pressure. These arrived too late to be used during the Normandy Campaign.

THE REAL THING

Top: This vehicle also carries stowage on the turret, glacis, and rear deck. This vehicle is apparently a field-modified assault tank, with extra armor welded onto the glacis and turret sides. The turret armor appears as if the turret of a disabled Sherman was cut into sections and applied to the turret sides of this tank.

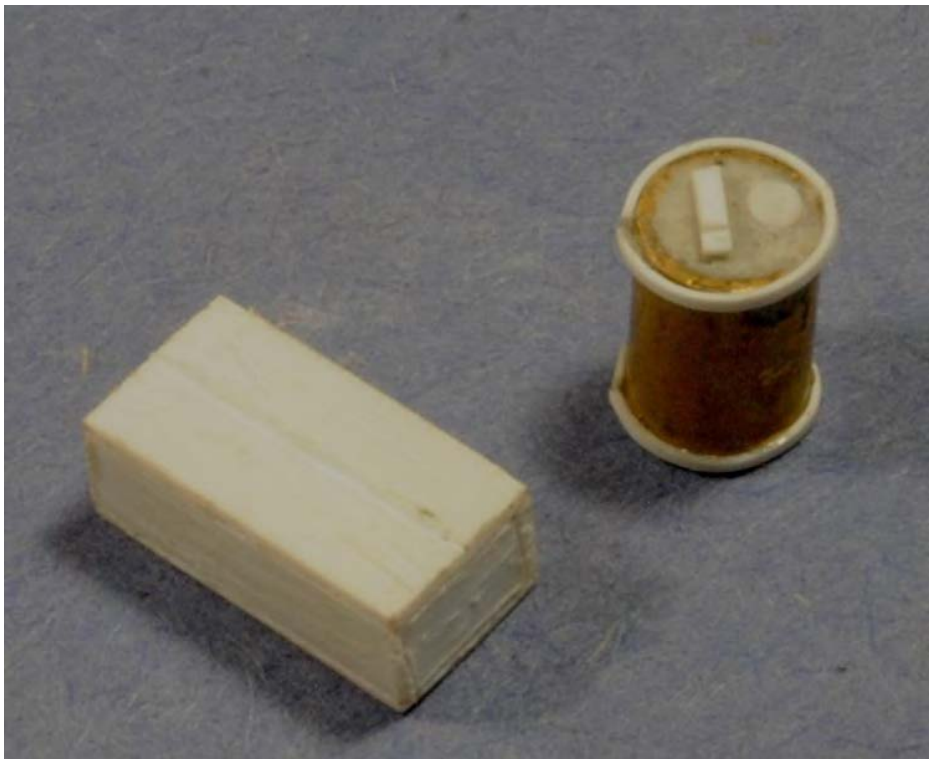
Bottom: This M4A1 carries a variety of stowage under a tarp on the rear deck. Crew musette bags hang from the tie downs on the rear of the turret.





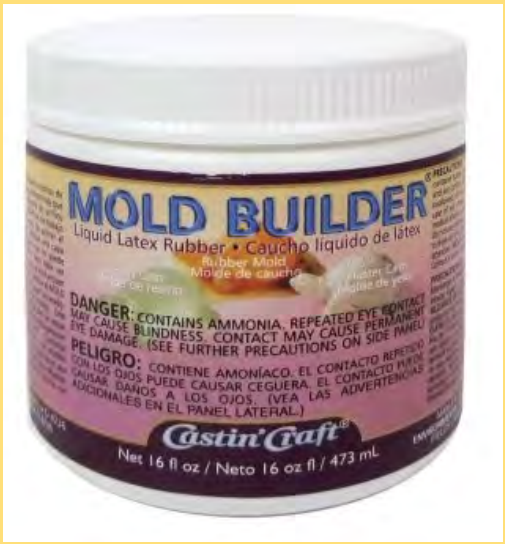
My plans for making a K Ration crate and oil container are shown here. These were among the first bits of stowage I made as I wanted to make molds to create additional copies. The crate was carved from a single appropriate-sized piece of styrene bar stock, simply adding woodgrain by dragging a coarse sanding stick across the surface and carving the individual boards as indicated by the black lines. The basis for the oil can was a piece of brass tubing filled with epoxy putty (I did not have on hand an appropriately-sized piece of plastic rod). The rims were made of .010 x .020 plastic strip. The spout is simply a slice of plastic rod and the handle cut from a bit of plastic strip.

My finished pieces. One-piece open-faced molds were made as shown on the next page and additional copies made from casting resin. Molds were also made from some of the Tamiya parts and from the Hauler .50 ammunition box (below).



THE REAL THING

Above left: A reproduction K ration case (photo from www.frontlinecrates.com). It matches in appearance and markings photos of actual crates I've found. The dimensions are approximately 8 x 12 x 22 inches which is 1/48 scale works out to approximately 4.5 x 6.5 x 12 millimeters. Above right: A beat-up oil can on the fender of an M4 Sherman. I was unable to locate dimensions of this can, although I did find several photos which show the details well enough to make a reasonable facsimile. I used this photo, comparing the drive sprocket to the oil can, to work out the dimensions I used.



To make a mold using Mold Builder, simply place the part on a piece of glass (I stick it in place using a small amount of poster putty), and paint on the liquid latex mold material until you build up enough thickness. The original part is then removed and copies can be made using casting resin. Here, we see a mold of Tamiya's duffle bag.

2-4. 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. 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.

However, for this project, I did not have need of anything so sophisticated. Everything I needed to mold (whether it copies of kit parts or copies of parts I had made) were suitable to cast as single-piece castings using open-faced molds. I used "Mold Builder" - 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. 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.

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. I did not use this method on this build, but I have used it on others.

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. In this case, I am making copies of a tractor-style seat (from the Tamiya Flakvierling kit).

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.

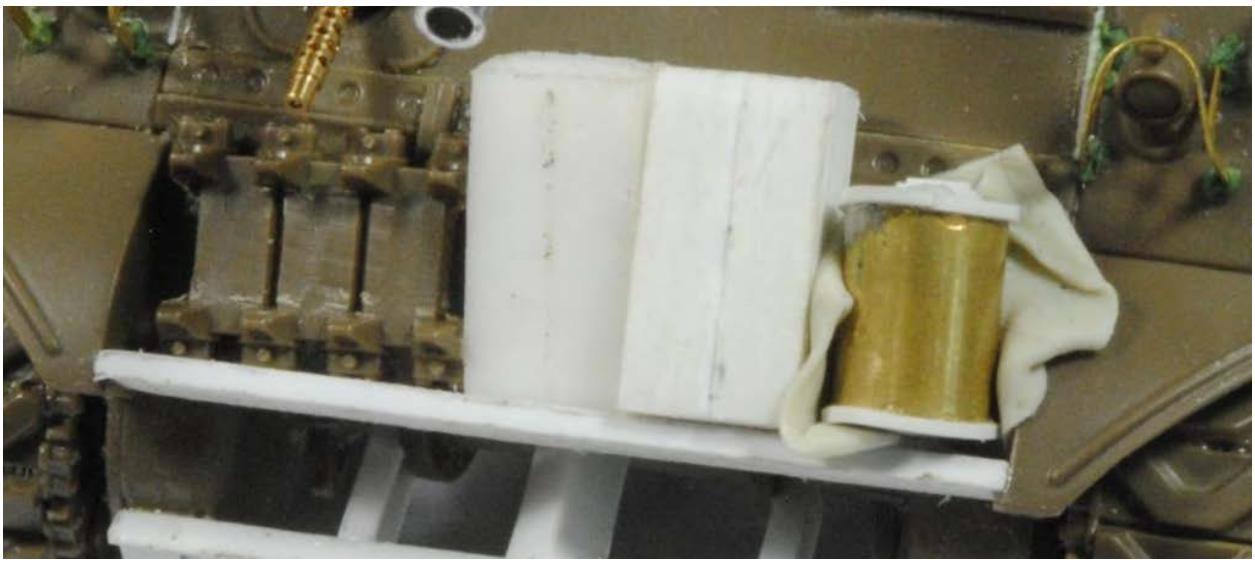
The stowage itself was made in the same fashion as already thoroughly covered in my earlier works on the StuG III Ausf G and Sd.Kfz 250/10. As in those cases, I used a combination of commercial and homemade pieces. I also build the stowage on the rear deck as a single large piece removable for painting. Likewise, the stowage on the glacis is a single removable piece. The stowage can thus be painted separate from the vehicle and added only after all painting and weathering is otherwise complete. Indents and creases caused by the tie-downs were sculpted into the stowage, but the tie-downs themselves were not added until after painting. The following photos show how my normal methods were applied in this instance to create the stowage on the Sherman.

Right: I covered the rear deck with a piece of kitchen plastic wrap to prevent the stowage from sticking to the vehicle during the assembly process. I want the pieces to be glued to each other, but not the tank.

Below: The first layer of stowage consists of some Magic Sculpt epoxy putty which has been rolled-out flat, cut to size, folded, and put in place representing various tarps. To this some Tamiya stowage pieces, a spare road wheel, and a cast K-Ration box have been superglued. These items were pressed into the putty to ensure they had a sense of weight.

The second "layer" of stowage was stared by gluing a rolled-out tarp to the top of the existing stowage and letting it hang off the rear of the vehicle. A few scraps of old putty and styrene were glued onto this to represent various bags and boxes. I used old scraps, as these pieces will be completely covered by the tarp.

The putty tarp was then folded up and over the bits of stowage and shaped using my putty-shaping toothpick tool and a paintbrush. While the putty was still soft, a couple Tamiya Jerry Cans, and some cast parts (.50 ammunition boxes and a bag) were pressed into the putty. This ensures these pieces have a sense of weight and rest in, not on, the cloth tarp.



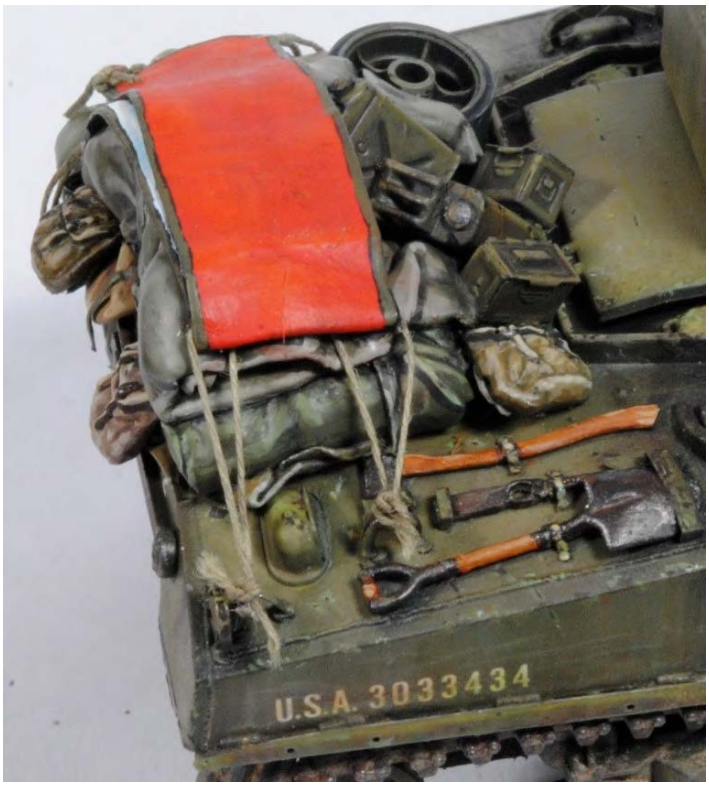
Top: An air identification panel was made from rolled-out Kneadatite epoxy putty and placed on top of the stowage. Various straps were also added from bits of Kneadatite. A couple more bags were hung off the rear of the vehicle. Tie-down straps were be added after final assembly. Bottom: The stowage on the front consists of a few spare track links, two K-Ration boxes and an oil can. A bit of rolled-out putty representing a rag or towel, serves as a bed for the oil can.

THE REAL THING

Air Identification Panels were used to help friendly aircraft tell friend from foe. These came into use in time for the Normandy campaign. Earlier, painted markings had been relied upon, but it was found these were often obscured by weathering or gear. The panels were 12 feet long by 28 inches wide. They were issued in three colors—pink/red, yellow, and blue. All had a white reverse side and olive drab edging and ties. The red and yellow colors were used by units at the front line, while the blue were reserved for rear area vehicles. Yellow was primarily used during the Normandy Campaign, but I did find a reference in the 745th Independent Tank Battalion After Action Report on the campaign of the order for Red for Operation Cobra. Colors were sometimes changed to confuse the enemy. Many units shortened the long panels. This was made official in March of 1945 when the length was shortened to six feet. Use of the panels continued after the war. Here we see an armored car crew from the 104th Infantry Division place a panel on the rear of their vehicle.

The pieces of stowage removed from the vehicle for painting.

The rear lump-o-stow before being attached to the vehicle. Note the metal items—Jerry Cans, Ammo Cans, Spare Wheel, were painted using the same methods and similar colors to those used on the vehicle itself.



Remember, we don't have to model reality—only the impression of reality. This applies to tying down the stowage. In the photo above left, strings have been run from the stowage to the tie down points and super-glued into place. Separate knots were then added to make it appear the ropes were tied to the vehicle as seen in the photo above right. This is far easier than trying to pull string taut and tying tiny knots without breaking off delicate attachment points (especially the photo-etched light guards).

Refer to the section on "Painting" for color mixes and methods used to paint various items of stowage. For details on my painting methods for cloth items, tarps, bedrolls, etc., refer to my build book on the StuG III.

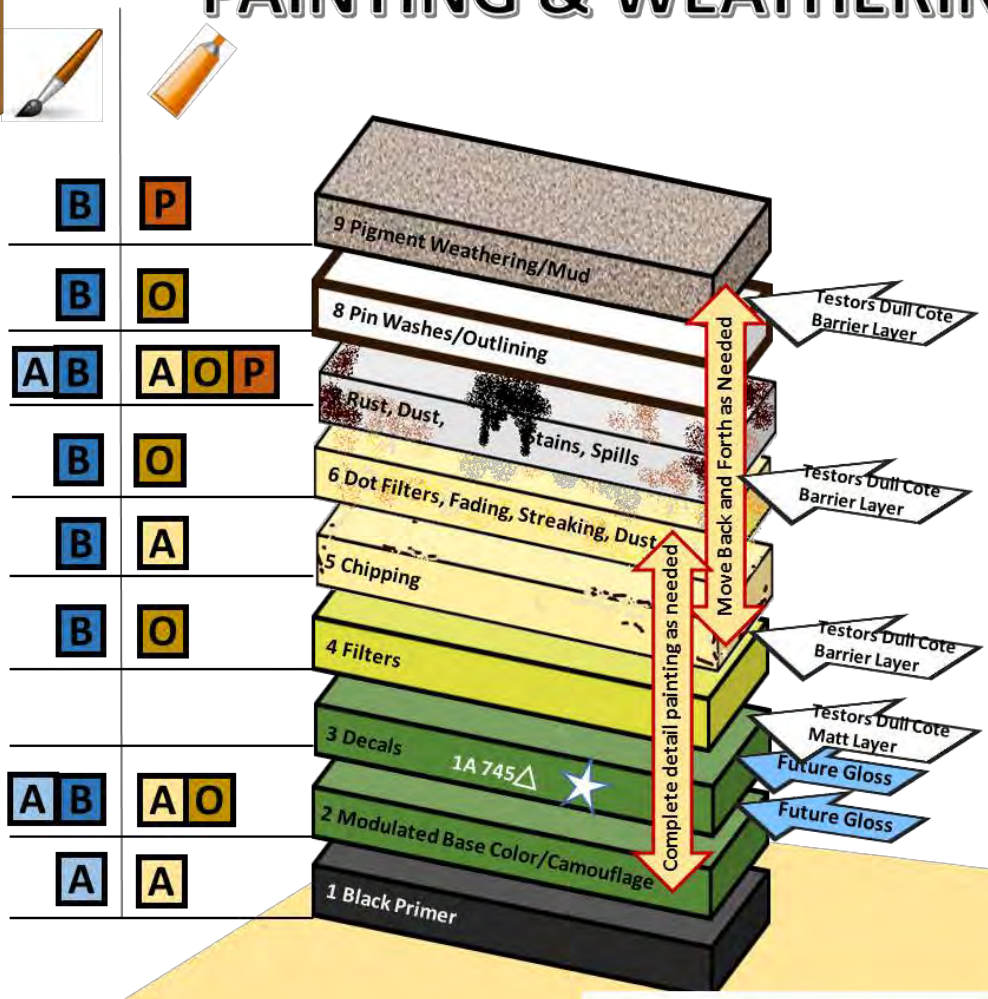
Painting and Weathering

Monotone does not have to be boring! Above is the vehicle after the Olive Drab coloring has been applied but prior to the application of decals, painting of details, and any weathering. Notice how the paint was applied to mimic light and shadow—upper surfaces are lighter while lower surfaces and shaded areas are in shadow. Highest points are picked-out with the lightest colors. Lines between panels are also darker than the surrounding panels. Various panels and pieces are also at times painted in slightly different values of the base colors. I also painted a slightly different olive drab color where the crew or maintenance personnel would have conducted touch-up paintings. I used a slightly different color as the paint would be newer and thus less faded and weathered in these areas. These areas include the hedge cutter and where the stars on the side of the turret and hull have been painted over.

How a model is painted is up to the modeler. There are all kinds of different methods and techniques that are commonly used. There is, of course, nothing wrong with just painted the model in the appropriate color and being done with it. A method that was popular "back in the day" was to paint the model in the appropriate colors and then provide depth and weathering through the application of a dark wash and then dry-brushing in progressively lighter colors. Another popular method is often referred to as "panel shading". In this method, the vehicle is painted a dark color (usually black or very dark brown), and then the centers of each panel are painted in progressively lighter colors. Of more recent popularity is the process referred to as "color modulation" which consists of painting various panels in slightly different colors, often with harsh contrast and sharp demarcation lines. The lightest colors are usually put on top surfaces and the darkest on the undersides. Each of these methods have their advantages and disadvantages. Some produce arguably more realistic results than others. Dry-brushing, for example, while quite easy, builds up light colors on high points. This is not the way dust and dirt build up on real vehicles. Color modulation can be complex and time-consuming to apply and usually has as much or do to do with artistic appearance than the reality of the way light strikes a vehicle.

I usually use a combination of some of the various methods. My methods were explained in-depth in my StuG III build booklet supplemented by my Sd.Kfz 250 build. Both of these used slightly different methods—I pre-shaded the StuG with black and white before applying the base color while on the 250 grey was built-up directly on top of the black primer. The latter method was also used on this build. I prefer a black primer. Whether I pre-shade with black and white or not, I still build up the base color (or colors) used several thin applications of color. Shading and highlighting as if the vehicle is lit from above are taken into account. In this regard, my method is closest to color modulation. Still, on the individual panels, I often use the panel shading method. Look at the photo above and all this will be obvious. The following pages will show how my process was applied to this model.

PAINTING & WEATHERING



KEY

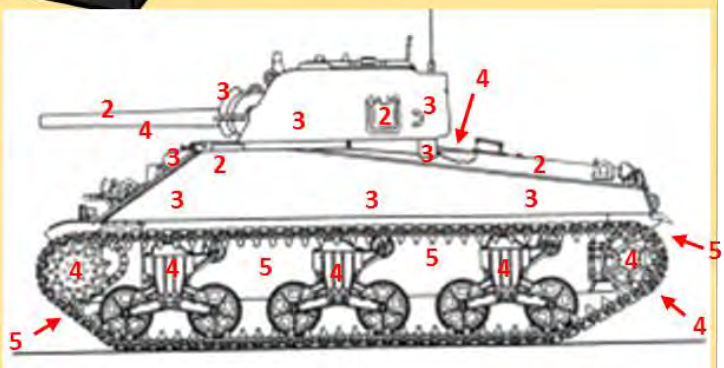
Method of Application

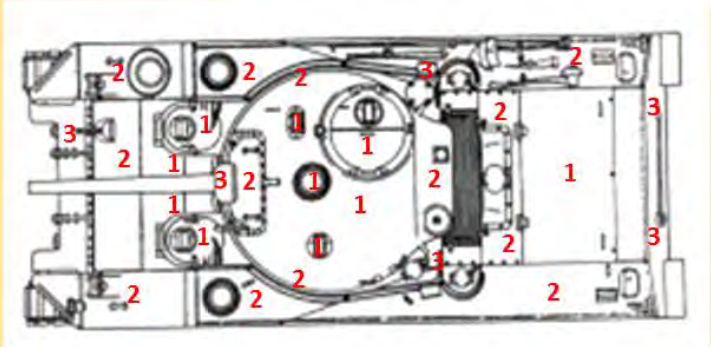
- A — Airbrush
- B — Brush

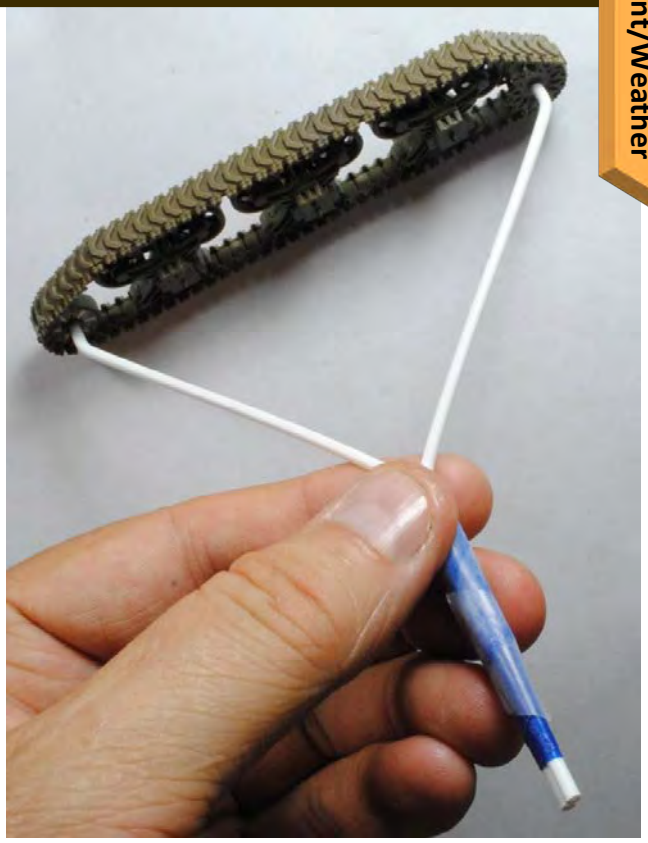
Type of Paint

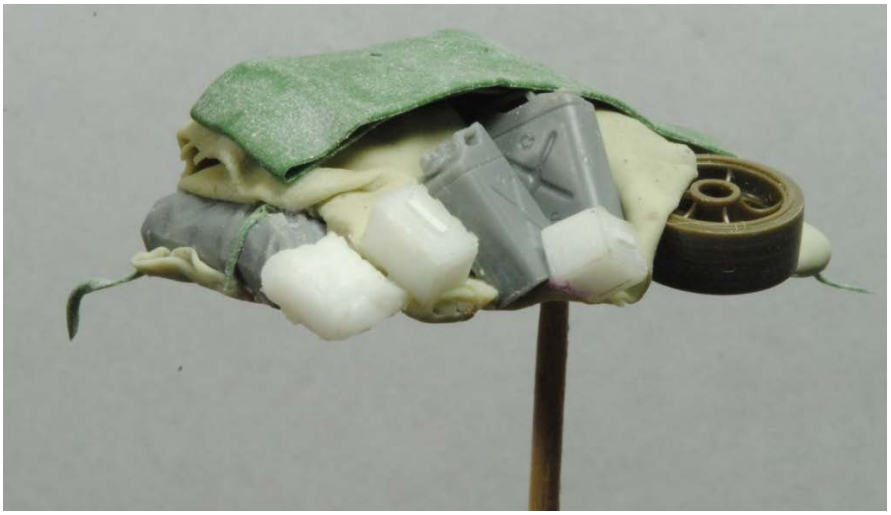
- A — Acrylic
- O — Oil
- P — Pigment
- M — Mix (Plaster, Acrylic Resin, Static Grass, Pigments, Acrylics, Etc.)

Color Modulation Using the Stop Sign Rule (Step 2)









You have to be able to hold the parts to paint them! Several ways to do this were used on this build. The tank itself was held on my homemade tool consisting of a large wooden dowel handle with a screw glued into a hold drilled in the end. This is screwed into a hole drilled in the bottom of the model to hold it securely. The track assemblies where held by a jig made from a couple lengths of styrene rod bent to shape and held together with tape. Other parts and assemblies were held by their mounting pins in pin vises. Finally, the lumps of stowage were held by toothpicks fitted into holes in the underside of the assemblies.

One option for painting is to use pre-packaged set such as AK Interactive's US Olive Drab modulation set which consists of six pre-mixed colors ranging from dark to light. There is certainly nothing wrong with sets such as this, and while I chose to use some of the colors for some applications, I did not use the set as intended. This is just personal preference—I like the Vellejo Model Air Colors and I find the AK Colors do not airbrush as well. I also think the colors are bit too green.

As stated, I like to use the Vellejo Model Air Colors. They work well for me. I mixed most of the colors used on the Sherman from the three colors at right. According to my research, the Brown Violet is a very close scale match to wartime US Olive Drab. Thus that color was used, straight from the bottle, for my mid-range color. Shadows were created with Dark Olive Drab and highlights were made using Tank Ochre.

1: Primer

The first step is to prime the vehicles in black. While any color can be used to prime models– grey and white are probably the most popular colors—I prefer black. The color does double duty as a very deep shadow and also serves as the pre-shade on panel lines.

2: Base Color

We start with the airbrush. Using the Dark Olive Drab, the vehicle is painted letting the black show-through around the panel lines and in the deepest shadows. This color corresponds to color #5 on the previous chart.

The next level of color was a mix of Dark Olive Drab and Brown Violet. Color was applied to all areas except shadow areas.

The mid-tone (my base color) of Brown Violet was next. This was applied to panel centers (working toward the edges) on the upper hull and turret only. On the modulation chart, this is color #3.

The Sherman hull is very angular. Therefore, when applying highlighting, it can be helpful to use masking to ensure some areas have hard demarcations between the light levels (value of color). This can be done with tape. However, I normally use Post-It Notes and, as seen here, Mig Camouflage Masking Putty (see next page for a product review). This can be easily and quickly applied, moved, and removed as needed without damaging the paint during the rest of the airbrush painting process. However, make sure it does not cover the fragile PE parts, or it can trap them and lift them from the surface.

The first highlight was created by mixing Tank Ochre with the Brown Violet.

The final airbrushed highlight, corresponding to color #1 on the Color Application Chart shown earlier, is straight Tank Ochre.

MIG CAMOUFLAGE MASKING PUTTY

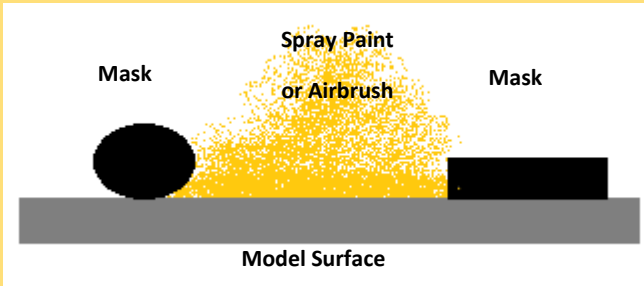
For masking when airbrushing, I sometimes use MIG Production's "Masking Putty". It's pricey, but it works well. Silly Putty (or poster putty) can be used in the same fashion. In fact, the MIG product is very similar to Silly Putty in many ways. The putty is quite soft and flexible. It feels slightly oily, but it leaves no residue behind at all – either on your fingers or on your models. If you pull slowly, you can stretch it just about forever. But give a quick tug and it breaks cleanly. It's self-leveling. Wad it into a ball and drop it back in the tin, after an hour or so, it will have settled right back into the shape it originally was. If kept in the tin when not in use, I don't think it will ever dry out.

Below Top: Hard-edged camo can be brush-painted, but masking and spraying is quicker and can yield better results. I pull and flatten pieces of the putty on a sheet of glass and cut the masks roughly into shape with a hobby knife – it cuts very easily with a knife or scissors. Then I just picked them up and apply them to the model. A tiny bit of pressure will stick it in place pretty good. I use a putty spoon to make any final needed adjustments. If you cut your piece a little small – no issues, just stretch it to fit. The self-leveling qualities are great here – in a couple minutes, the putty will snug down quite nicely over details such as rivet heads, hinges, panel lines.

Once happy with the pattern, spray your color. Note in this example (my 251/22), the camouflage pattern is modulated to the same degree as the base color. Remove the putty (it peels off very easily or can be lifted with more putty – it sticks tenaciously to itself), and you have a nice clean pattern. Paint seems to absorb right into the putty, leaving the putty no worse for wear and just as pristine and residue-free as it was before.

If you apply the putty in a "sausage" where the outer edge is slightly elevated over the model, it will leave a soft, feathered-edge pattern as seen below.

Below: Masks can allow you to paint hard or soft-edged camouflage. If the mask fits tightly against the surface (near left), the demarcation line with be solid, creating a hard-edged pattern. If the edge of the mask is slightly raised (far left), some paint will get past, resulting in a slightly blurred, soft-edge pattern.



M4 Sherman

I wanted to depict some newer areas of paint that had been applied in the field. Not only were the US stars often painted out, but I assume that the field-fitted Rhino hedge cutter attachment would also be painted. This new paint wouldn't show the fading of the old paint, but would quickly accumulate the same degree of weathering. For this, I sprayed on AK Interactive's Dark Olive Base (from their US Olive Drab Modulation Set seen earlier). This was highlighted with Olive Base from the same set. The contrast with the modulated base color is clearly seen in this photograph.

Turning from the airbrush to the paint brush, some additional highlighting and edging—as well as coloring on some of the small panels—was applied with a variety of colors as seen below. Note, the fine detail on the weld seams is clearly visible in this photo.

The colors used for this final step include from left to right Vellejo Model Air Light Grey Green, Velleo Color Green Grey, a mix of Vellejo Model Air Tank Ochre and UK Light Stone, and AK Olive Drab Shine (the high highlight from their Olive Drab Modulation Set).

These photos, as well as the picture on page 65, show the base Olive Drab color applied to the vehicle. (The tracks have been temporarily put back in place for purposes of the photo). Although painted with several colors, the intent is to mimic a solid color affected by light and shadow. Not only does this process add scale realism, it has the added advantage of adding visual interest.

3: Decals

Decals were applied using my normal methods. I apply the decals on the a gloss coat of Future Floor polish and add another layer on top. Once all is dry, I coat the area with Dullcote to reduce the shine.

Stars on the sides and glacis of tanks were often painted over as they made ideal aiming points for anti-tank guns. I followed that practice with this model as most photos I could find of tanks of my chosen unit (The 745th Independent Tank Battalion) had the stars painted out. I did not bother with tactical markings on the glacis as these will be covered with stowage.

Markings are minimal in accordance with normal wartime practice. As the side stars are painted over, only the roof star is applied, along with the US Army registration numbers and tactical markings. I applied the tactical markings only to the rear as those in front will be covered with stowage. Although markings for the 745th are not included in the kit, with some creative cutting and rearranging of kit decals, I was able to create the markings needed.

THE REAL THING

This detail from a photo taken in Normandy shows a tank from the 745th Independent Tank Battalion. The tactical marking under the ball MG is:

1A745△

This indicates the vehicle is assigned to 1st Army, 745th Armored (armored units were symbolized by the triangle). If the vehicle belonged to a regiment assigned to ta Division, the divisional number and triangle symbol would replace the 1A. The company letter and vehicle number would be on the opposite side. The markings are also on the rear of the vehicle.

In this photo, the tactical markings are present, but it appears the stars on the sides and glacis have been painted over. It also appears the vehicle is in plain Olive Drab rather than Olive Drab and Black camouflage. According to my research only the Headquarters tanks and tanks of A and D Companies received the camouflage paint prior to Operation Cobra.

What was regulation and what was done in combat were not always the same—painting proper markings on vehicles was understandably not a high priority for crews or maintenance personnel.

THE 745TH INDEPENDENT TANK BATTALION DURING OPERATION COBRA:

"Under Field Order Number 38, First Infantry Division, dated 19 July1944, Company "B" of this Battalion was attached to the 18th Infantry Regiment, Company "C" was attached to the 28th Infantry Regiment, and remainder of Battalion was attached to 16th Infantry Regiment for participation in Operation COBRA… All elements of the Battalion moved to the vicinity of Les Cordiers 20 July 1944 in assembly position in preparation for Operation COBRA. 27 July 1944 elements of this Battalion moved south through the break through which had been made north of Marigny. At Marigny, all elements of this Battalion moved west toward Coutances in an effort to close the enemy escape route… 29-31 July 1944 elements of the the Battalion moved south in pursuit of the enemy… Through the practice of attaching each company of this Battalion to one Infantry Regiment continuously, a more thorough understanding and closer cooperation has developed between infantry and tank personnel. The practice of mounting infantry on the outside of tanks for movement has been very successful."

-Excepts from the 745th Tank Battalion's After Action Report for Operation Cobra

The 745th Tank Battalion was an independent tank battalion that served in NW Europe from D-Day through to the end of the war. During this time it was continuously attached to the 1st Infantry Division. It saw action with the 1st ID not only during the Normandy Campaign and subsequent breakout, but also during the Aachen and Hurtgen Forest Campaigns, the Battle of the Bulge, and the Battle for the Ruhr. After racing across Germany, it found itself in Czechoslovakia at the end of the war.

While modern histories are certainly helpful when researching our models, primary documents are even more so. These include not only photos (the camera rarely lies), but also documents such as the After Action Report quoted above. Photos, such as the one on the facing page, were instrumental in my selection of vehicle markings. The aforementioned After Action Report proved helpful when confirming the unit saw action in combats such as I represented in my diorama. It also provided very helpful information on the installation of the Rhino Hedge Cutters, the application of camouflage paint, and the color of Air Recognition Panels in use. Some of that information is quoted below: (Note, the entire AAR is available for download on the internet).

"18 July: Teams from 526 Ord Co arrived Bn area started installing Rhinoceros on tks
19 July: During day 526 Ord Co continued installation of rhinoceros. Further experimentation with rhinoceros, results not entirely satisfactory, need strengthening… Bn Comdr in tel conversation with Asst CG 1st In Div re extra steel for reinforcing rhinoceros… Message from Hq 1st Army—Rhinoceros attachments for tanks will not be employed tactically until D-Day, for Operation COBRA. Security status will be carefully guarded… Message from Armd Sec, 1st Army—Cerise Red Luminous panels will be shown on horizontal surface of rear deck, all tanks for air-ground identification commencing D-Day, COBRA. Substitute yellow in lieu of Cerise. Panels will be in addition to White Star Marking.
20 July: 526 Ord Co completed installation of Rhinoceros.
21 July: CAPT BECK, camouflage officer, 1st US Army, arrived CP, discussed plans for camouflage painting of the tomorrow.
22 July: Co "A" practiced riding infantry on tanks with elements 16th Regt, definite crews assigned tanks for transportation. Results very satisfactory… Due to weather, impossible to camouflage paint tanks.
24 July: Engineer team arrived—starting camouflage painting of Co "A" tanks… All Co "A" tanks camouflage painted.
25 July: Engineer team finished painting of Co "D" tanks and Tank Section."

So, from a modeling perspective, what do we take from this? Actually, quite a lot. We know tanks were fitted with Rhinos. Photos show us the design. We also know all tanks were to carry Air Identification Panels—preferably red, but yellow could be used. We also know that only two companies and HQ tanks received camo painting.

Tanks of the 745th in action with the 1st ID at Aachen. Tactical markings are not visible—if they are present, they are covered by stowage. It appears that both side stars and vehicle registration numbers are absent. It is hard to tell if the vehicles are camouflaged painted in a black in white photo. But note that even if a unit's vehicles had been painted, it is unlikely that replacement vehicles were so camouflaged.

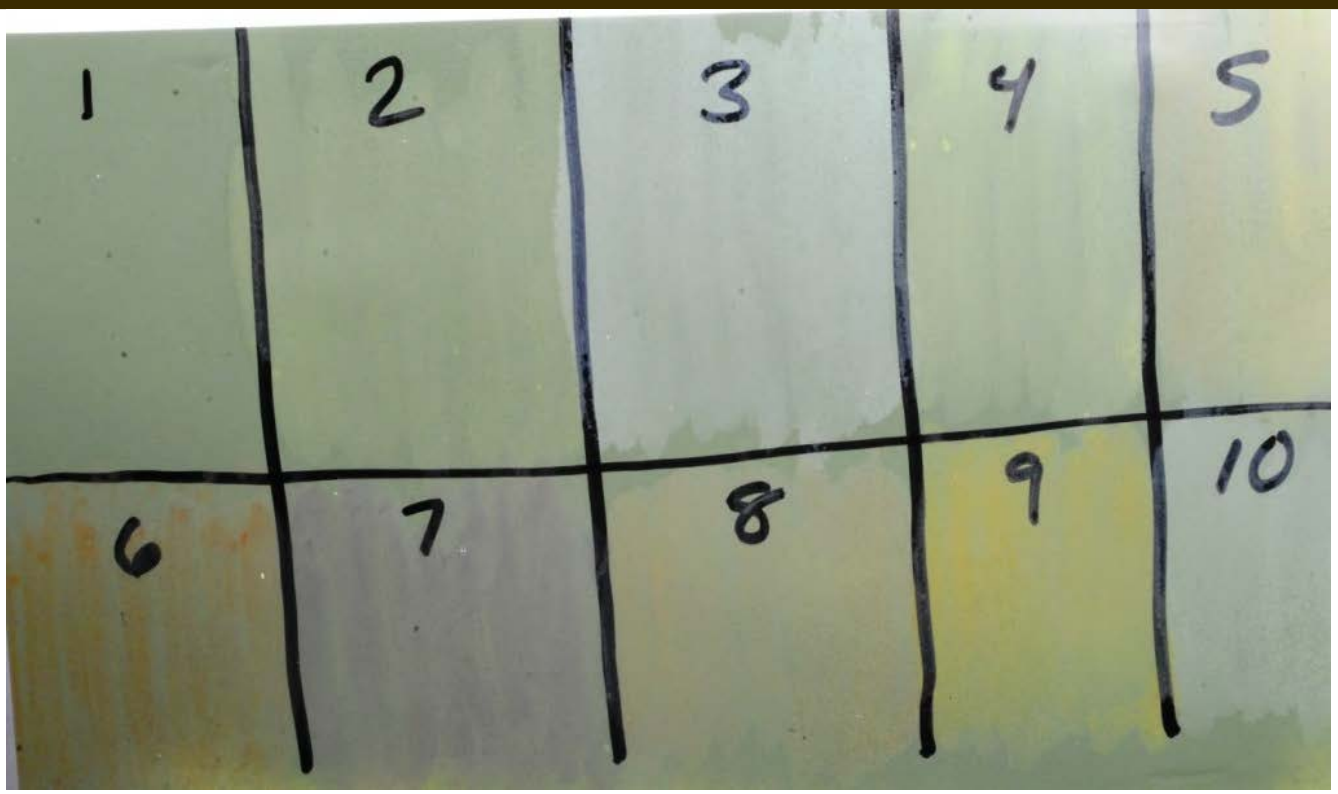
A map from the 745th Tank Battalion's History showing the unit's route through Europe. Unlike many of the Independent Tank Battalions, the 745th remained attached to the same Infantry Division—the 1st Infantry Division—for the entirety.

4: Filters

Filters are simply a very thin application of color. I prefer oils due to the long working time and ease of removal if I don't like the result. I do not like using acrylic paints since a filter is mostly thinner. With acrylics this means water, and very thinned acrylics can leave "tide marks" of solid color at the edges. An advantage of using oils for filters is that you can "adjust" or "correct" them with a thinner-damp brush (I use Mineral Spirits).

Those familiar with my other works know I like to use filters for a variety of tasks. They can be used to lighten and/or darken a color to reinforce highlighting and shading. They can also be used to slightly vary the color on individu-

While you can buy ready-made filters from various manufacturers in various mediums (oil, enamel, acrylic, etc.) it's very easy to make your own. I don't use the commercial products as a filter is mostly thinner—why pay for that? I bought a set of empty paint bottles with dropper tips and make my filters in these—a bit of oil paint and a lot of Mineral Spirits. I make the colors I use most. A little goes a long way.



The effect of filters. 1) The base-color in this case is simply a rattle can of "Italian Olive" from the department store paint section used to spray a sheet of plastic. Various colors of filters have been applied over this base color. Note they do not mask the original color, they simply slightly alter it. Oil Colors are Windsor & Newton, Georgian, and Panzer Abteilung. Filters used here are:

2) Lamp Black + Yellow Ochre (the US official mix for Olive Drab)
3) German 3-Color Fading
4) Yellow Ochre
5) Burnt Umber + Yellow Ochre
6) Burnt Umber
7) Crimson Alizarin + French Blue
8) Raw Sienna
9) Cadmium Red + Cadmium Yellow
10) Neutral Grey

Note that these are the colors shown on the previous page.

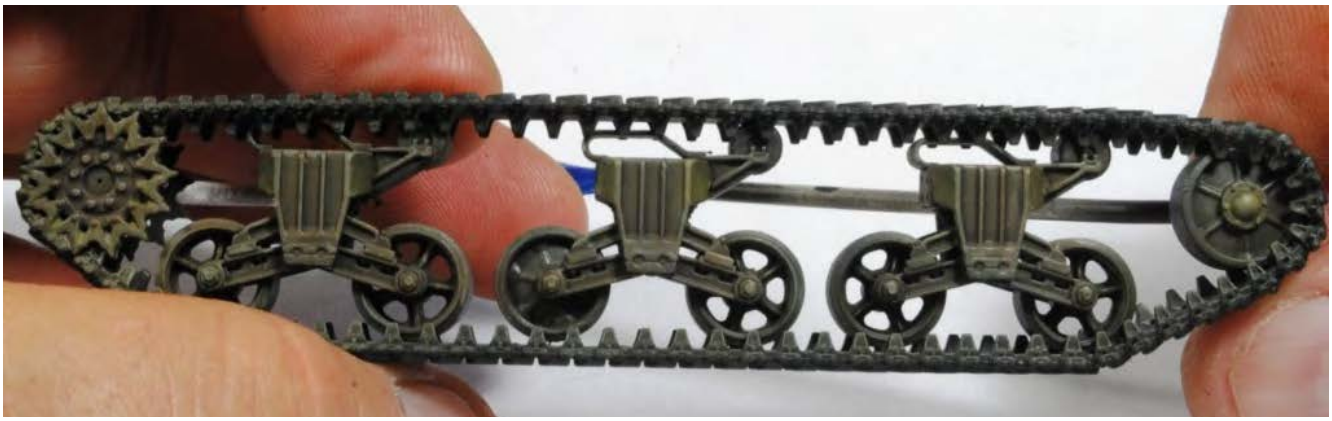
al panels and sections adding visual interest. They can "visually blend" colors, reducing contrast—or they can be used to enhance contrast. They also can be used for weathering to add fading or dust effects or simply as a base upon which to add additional weathering. In this regard, I look at filters as the dividing line between painting and weathering—they finish the former process and begin the latter process.

Creating a filter is simple: just add Mineral Spirits to a bit of oil paint until you get the consistency and thinness that works for what you are trying to accomplish. There is no magic formula.

You may ask, "What if the difference between a filter and a wash?" A wash is usually thinner than a filter, designed to settle in crevices and around details while a filter is meant is meant to remain on horizontal and vertical surfaces, providing a thin, transparent glaze that slightly alters the underlying color without masking it.

Filters can be applied as a single layer or they can be built up as multiple layers (be sure to allow the underlying layer to completely dry first). These layers can be of the same color to enhance an effect, or they can be of different colors to create even more effects. Filters can be applied evenly, or they can be ragged, splotched, streaked, etc., depending on the effect you wish to achieve. If you streak them, make sure the streaks go in the direction of runoff and that such streaking is appropriate for the region you are modeling.

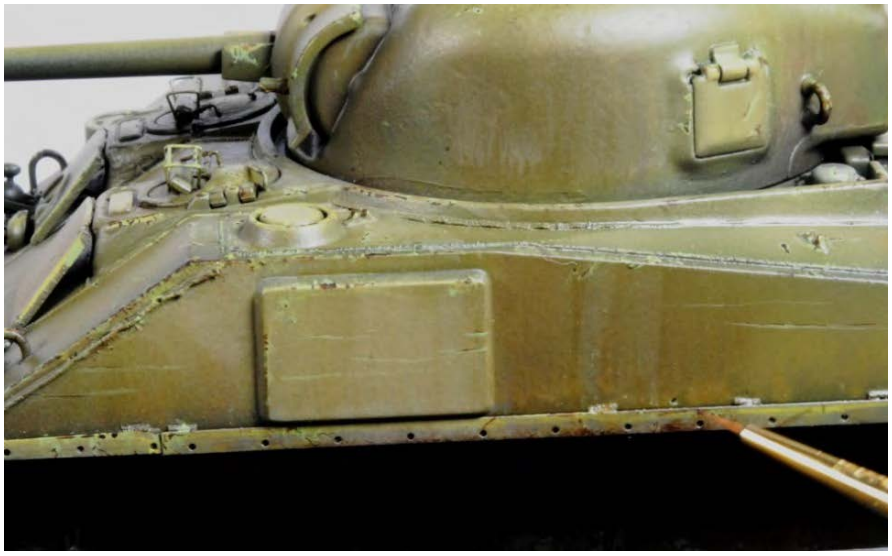
I generally apply darker filters made of dark blues, purples, and very dark browns in shadow areas to enhance modulation (shadows are not usually black colored, although you can use black if desired). A mix of Lamp Black and Yellow Ochre (making Olive Drab) can be used to tone down areas that appear a bit too green. Burnt Umber or a Burnt Umber/Yellow Ochre mix can do the same thing. The Burnt Umber filters also makes a good base for dirty/muddy areas. Other colors simply add some variation and visual interest. Let's look at my filter applications.



Here we see the model after the application of filters.
The Purple color was applied to shadow areas (the lower hull, around the base of the turret, the gun mantlet behind the rotor shield, recesses in the wheels and bogies, the underside of the gun barrel, etc.). Purple and dark reds are great colors with which to shade green—red being the complimentary color to green.
After this dried, the Burnt Umber filter was applied to areas where mud and dirt would build up (the lower hull, bogies and wheels).
The Olive Drab filter was used to tone down areas where the color was too green and to reduce the stark whiteness of the decals.
The Raw Sienna area filter was applied to the hedge cutter.
The Orange filter was used on selected vertical surfaces of the upper hull such as the sponson and turret sides.
The Yellow Ochre, Burnt Umber + Yellow Ochre, and Neutral Grey filters were used to randomly vary the color on different panels and surfaces of the vehicle.
The German 3-Color Fading filter was used on top horizontal surfaces and areas that would catch light.

5: Chipping

Chipping was accomplished using my normal methods. This is really an optional step in this scale—in reality most chips would not be visible in this small size. But the method does help show a used and battered vehicle. It is probably one of the most controversial techniques—it seems modelers either love it or hate it. The choice is yours.



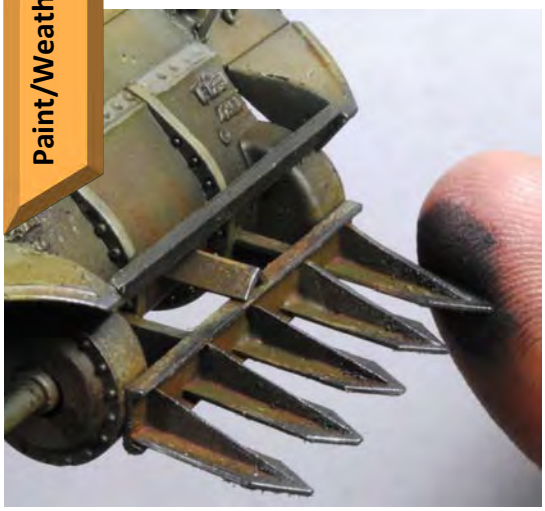
Chips were added in two layers. First, the superficial scuff and scratches were added in a light lime-green color (see below). Some of these were added using a bit of sponge (dip the sponge in paint, dab most of it off, then dot and stipple the sponge on the model to create clusters of small chips and scratches). Others were carefully added using a fine brush. Note that horizontal scratches were also put in place—as if branches have scraped along the hull; a likely event considering the tank is crashing through hedgerows.

The next step was added using a darker, rusty color (see below). These chips were added using the same methods, and were most often added in the middle of the lighter chips using a method often called "mapping".

Chipping on the lower hull and suspension was done entirely with the sponge as most of this will be covered by later applications of dirt and grime.

Any mistakes can be painted over using the AK or Model Air colors.

The light color chips were made by mixing a lime-green color (made from Ocean Reef Blue and Straw) with Timberline Green. Darker chips were created with a mix of Tank Brown and Black. Extender, to reduce drying time, was added to both mixes to give me working time and to keep the tiny amounts of paint from drying on the brush prior to being deposited on the model.



I also added pencil lead wear at this point. This can be applied using powder (rub a pencil on some sandpaper) applied with a finger, brush, or cotton bud or it can be applied directly by using the pencil itself.

6: Dot Filters

7: Rust, Dust and Spills

Dust colors were dotted into place mostly on horizontal surfaces in areas where dust would gather.

These steps were accomplished more or less simultaneously on this build and were done entirely with oil paints. As as we have seen in previous builds, I often use dot filters for color variation and fading. In this case, I felt the base colors had accomplished this sufficiently and the dot filters were used almost entirely for adding dust and streaking. Dirt build-up on the lower hull and tracks and running gear was also added during this step. Colors used were from Georgian and Panzer Abteilung and consisted of Burnt Umber, Yellow Ochre, Burnt Sienna, Titanium White, Sap Green, Faded Green, German 3-Color Fading, and Neutral Grey. The whites, yellows, and greys were used for dust. The same colors, along with the greens, and Burnt Sienna, were used for streaking, and the Burnt Umber was used to add dirt build-up on the lower hull.

Then, using a brush damp (not wet) with Mineral Spirits, the dots were blended into each other and the model, leaving the appearance of dust on the model surface.

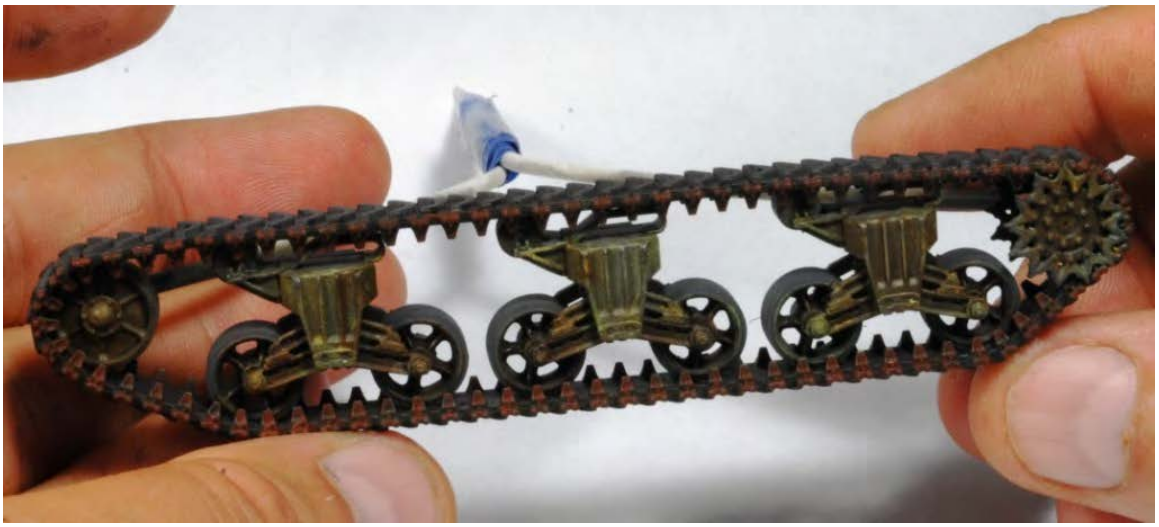
Below: For streaking, dots of color were put where the streaks were to start. Rain marks (yellows, whites, grey, greens) were put on top edges and areas where dust would run off. Rust dots of Burnt Sienna were placed where rust streaks would start.

Not Shown—using a Mineral Spirit damp brush, the streaks were dragged downward until they disappeared. Keep adding and adjusting color and streaking until you are happy.

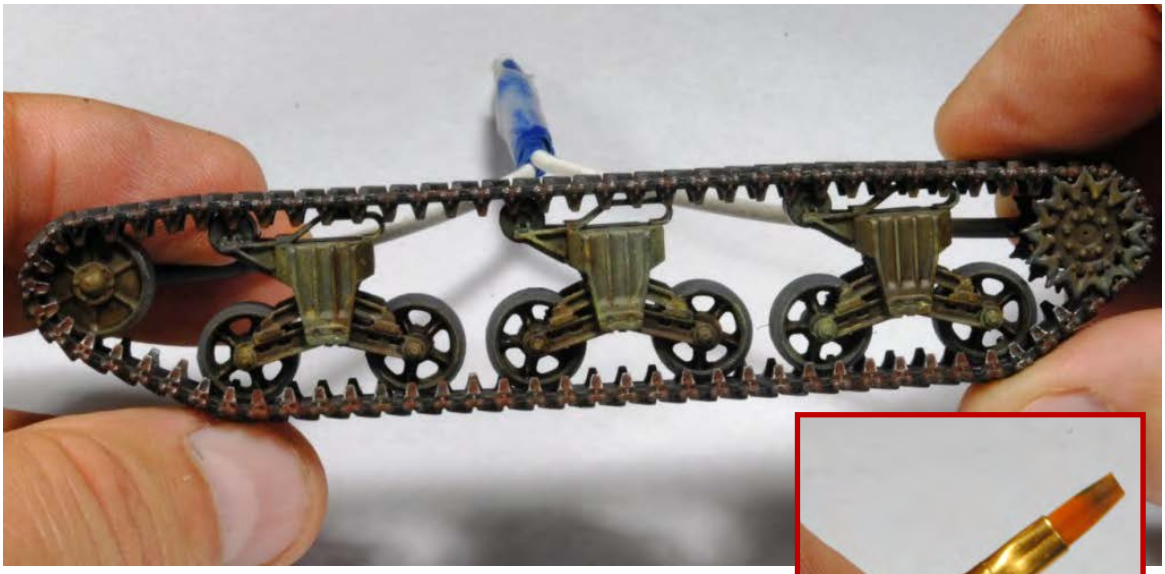
Here we see the finished dot filters and streaking. The fuel spills were made from mixes of Black, Burnt Umber, and Green Fading oils. These were applied around the fuel caps and drug down in the direction of spill runoff. Make sure you don't get it on the fuel fill caps—these were removed and likely set out of the way when fuel was being added.

Although not shown here, rust on the exhausts was applied using the same methods seen on the StuG III build—the items were pained with Brown Iron Oxide, and, while still wet, stippled with rust-colored pigment powders.

Here is what the track units look like at this point with the base color, chipping, and Burnt Umber oil paint dot filters in place.



Details have been painted here. Tires have been painted Charcoal. End connectors are colored with Brown Iron Oxide, and track pads are mix of Charcoal, Black, and Mushroom.



Wear areas were painted with a mix of Lead (Andrea Color) and Black. This was dry-brushed on end connectors with a small, flat brush (see inset). The contact surfaces on the idler wheels, return rollers, and drive sprockets were also painted with color.

Not Shown: The entire assemblies were given a thin black wash of oil paint to provide outlining.

Pigments were added. These were mixed with water (I used dark brown, sand, and grey colors) and painted over the suspension units and lower hull. This photo shows the appearance at this point. Once dry, excess will be brushed off.

8: Pin Washes

9: Pigments

Although not shown, outlining was done with pin washes of oil paint (a black and burnt umber mix) using my normal methods.

Above: The same pigment mix used on the suspension was added to the lower hull. No additional mud build-up was added on the assumption the vehicle would have been relatively free of mud and dirt at the start of the operation, and my scene depicts action in the opening stages of the operation.

Color Mixes and Methods

Unless specified otherwise, colors are Delta Ceramcoat acrylics. Apple Barrel paints are identified with (AB), Folk Art (FA), Andrea (A), AK Interactive (AK), Vellejo (V), Vellejo Model Air (VA), Liquitex (L), and Golden (G). Oil paints are indicating by so stating. Key: B = Base Color, L = highlight (1L, 2L = 1st highlight and 2nd highlight), S = Shadow. Highlights and shadows are normally applied with glazes. For color mixes, if no ratio is listed, the colors were mixed "by eye" until they looked right! In the chart below the colors for each item are generally listed in the order they were applied.

TOOLS:
Wood: Raw Sienna + Khaki (AB). Streaked with a mix of Burnt Sienna and Black oil paint.
Metal: Lead (A)/Black/Tank Brown. Highlights Lead (A) and Silver (A). Rust areas glazed with Brown Iron Oxide.
Straps: Timberline Green + Khaki (AB). Highlights Khaki (AB). Outlining in Black. Buckles Lead (A)

LEATHER PAD IN COMMANDER'S HATCH:
Basecoat of Raw Sienna highlighted with Khaki (AB). Dark areas added with Andrea Brown (acrylic ink). Scratches were added with a damp toothpick.

BOARD MOUNTED ON GLACIS FOR STOWAGE:
Base was a mix of Burnt Umber/Pewter Grey

(AB) dry-brushed with the same mix + Khaki (AB) followed by Khaki (AB). The whole was given a wash of oil paint (Black/Burnt Umber mix).

PERISCOPES:
The body of the scopes was painted as the vehicle. The lens are Olive Green (VA) coated with Clear Gloss.

HEADLIGHTS:
These were given a base-coat of Silver (A), highlighted with Pale Grey Blue (VA), then coated with Yellow acrylic ink (A). The black-out light was painted Ultra Blue. Once dry, all were coated with Clear Gloss.

TAIL LIGHT:
The red light was painted Barn Red while the backup light was

painted Pale Grey Blue (VA). Both were coated with Clear Gloss.

MUFFLER:
This was painted Brown Iron Oxide and stippled with various rust-colored pigment powders.

PARKERIZED FINISH:
(US Machineguns were parkerized rather than being blued—this results in a dark grey finish).
Machineguns were base-coated in Panzer Dark Grey (VA), highlighted by adding US Grey Light (VA). The guns were then given a wash of Black oil paint. Highlights and wear areas were picked out with Lead (A) and/or Steel (A)

AMMO BELT: Cases were painted Antique Gold (L) with a Brass (V) high-light. Bullets are Copper (G), with the tip of every fourth round being a Scarlett Red (V) tracer. Links are Charcoal. The whole was given a oil wash of Black.

SOOT:
Soot on the muzzle of main gun and machineguns (and on the mantlet by the coaxial MG) and near the vehicle exhausts was added with black pigments.

SPARE TRACK LINKS:
The rusty end connectors were painted with Brown Iron Oxide and highlighted by adding Orange. They were then given a wash of Black oil paint. Track pads were painted with a mix of Black and Charcoal and highlighted by adding Pewter Grey (AB). Edges were straight Pewter Grey (AB).

OIL CAN:
The black primer formed the base color, highlighted with Charcoal. High highlights and edges were added with Pewter Grey (AB).

ANTENNA:
US Dark Green (VA)

OLIVE DRAB ITEMS: (Jerry Cans, Ammo Cans, Machine Gun Mount, Antenna Base)
These were painted in two mixes for variation. Both were given a base coat of Dark Olive Drab (VA).
Mix 1: Brown Violet (VA), highlighted by adding Tank Ochre (VA).

Mix 2: Olive Drab Shadow (AK), highlighted with Olive Drab Highlights (AK).
Chipping was done using the same methods/colors as on the tank. Some items were given a Burnt Umber oil filter. All were given a pinwash of Black oil paint.

RATION BOXES:
One box was base-coated in a Khaki (AB)/Raw Sienna mix and the other in a Mushroom (AB)/Raw Sienna mix. Markings were hand-painted with a mix of Charcoal and Black. The boxes were both given a wash of Burnt Umber oil paint. Worn edges were created by adding Khaki (AB) to the base mixtures.

TARPS AND BAGS, GREEN, MIX 1
In the interests of both realism and visual interest, the various bags and tarps were painted in different mixtures of green and khaki. We will look at several samples here:
B: US Dark Green (VA)
1L: B + Wedgewood Green
2L: Wedgweed Green
3L: 2L + USAF Light Grey (VA)
1S: B + Black Grey (VA)
2S: 1S + Black
3S: Black

TARPS AND BAGS, GREEN, MIX 2
B: Olive Drab (VA)
1L: B + Cam Brown (VA)
2L: 1L + Cam Brown (VA)
1S: B + Black
2S: Black

TARPS AND BAGS, GREEN, MIX 3
B: US Dark Green (VA)/Olive Drab (VA)/Light Grey Green (VA) 3/1/2
1L: Light Grey Green
2L: 1L + USAF Light Grey
3L: 2L + USAF Light Grey (VA)
1S: B + Black Grey (VA)
2S: 1S + Black
3S: Black

TARPS AND BAGS, KHAKI, MIX 1
B: US Field Drab (VA)
1L: B + Trail Tan
2L: Trail Tan
3L: 2L + Antique White
1S: B + Olive Drab (VA)
2S: 1S + Black
3S: BlackT

TARPS AND BAGS, KHAKI, MIX 2
B: Mushroom (AB)
1L: B + Trail Tan
2L: Trail Tan
3L: 2L + Antique White
1S: B + Burnt Umber
2S: Burnt Umber
3S: Black

TARPS AND BAGS, KHAKI, MIX 3
B: Mushroom (AB)/Raw Sienna
1L: B + Khaki (AB)
2L: Khaki (AB)
3L: 2L + Antique White
1S: B + Burnt Umber
2S: Burnt Umber
3S: Black

STRAPS:
B: US Dark Green (VA)/Light Grey Green (VA) 3/1
1L: Light Grey Green (VA)
2L: 1L + Antique White
S: B + Black

AIR IDENTIFICATION PANEL:
The Red side was base-coated with Bright Red and highlighted with Orange. High highlights were created by adding Gloss Glow In The Dark Orange (AB) to the orange. No shadows were used as only upper surfaces are exposed.
The white side was base-coated with White with a small amount of Prussian Blue added. Highlights are white. Shades were created by adding a bit more Prussian Blue to the base mix.
Tape edging was painted Black (to create a shadow line) and highlighted with a mix of US Dark Green (VA) and US Field Drab (VA).

The finished tank prior to placement on the base and the addition of figures.

U.S. Uniforms in Northwest Europe

The subject of U.S. uniforms in can be a complex one. For our purposes, we are interested only what was worn during Operation Cobra in the Normandy Campaign. As always, research is key as some units had peculiar methods of wearing certain items and gear or were issued particular uniforms. As an example of the latter, some units in the 2nd Armored Division were issued camouflage HBT uniforms during the campaign as a test. (The common story is that these were soon withdrawn because their similarity with German SS camouflage resulted in friendly fire casualties, but I have found no actual evidence to back up this claim.)

By far the most common uniform worn was the standard wool trousers and shirt with the M-41 field jacket (or tanker jacket), service shoes, and leggings. The HBT (Herringbone Twill Uniform) was also seen. The M1943 uniform with its distinctive field jacket and two-buckle boots did not begin to appear until the fall of 1944 and never completely replaced the earlier uniform. Thus, the 1943 uniform items would not be appropriate for a scene set in Normandy.

Helmets and field gear were pretty much the same throughout the war. Web gear was created in three colors during the war. The earliest color was Khaki and was still the most common type at the time of the Normandy Campaign. Light grey-green gear was also in use. The 1943 gear in a darker green color was just coming into use and would have still been quite rare.

Above and below left: The "standard" G.I. in Normandy. The officers above wear the standard wool uniform with the popular tanker's jackets instead of the M1941 Field Jacket (which offered little resistance to the wind and rain). The soldiers below wear mostly the wool uniform and have the M1941 jacket. The man in center wears HBT trousers with large thigh pocket. The soldiers below right wear the experimental camouflage HBT uniform issued to some units in the 2nd Armored Division during the Normandy campaign. Note the variety of ways they wear their gear and helmet straps. Note also that some helmets have nets while others do not.

Creating and Painting Figures

No matter what I am building, figures are usually one of my primary focuses—they provide a immediately recognizable sense of scale, are usually essential in story telling, can draw attention to certain features by being placed nearby (because they catch the eye), and of course they provide human interest. My figure philosophies, as well as my sculpting painting methods were thoroughly described in my StuG III Ausf G. build booklet. Here we will specifically discuss Tamiya plastic figures.

I chose to use Tamiya plastic figures for this project. In 1/48th scale the selection of figures is slim compared to the more popular 1/35th scale, but the Tamiya figures are varied, plentiful, and inexpensive. And while there are aftermarket figure sets depicting US soldiers and tankers that are certainly better detailed than the Tamiya minimen, they are not available in the action poses I required.

While I could have sculpted my own figures to make up for the shortcomings of the Tamiya figures as I did with both my StuG III Ausf G and 250/10 pieces, due to the number needed I chose to us the Tamiya "US Army Infantry GI" set, part #32513.

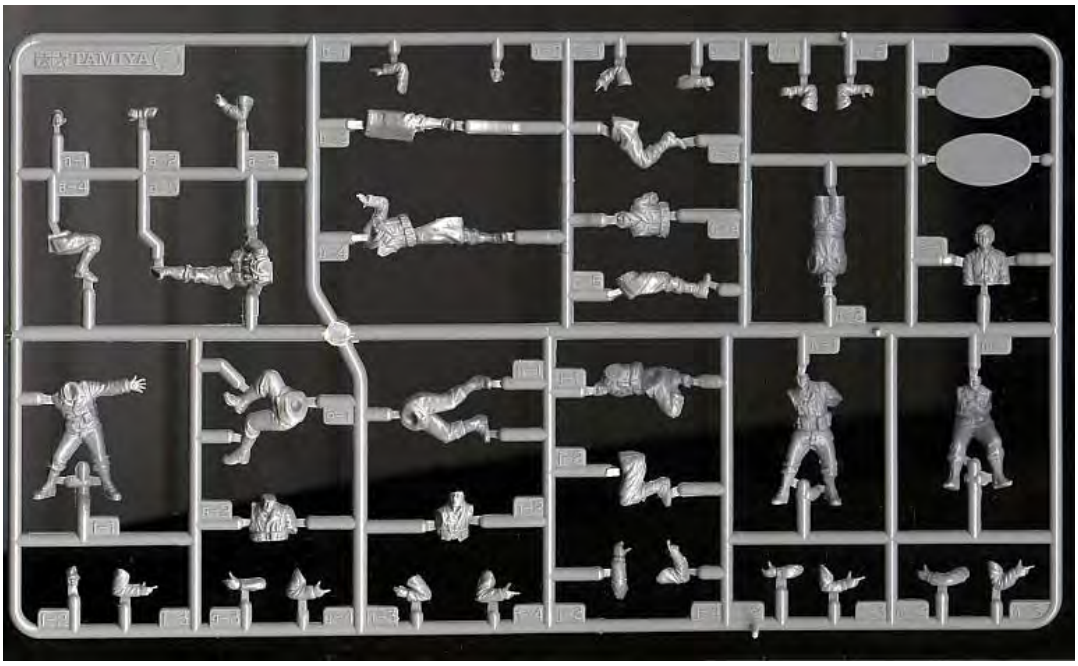
The set contains 15 figures, including two tankers. Uniforms are suitable for NW Europe being a mix of M1941 and M1943 uniform items. Most figures wear field jackets, and a couple are in winter gear. The poses are similar to their 1/35th scale offerings—in fact, the figures are probably pantographed down from the larger scale. While the detail and crispness may be marginal in 1/35th, they are not as bad in the smaller 1/48th. Most figures come in multiple pieces, giving some multi-pose capability to the sets, and lending them well to conversions. Belts, straps, and some ammo pouches are molded on, but most gear is separate. The set comes with two identical sprues of weapons and equipment that gives you what you need to build the figures with plenty of extra.

Perhaps most importantly, the pose and anatomy of the figures are very good and quite natural. These are the most important aspects of figures and one in which some of the more expensive aftermarket sets fall short. The

I used Tamiya's U.S. Army Infantry GI set for my vignette. The figures wear a mix of field jackets—both M41 and M43 models - and winter uniforms. The winter coats and M43 jackets are not appropriate for a scene set during Operation Cobra which somewhat limits the usefulness of the set. However, for a diorama or vignette set from the fall of 1944 until the end of the war, these figures would work well.

sets offer excellent value for the money being under $20 a set as of this writing (Fall, 2017). In fact, each set costs about the same (or even less) than a set of 2-3 aftermarket figures.

The main downside to the figures, other than soft detail, is that they are a bit too small, scaling out to only between 5'3" - 5'10" - closer to 1/50th scale than 1/48th. The weapons and equipment scale out perfectly. Still, the figures look good with the vehicles, and their size ensures they fit well inside. Their small size limits the ability to use them in conjunction with most aftermarket figures, but this is not as large a disadvantage as it may appear since the Tamiya figures are available in larger numbers and more varied poses (including action poses) than the aftermarket provides in this scale.



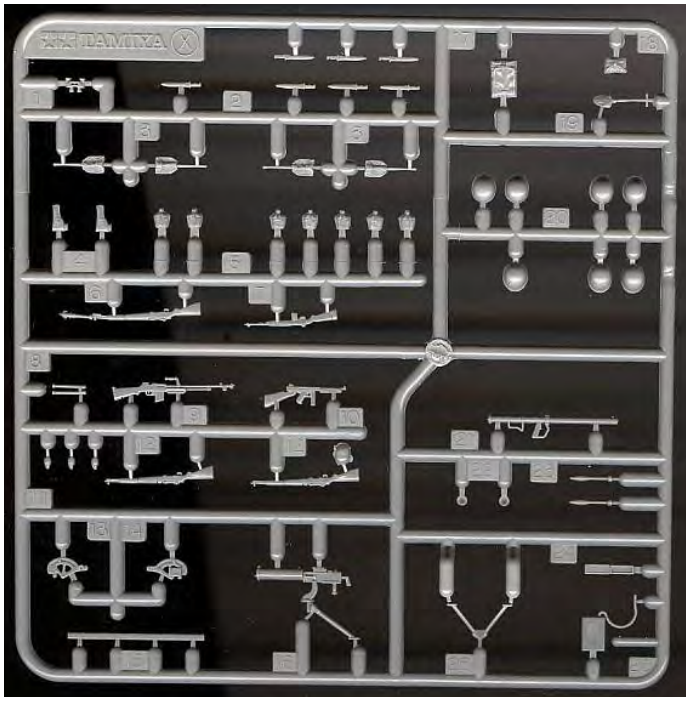
The Tamiya figures come in multiple pieces as seen here. Some come with two-piece body and legs, others as one. Some have partial or complete arms molded on, most have these as separate parts. The same applies to the heads. Simple changes can be made to the figures by swapping parts as long as the resulting new pose works. The set comes with 2 of the equipment/weapon sprues seen below. Belts, straps, and many ammunition pouches are molded directly onto the figures. Although the figures are a bit short, these pieces are scaled correctly.

Since these figures are made from the same plastic as the kits, assembly is the same.

It is up to you how much of the figure you assemble prior to painting. Parts whose joints will require putty work should probably be assembled prior to painting if practical. In larger scales I often build in subassemblies and leave weapons and gear separate until after painting. However, I normally completely assemble small figures prior to painting since it is more difficult to glue all those tiny pieces onto a painted figure without damaging the finish. Completely assembling the figure prior to painting also ensures all shadows and highlights are consistent and fall at the same angles. But this is not a hard and fast rule – due to design or pose, you may find some figures must be built and painted in a certain order.

If planning and clean-up was done well, the figure should go together with little or no trouble. But sometimes gaps may be present at joints. These can be filled in various ways, but I prefer epoxy putty. As it is water soluble, a quick swipe with a damp finger will both remove excess and smooth the joint, removing the need for further sanding after the putty cures.

Although the Tamiya figures are not bad for their size, and, for the most part, can be built straight from the box, there are still some areas where they can use some help. While most belts



and straps are molded onto the figures as needed, other straps such as weapon slings are absent. These are easily added using paper, thin sheet plastic, putty, or other materials. I prefer to use strips of tape. For smooth leather, electrical tape works well. For courser materials, strips of blue painter's tape are my choice. Some detail is rather soft and can be enhanced with a bit of carving and cutting with a hobby knife (such as deepening undercuts around pocket flaps and jacket skirts or squaring off jacket cuffs around wrists, etc.)

The Tamiya figures are plentiful and varied enough that it is certainly possible to create a wide range of vehicle crews, vignettes, and dioramas using only straight from the box figures if that is your desire. However, there will probably come a point where what is available does not adequately meet your need. Fear not, converting these figures is quite easy.

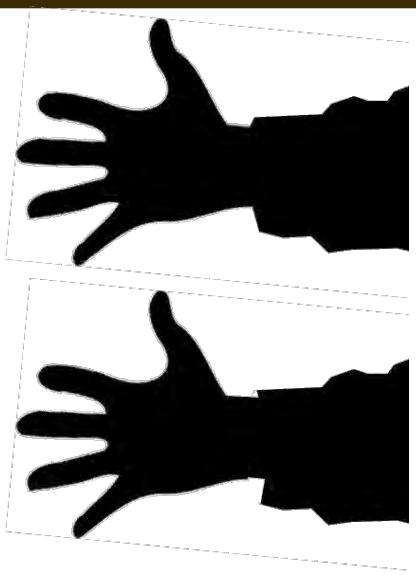
When converting a figure—whether it be a simple swap of parts, minor alterations of pose, or nearly complete resculpts—the first and most vital step is to get the anatomical proportions and pose correct and believable. The proportion diagrams I use for sculpting (see the StuG III build book) are useful here, and I use the sculpting techniques for conversions I demonstrated in that work and the supplemental booklet on my Sd.Kfz 250/10 build. I have heard of modelers "correcting" the height of Tamiya figures by adding a wedge of plastic between the upper and lower torso halves. While this would make the figure taller, it would also skew the proportions – arms and legs would be too short relative to the body and the head would appear too small. It would also make the figures too skinny.

As you convert your figure, ensure arms and legs are the same length, the correct length, and that knees and elbows are in the correct places. During conversions, as we cut and reposition our little figures, joints can tend to "migrate" and we must always be mindful to keep them in the right place. Make sure figures only bend in proper places—we do not want "spaghetti" arms or legs; limbs should be straight between joints.

The simplest conversion is probably just swapping parts, such as a hand, arm, head, foot, etc. Often times, with the multi-pose nature of the Tamiya parts, we can just substitute parts when building the kit. Or we cut off and replace parts (hands, for example, are not molded separately but are attached to an arm). For heads and hands, I like to slightly hollow out the collar or sleeve so the new part slides into place realistically. But there are limits to parts swaps. Swapping that lowered arm for the raised one will also affect the pose of the shoulder, which may in turn affect the pose of the hip.

Equipment, straps, and belts can be carved away or added (using tape, paper, etc.), but this usually requires more work since belts and straps alter the wrinkle patterns in the garments they contact and the weight usually causes equipment straps to sink into clothing rather than just rest on top of it.

Another fairly easy conversion is bending a straight arm/leg or straightening a bent arm/leg. If repositioning a knee or elbow, make your cut on the inside of the joint to ensure the limb remains the correct length. Straight limbs can be bent by removing a wedge of material and closing the limb to the de-



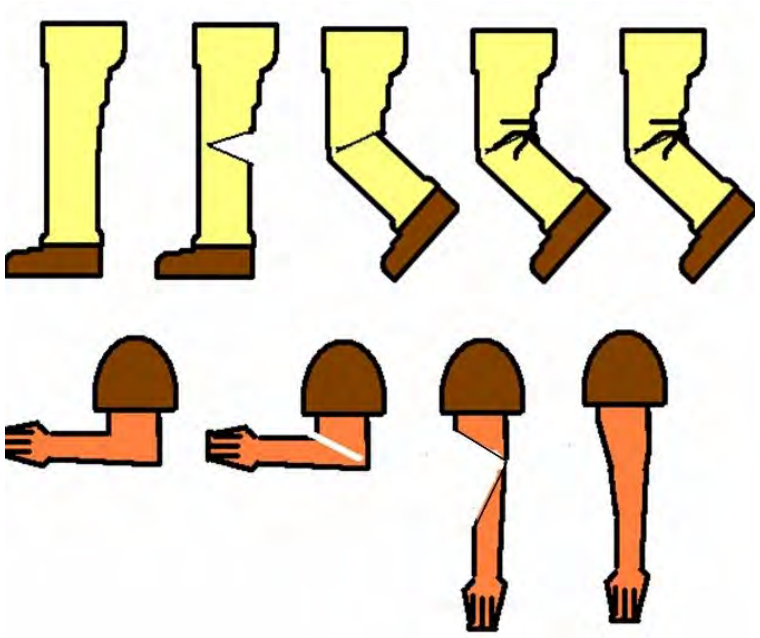
Due to the molding process, some details can be soft. Note the cuff where it joins the arm in the top drawing. This can be improved by taking a sharp hobby knife and trimming the joint as shown in the bottom drawing—basically hollowing out the cuff around the arm. The same process can be done as needed around pocket flaps, straps, etc., to sharpen detail.

The helmet netting was made from a small piece of fine brash mesh.

Missing slings and straps

Of the four figures used in the vignette, the two shown above (in Tamiya's instruction sheet) were built stock, with only minor additional detailing such as shown on the previous page added.

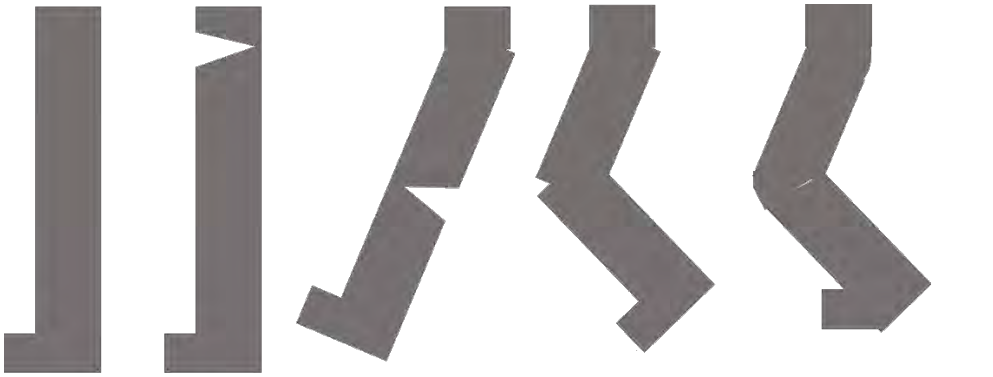
The kneeling soldier could not be used stock as he wears the M43 field jacket. As this was longer and had different pockets than the M41, the pockets and all portions below the belt were carved away and the areas repaired with Magic Sculpt epoxy putty using the same sculpting methods we discussed in my StuG III Ausf G build booklet. The cuffs are likewise different, so the arms were replaced with similar arms (from the same set) wearing the M41 jacket. For his weapon, I used an M1 Garand with rifle grenade attachment.



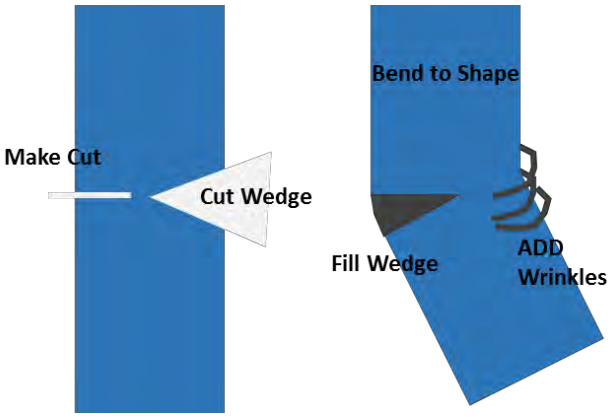
sired position. Bent limbs can be straightened by making a cut and opening to the desired angle. For plastic figures, you will have to cut almost all the way through the joint to be able to bend it to the desired position. You can also simply cut it in two and glue it back in the correct position. A piece of metal wire can be glued in holes in both pieces and the joint bent to shape – sort of like an articulated action figure. Fix any damage with putty. Note that changing the position of arms and legs may affect the wrinkle pattern on clothing requiring even more conversion work. Normally, however, with the small size and simple detail of the Tamiya figures, this is not a significant issue. The same procedure can be used to bend a head at the neck or a torso at the waist, whether bend front to back or side to side.

While I have made some very radical changes to the Tamiya figures, these simple methods well all that was needed for most of the figures, combined with some creative swapping of parts among the various figures. The photos and captions show how it was done.

The remaining two figures required using parts from multiple figures and significant reposing. To repose a plastic figure, simply cut it apart at the joints and put it back together in the pose you want! Refer to the diagram at left. For instance, to close a straight arm or leg, cut out a "V" behind the knee or in front of the elbow and close the joint. To open a bent knee or elbow, cut almost through the part from in front of the elbow or behind the knee and straighten it. Ensure the limb stays the correct length. Always make sure anatomy remains correct—reposing one part may affect others. For example, if you raise an arm, the shoulder will also rise. Lifting a shoulder will cause one of the hips to lower, and so forth. Also make sure the pose appears natural. Getting pose and anatomy correct is the most important part of any conversion! Once the figure is reposed, simply repair the joint and any lost detail using epoxy putty or other preferred means.

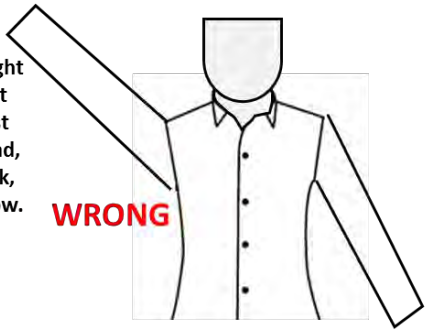


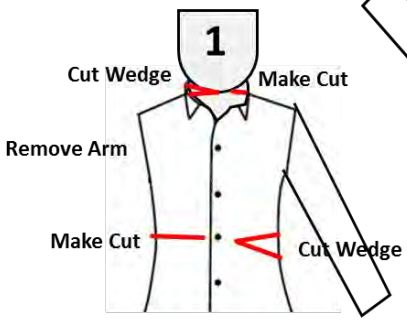
Top: The same technique to open or bend an arm/leg can be used on multiple joints on the same limb. Here, a leg is bent at both the hip and knee. If the foot is going to be resting on something, it can also be bent at both (or either) the ball or ankle. Keeping anatomy correct is the only limit.

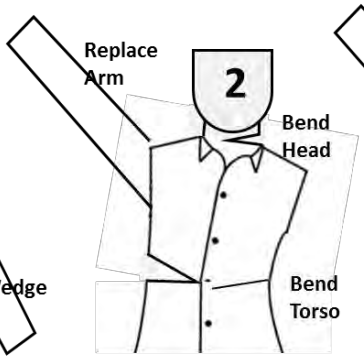


Middle: In this small scale, simply cutting a wedge and bending is usually enough. But for repositioning thick items (like a torso), we may need to both cut a wedge on the inside of the joint and a line on the outside of the joint. Otherwise, the part may be too hard to bend in to its new position. Putty then corrects the damage. Note that cloth will wrinkle up on the bent inside of the joint. This must be built up using putty—you cannot get away with simply carving new folds into the plastic, as it would not look realistic.

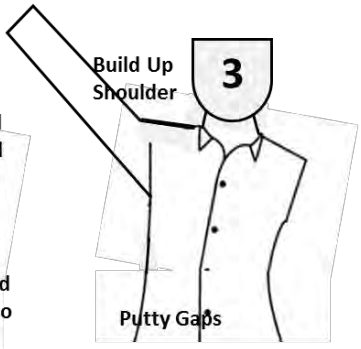
Let's say we want to raise the right arm of the man at left. If we just raise the arm as at right, the post just doesn't look natural. Instead, we must also reposition the neck, shoulders, and hips as seen below.







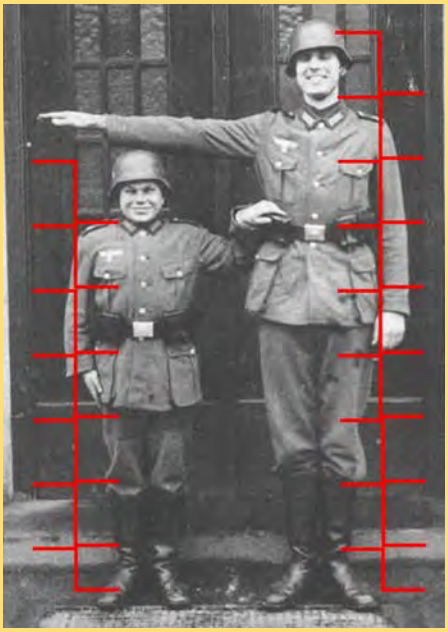
CORRECT



Add/Alter Wrinkles As needed

Bottom: There is a practical limit to how far changes can be pushed before major changes or even resuclpting must be done. While it may seen easy to raise a lowered arm by simply cutting it off and repositioning it, there is a limit to how far it can be raised. In this example, raising the arm over the head also requires changes to the hips/waist, neck, and right shoulder. If the figure is wearing belts, straps, and equipment, this will alter the way they sit. It will also change the wrinkle pattern on the arm, waist, and right shoulder. The lower jacket skirts may also require alteration as may the legs. This is a major conversion. The lesson: Although Tamiya figures come in several parts, they are not truly multi-pose. Only certain parts will work together properly without further changes.

Can the Size Problem with Tamiya Figures be Fixed?



We have seen that Tamiya mini men are too small, but in reality the only critical dimension in which they are too small is one us won't notice. Even though we all come in various sizes, an adult male head is fairly consistent at about 9 inches tall. Thus a man who stands 8 heads tall is 72 inches, or 6 feet tall. I've included a photo of two Germans showing height in heads. Note the heads are the same height, but one man stands about 80 inches (just over 8.5 heads) while the other is 57 inches (just under 6.5 heads).

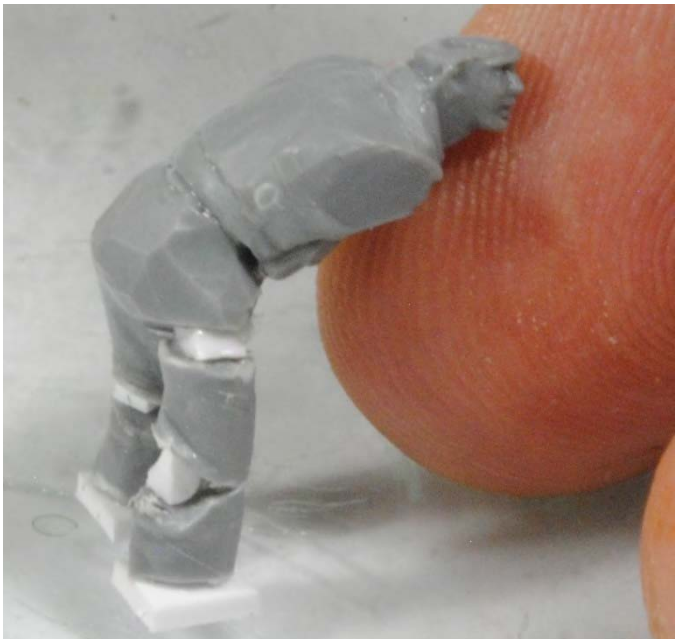
We are conditioned by seeing figures sculpted in "ideal" 8-head proportions. Most people fall short. In WWII the average height of a US soldier was 5 foot, 8 inches. Average weight 144 pounds. The hat was a size 7 or 7 1/2. Chest was 33 1/2 inches, waist was 31 inches. Shoes were size 9. German soldiers were, on average, about two inches shorter than US soldiers.

Some Tamiya figures scale out to only 5' 2" or 5'3". Others are as tall as 5, 10". Most are in the 5'5-5'7" range. So they're not bad. However, as they are sculpted using ideal proportions their heads are actually a bit too small! Their gear is fine. So, in theory, you could correct the Tamiya figures by replacing heads with correctly scaled 1/48 aftermarket heads. But guess what, because we expect ideal proportions, they would appear as if the heads are too big!

So, can the Tamiya figures be fixed? Short answer - No. Long answer - yes, but it would be easier to sculpt a new figure from scratch! You could increase the height by adding a shim at the waist (most figures have separate upper and lower halves). But realistically, you could only gain a scale inch or two. If you added more, the arms and legs would appear too short. To correct this, arms and legs would have to be lengthened both above and below the elbow/knees. While this would give you a figure of correct height - they would be skeleton thin with a pin head. They simply could not be realistically fattened and still maintain any of the original figure.

Ok, so what can be done? Best bet is to use them "as is". They look fine. They only appear too small if that is what you are looking for. You can mix and match them with aftermarket quarter scale figures and/or wargame figures as long as the difference is not too extreme. But if you do this, keep in mind head size should be consistent and gear/weapons should be absolutely identical. So, if you mix/match, use the same size head on all figures and use the Tamiya gear and weapons. If you do, the height and weight differences will look perfectly normal.

The wounded German soldier, about to have a close-encounter with the tank's tracks, is a real Frankenstein. Another one of my projects over the past three years has been building a series of 1/48th scale Sd.Kfz 251s. Fifteen have been completed, one more is on the workbench, and two remain to be built. All have been placed in small vignettes or dioramas that cumulatively include well over 100 figures. Numerous Tamiya figure sets have been used, and I have a couple boxes of spare parts. It was from these parts this figure has been made. I doubt any two pieces are from the same figures. I am fairly sure the upper torso with head and the right leg are from Tamiya's Panzergrenadier set. I believe the left leg is from a figure in Tamiya's flakvierling kit. Note that both hands have been cut from the arms and repositioned. Both arms have also been repositioned at the shoulder. Both knees and the right ankle have also been repositioned. All of these changes were made as shown on the last two pages. Putty work is needed to not only repair all the alterations, but also to blend the parts from the various figures together. Once this is accomplished, gear can be added. Like the U.S. set, most German figure sets come with two sprues of weapons and gear. Each of Tamiya's Sd.Kfz 251 halftrack kits also contains one of these sprues.



The tank commander is the most extensive conversion. For his legs, I used a pair from the German Field Maintenance set, as they had leaning forward pose I want. The torso, head, and arms were from the US Infantry set. Many details were removed and some limbs repositioned as shown in the accompanying photos. The figure was test-fitted into the tank (taking the future position of the hatches into account) to ensure he fit properly. The final posed figure is seen at right. Repairs and resculpting were done with Magic Sculpt epoxy putty using the methods seen in my previous booklets. The microphone was made from styrene bits and the wiring added from fine wire.

Color Mixes

I paint figures almost exclusively with craft acrylics as explained in my StuG III build Booklet. The Model Air colors also work well for brush painting. Unless specified otherwise, colors are Delta Ceramcoat. Apple Barrel paints are identified with (AB), Folk Art (FA), Vellejo (V), Vellejo Model Air (VA)

HELMETS:
These were base-coated with a mix Olive Green (VA) and US Dark Green (VA). Highlights were created using Timberline Green and shades by adding Black.

US Uniforms came in a variety of colors. A couple slightly different mixes were used for most items. Here are some samples.

WOOL TROUSERS:
Base color was either Cam.Med.Brown (VA) or the same color mixed with Olive Drab (VA). Highlights were created by adding Sandy Brown (VA) and/or US Field Drab (VA). Shades were created by adding Black.

M41 FIELD JACKET/GAITERS:
These were painted in various mixes of US Field Drab (VA), Timberline Green, and/or Mushroom (AB). Highlights were created by adding Mushroom (AB), Khaki (AB), and/or Parchment as appropriate. Shadows were created by adding US Field Drab (VA) or Olive Drab (VA). Deepest shadows were created by adding Black.

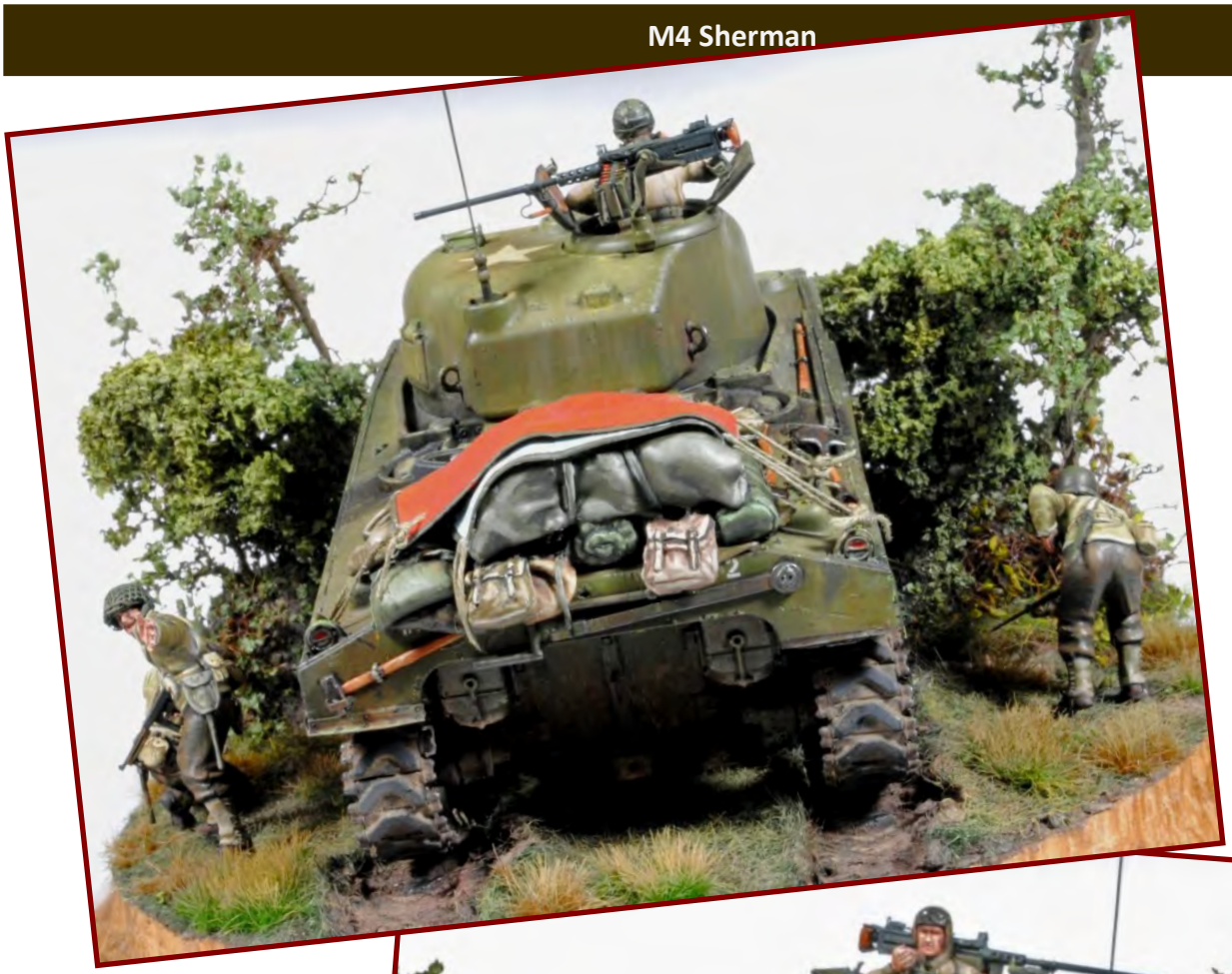
SHIRTS: These, just visible inside the collars, were left in Black primer, highlighted first with olive Drab (VA) then US Field Drab (VA).

TANKER JACKET: This was base-coated in a mix of US Field Drab (VA) and Mushroom (AB). Highlights were created by adding Trail Tan, and shadows by adding Olive Drab (VA). The collar and cuffs was painted with a mix of Sandy Brown and US Field Drab (both VA), highlighted by adding Khaki (AB).

Rank Chevrons and formation patches were painted in appropriate colors.

WEB GEAR:
Even more variety was shown here with different colors mixed and matched on each figure. Three color mixes were used for the web gear. One was Khaki (AB), one was Light Grey Green (VA), and the last was a mix of US Field Drab (VA) and Trail Tan. Highlights were created by adding Trail Tan, Parchment, and/or Antique White as appropriate. Shades were made by adding US Field Drab (VA) or Olive Drab (VA). Outlining was done with Black.

Other items were painted using the colors/methods listed in my StuG III Ausf G build book and my articles on my Sd.Kfz 251 builds.



Building and Painting the

M4 SHERMAN

in 1/48 Scale

Armor Modeling How To

Assembling, Detailing, Painting
Figures, Composition, Groundwork

by Kevin Townsend