Build Instructions for 1/16th Scale RC
Mato/DGS Sherman VC M4A4 British Firefly w/ Modifications

Started: Aug. 11, 2025 Finished: Nov. 7, 2025

by Paul E. Howald

Notes:

1. This construction article will discuss the modification I made to a Mato metal Sherman lower hull by adding a Dean Godin's Selkirk (DGS) resin Firefly conversion kit as the upper hull/turret.

2. There are a number of books available for this type tank (see list below) and I also researched pictures on the internet for modeling information, prototype pics, and color info.

Parts used:

1.	Mato Sherman metal lower hull w/ VVSS running gear & metal gearboxes	$152.00
2.	DGS Firefly resin Upper Hull kit with aluminum barrel (bought 11-22-2017)	$200.00
3.	Radio: Flysky FS-i6 2.4 ghz	$ 40.00
4.	Tamiya parts: MF-02, DMD T-05, turret rotation motor, barrel elev. motor	$350.00
5.	Tamiya IR flash & Etsy IR receiver unit	$ 45.00
6.	7.2 v Battery	$ 20.00
7.	British resin soldier castings (2)	$ 40.00
8.	AFV-Models.de in Germany, Part No. DT16009A 50 cal MG:	$ 60.00
9.	Mato Sherman metal Commander's Hatch; MT164	$ 21.00
10.	Mato Sherman metal front Headlight and Guards; MT167	$ 20.00
11.	Mato Hull metal 30 cal. MG: with flash	$ 11.00
12.	Schumo metal Tow Cable; SH0027N	$ 22.00
13.	Misc. brass pieces and plastic parts	$ 5.00
14.	Misc. saved Tamiya Sherman plastic parts & screws	$ 30.00
15.	Decals:	$ 18.00
16.	Modeling time and talent	$300.00
	Total Cost	**$1332.00**

Research Materials used:

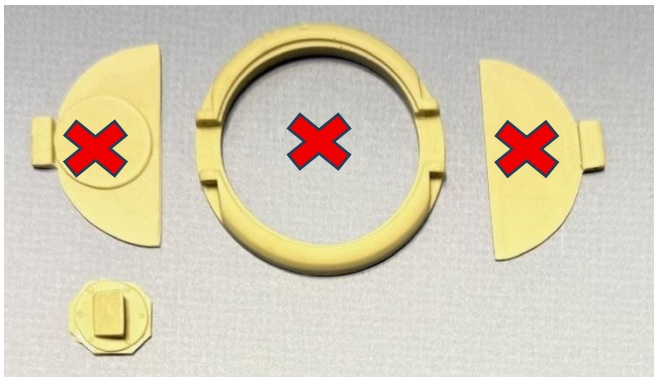
1. DGS Firefly resin kit instructions
2. M4 Sherman Tank by the Tank Museum c2024
3. Military Ordinance #17: Sherman VC M4A4 Firefly
4. Tank Power #436 "Firefly"
5. Tanks in Detail Medium Sherman M4 (76mm & 105mm)
6. Osprey Vandguard 15: The Sherman Tank in British Service 1942-45

Commence Work:

1. **Check all parts:** If there were no instruction with the resin kit, you can find them on-line. But you must still be a modeler w/ lots of experience to build this tank model. It is not for the faint of heart. Make sure all your parts are there, both resin, plastic, any metal additions and all your electronics.

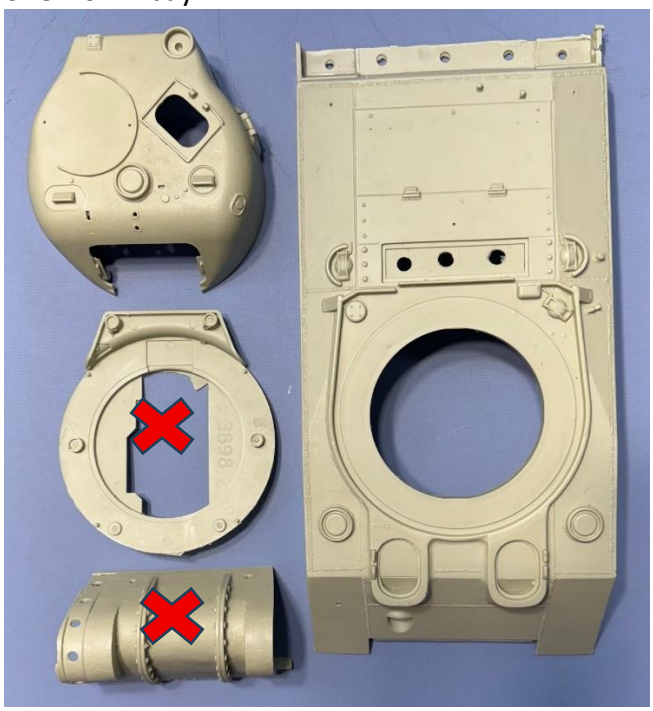
   Next verify that all of parts to the metal Mato lower hull with running gear, metal gearboxes and metal track are all collected and operational. Gather any additional parts that you plan to substitute.

   Here are the photos of all the parts I first verified. Ultimately, I found that some parts were not used or even mentioned in the DGS Firefly instructions I found at Sherman Firefly VC Resin Conversion Kit – DAK RC Tanks On this page, look half way down on the left for the instruction pdfs.

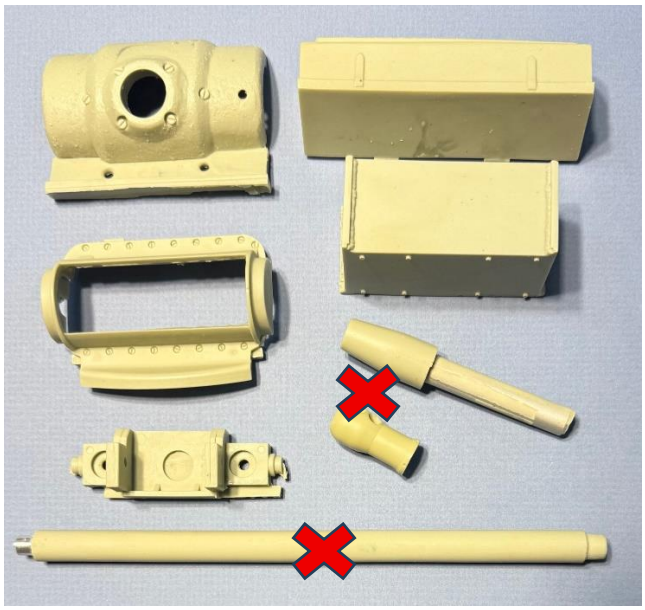


I chose to substitute this part with a metal one from Ebay.

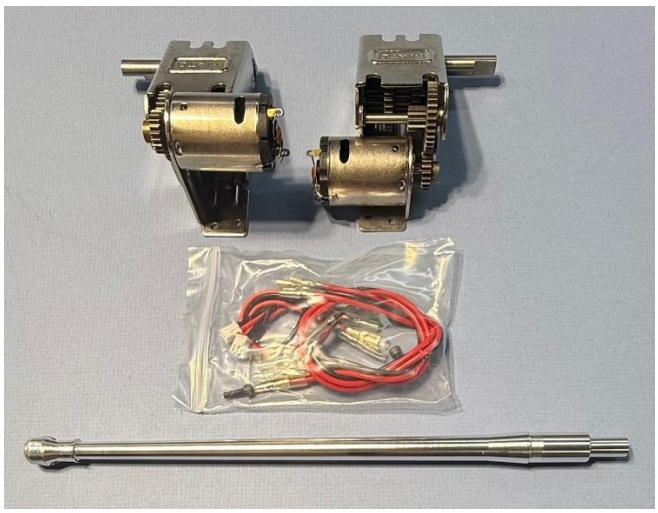
I substituted a Tamiya bottom lower base for the one in the DGS kit...it was warped out of shape.

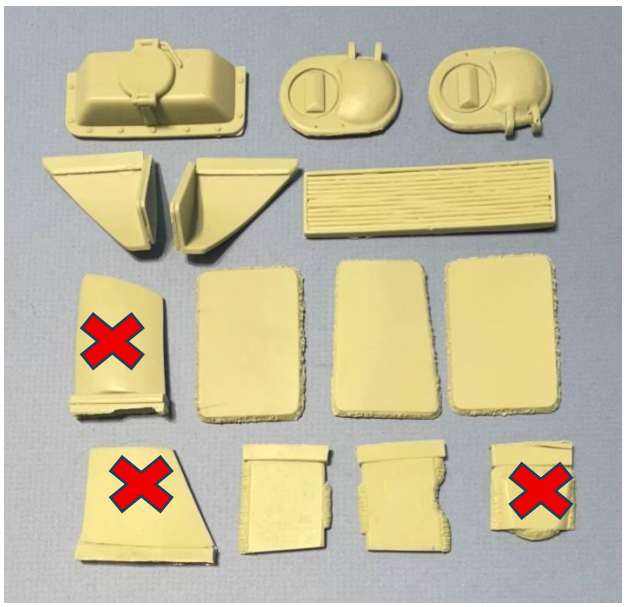


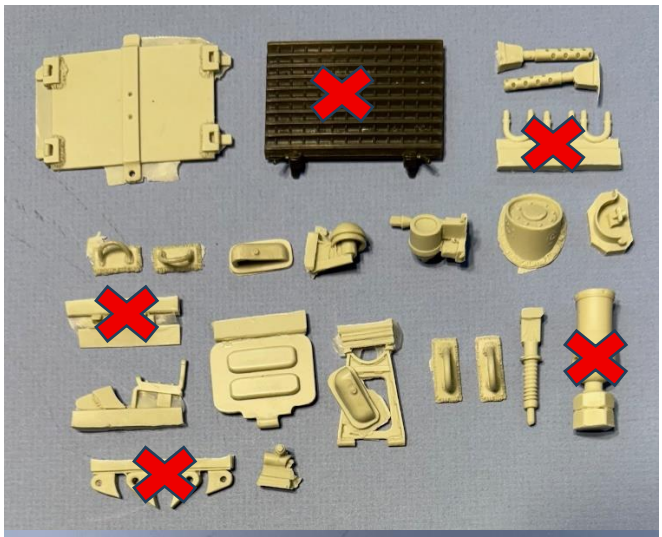
I used the Mato Glacis. The DGS one was too big.

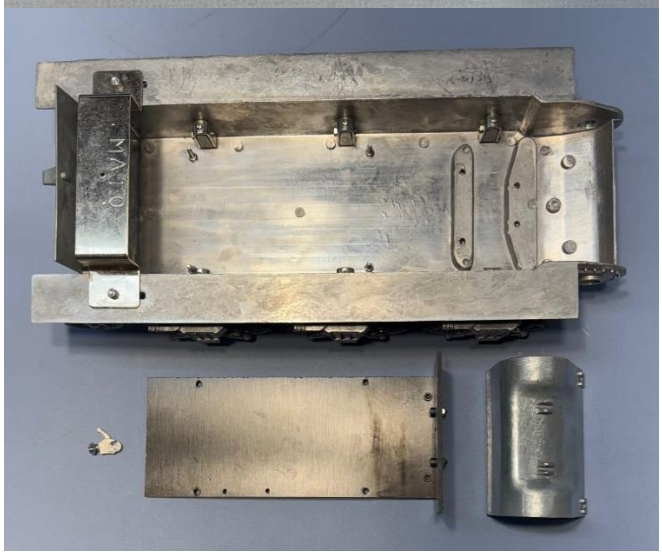


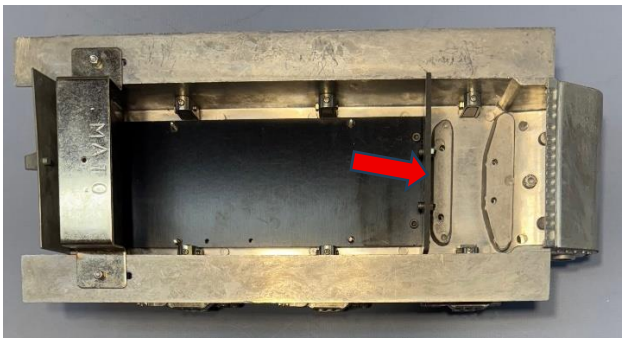
These 2 parts are not needed.





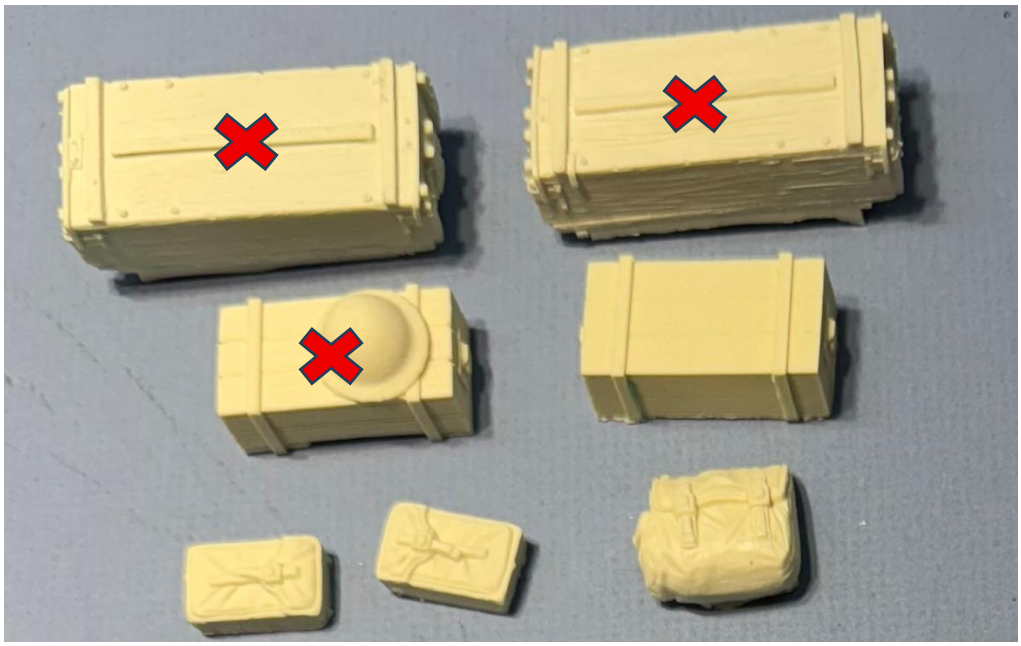




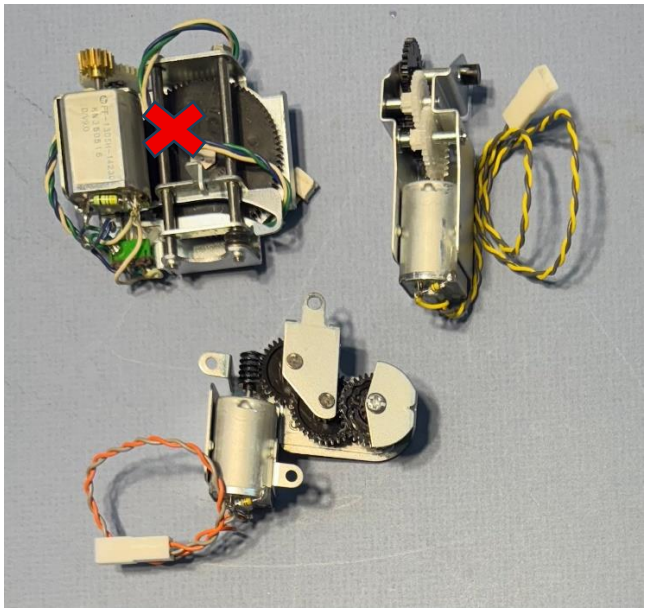


Red arrow shows front wall removed for drilling. See comment in step 2

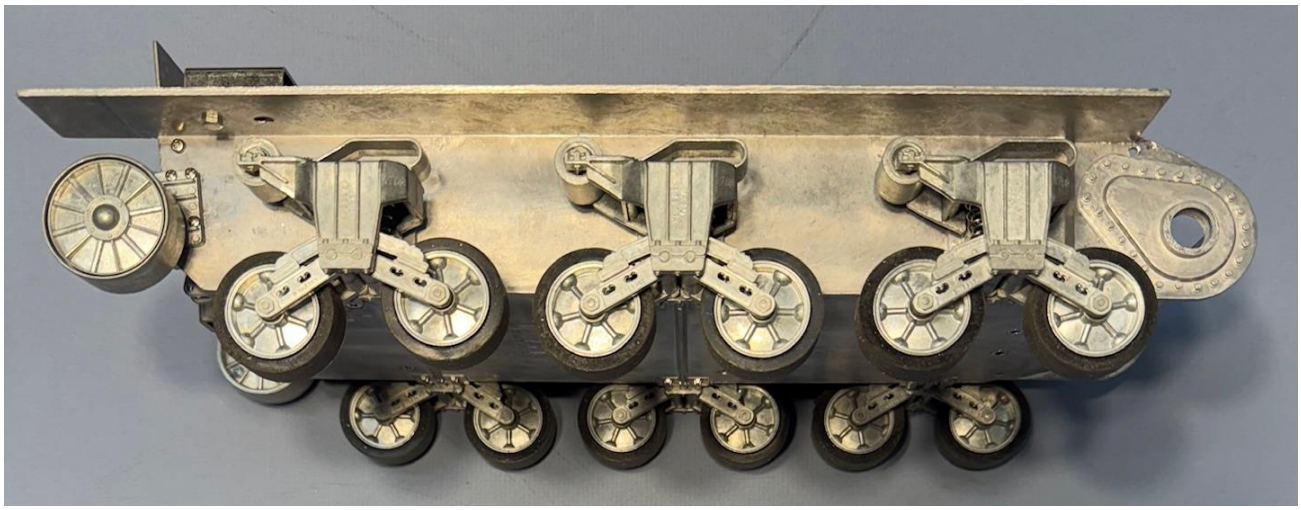
This is the Value Gear set (no #) for stowage on back of a tank. It came with the DGS parts as a bonus. I only use a few of these castings.



This was another set of resin stowage that I had acquired.

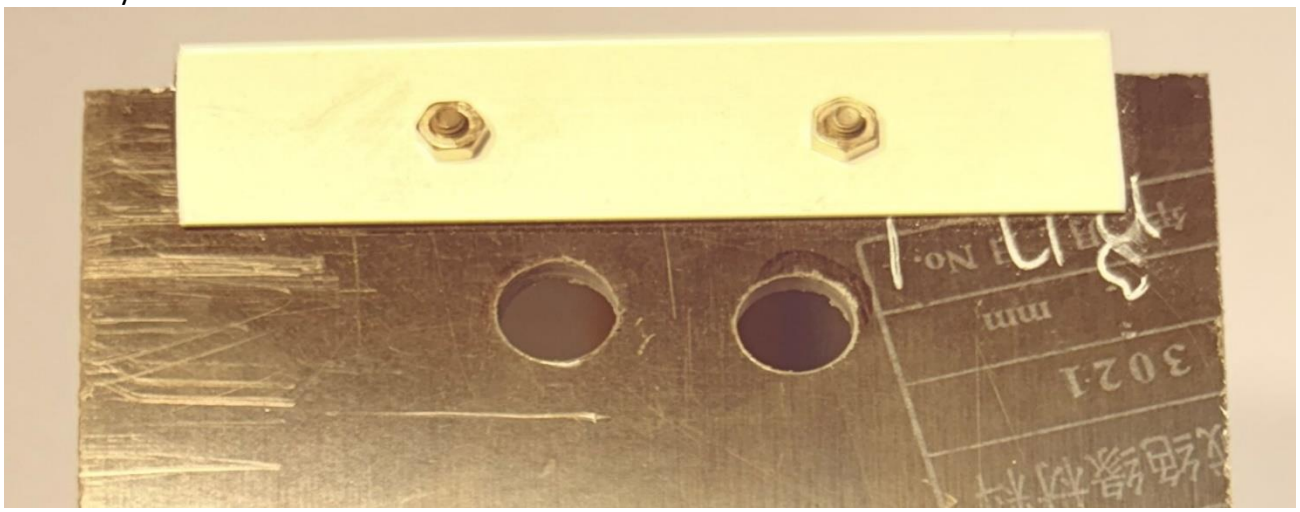


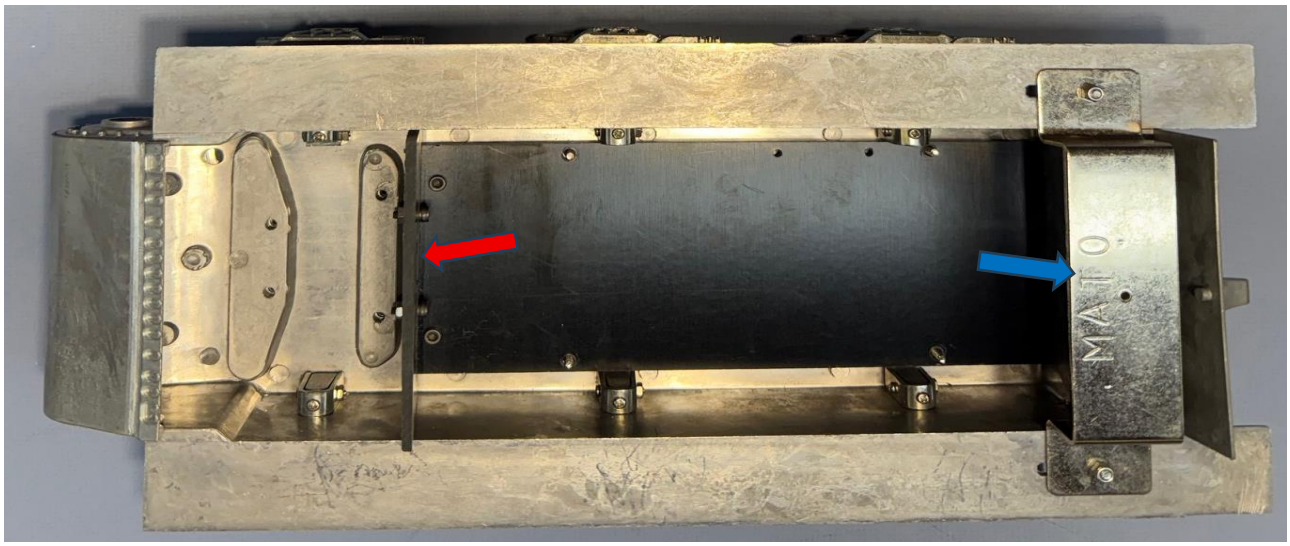
I ended up not needing the Tamiya barrel recoil motor (too big) and the Tamiya Apple won't fit either.

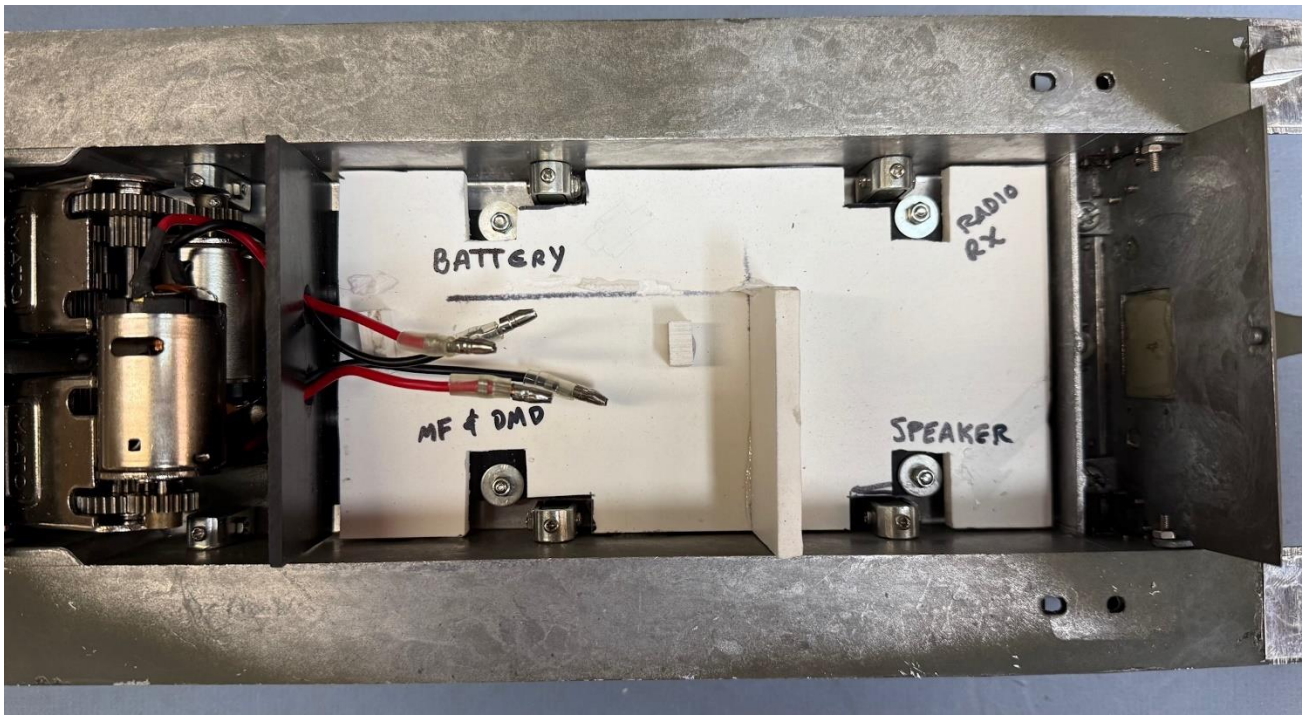


There are other electronic boards available for this conversion, such as Clark Boards or Heng Long Boards, but I like the simplicity of the Tamiya Sherman Boards, so I chose that source.

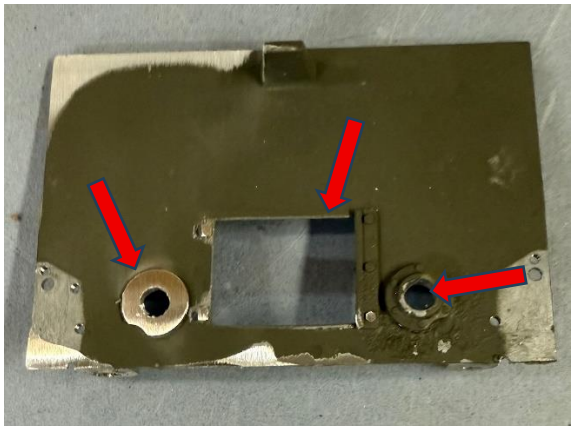
2. **Electronic wiring modification:** I removed the front wall inside the Mato hull and drilled 2 half inch holes in it for running the gearbox wires to the electronics board. I then re-installed the wall and bottom piece (red arrow). I also removed the rear bracket as it was not needed (see blue arrow in second picture). In the 3rd picture I cut a plastic foam core bottom piece to hold the electronics & battery off of the metal floor, so there would be no short circuiting. Don't forget to install a speaker unit. I later realized that the plastic foam core board needed to be lower and the middle wall wasn't necessary.

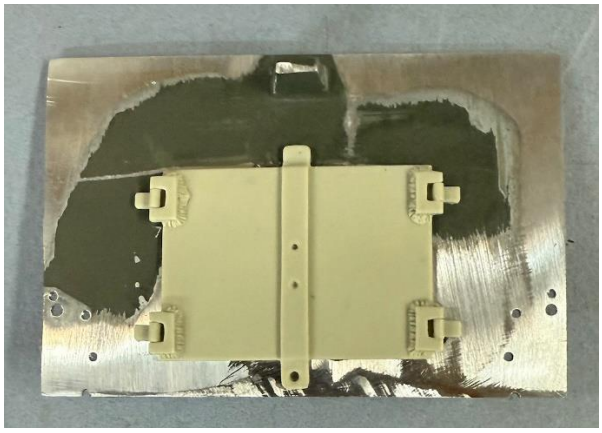


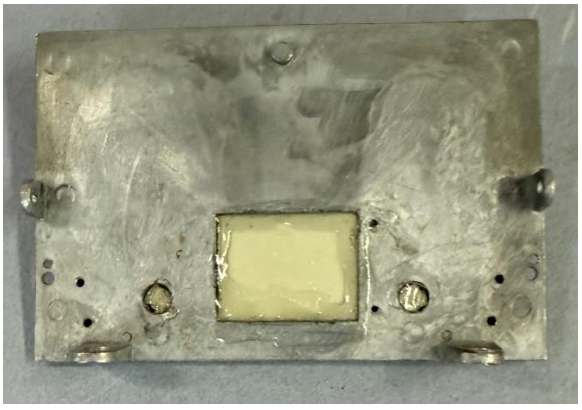




3. **Rear Wall of Lower Hull:** The rear wall has to change significantly which requires removing the wall from the hull. The 2 larger screws in the bottom are very hard to remove and required first heating with a hobby torch. You also have to remove the return roller brackets (8 small screws in each). The 2 exhaust vents are not needed nor is the access door and hinges, so remove those from the wall. Now you have to grind away the 3 cast on parts (see red arrows in photo below). Once those are removed the new resin door can be glued in place (be sure to glue the back side of the door as well…see 4th picture below).

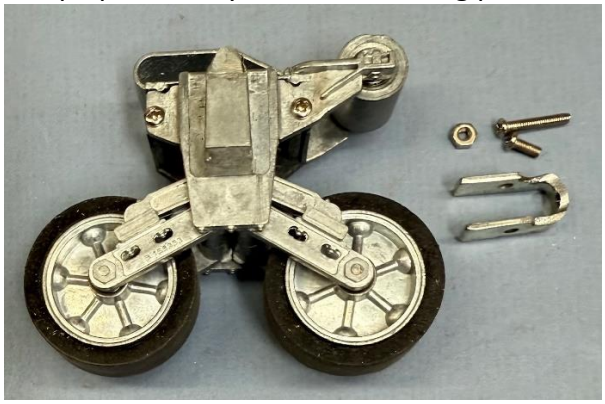


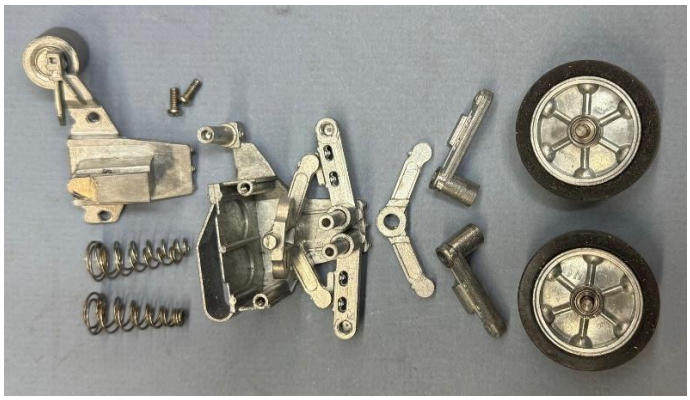


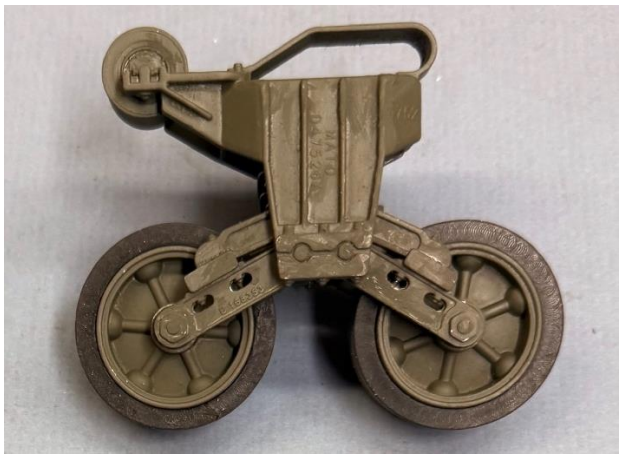


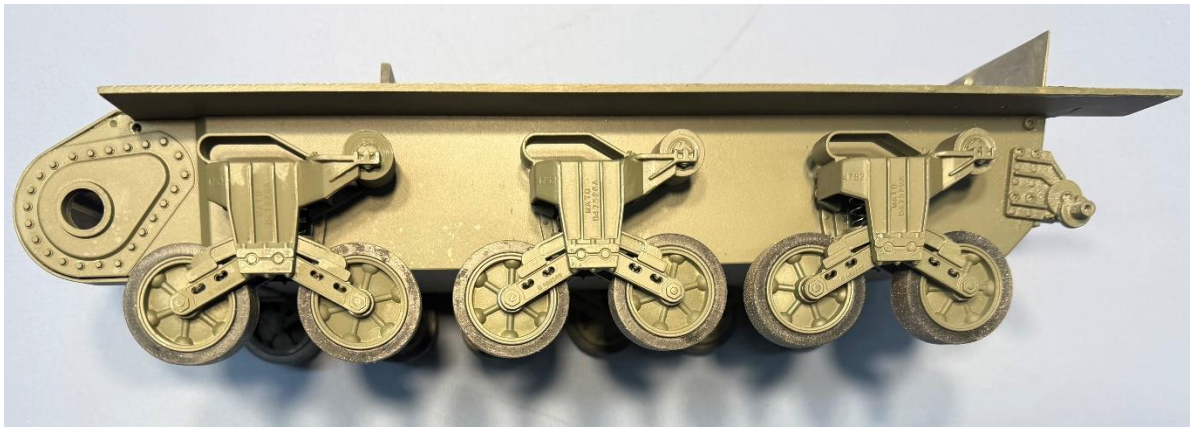
A new exhaust louver/vent is not readily visible because it is recessed high above the new access door, so I elected not to fabricate and add it. Don't forget the brass wire handle on the Rear door.

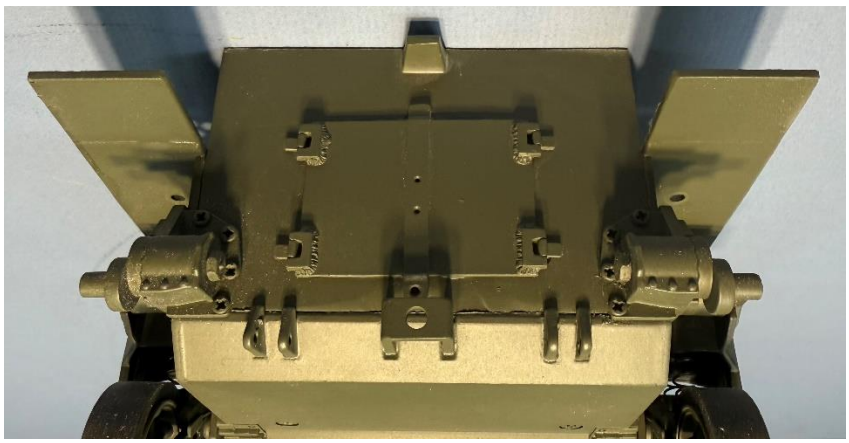
4. **Lower Hull:** I decided at this point to paint the lower hull and running gear (I used Krylon Camouflage #4329 Olive Drab spray paint). Painting requires removing all the running gear from the hull….be sure to keep track of the order of what suspensions you take off and keep all the parts together for proper reassembly. The following pictures show all this work. Remove the rubber tires before painting. Scrape paint away from close fitting parts and add oil to areas that slide or roll on another part.



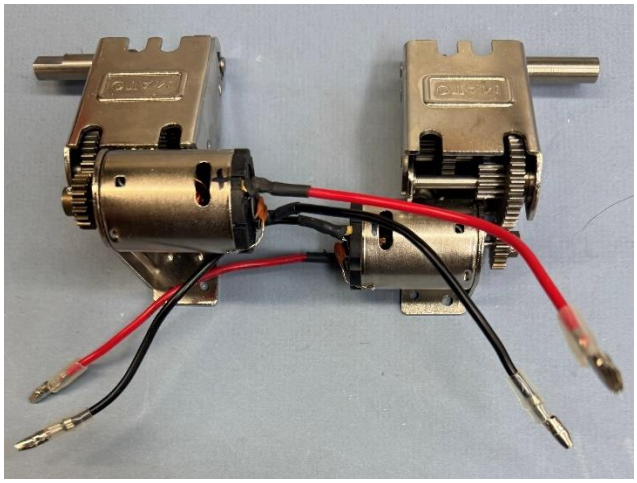


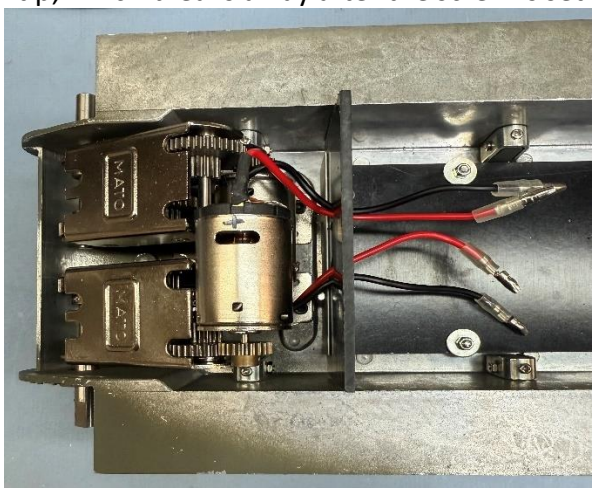






5. **Install Gearboxes:** First remove the front metal Glacis Plate from the lower hull (I chose not to install the resin version of the Glacis Plate bc it was too wide and was warped). Before installing the gearboxes, determine which of the motor leads are positive and negative. Solder the wire leads to the motors accordingly. Now install the 2 gearboxes. There are only 4 black allen-head screws for mounting. They screw on tight, down thru the gearbox frames into the lower hull, but I have to question why Mato didn't use 8 for mounting for better strength? To keep from losing the screws off the allen wrench (they are steel and the motor's magnets pull on them as they slide by), I chose to hold them with a tiny bit of glue to the allen wrentch tip, which breaks away after the screw is set.



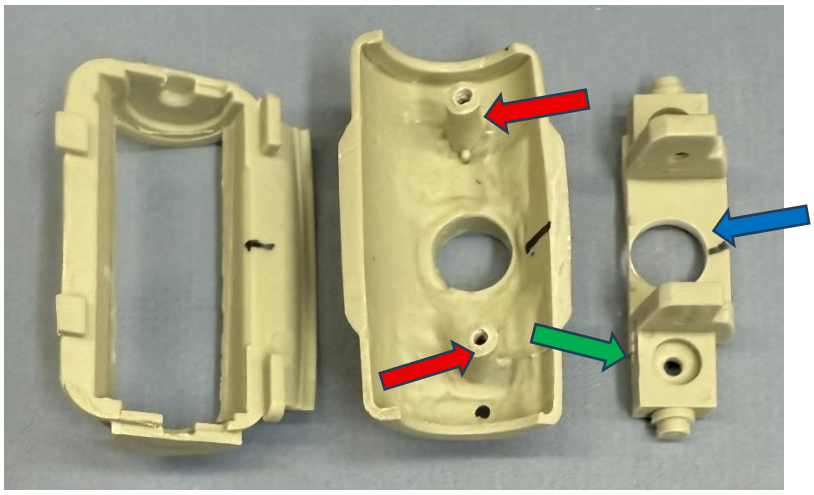


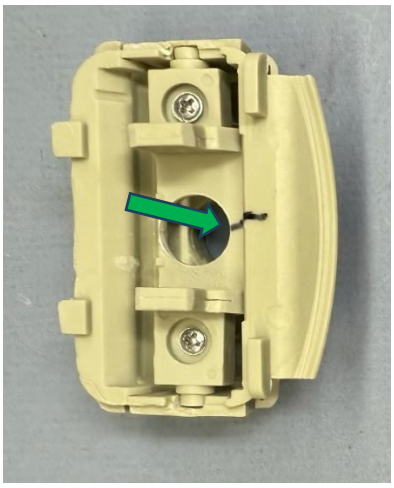
6. **Sprockets and Rollers:** After you have painted them, you can now install the Drive Sprockets and Return Rollers to the front and rear axels. The Sprocket Covers need to be ground down some on the back side, so there is enough room for them to set down over the axel anchor screws. I also had to clean the paint out of the thread area on the Sprockets to get the covers to turn easily. You might consider some type of rubber glue to make sure they don't come loose?

7. **Tracks:** I like my tracks to have a base coat of Red Primer on both sides, and then I add heavy coatings of AIM Products Weathering Powders #110-3104 "Dirty Yellow" and #110-3122 "Dark Buff" to both sides in "splotches and spots", which is then sealed with Testor's Dullcoat. The inside teeth of the treads where the wheels rub, are accented with silver paint to replicate a steel on steel look where the paint would wear off. Use blue masking tape to protect areas where the silver paint should not be. You may want to add silver highlights to the roller on the top of each suspension bogie unit to replicate the steel on steel look. Also coat the outward facing track links with a light steel look to replicate wear and tear of the track on ground or pavement.

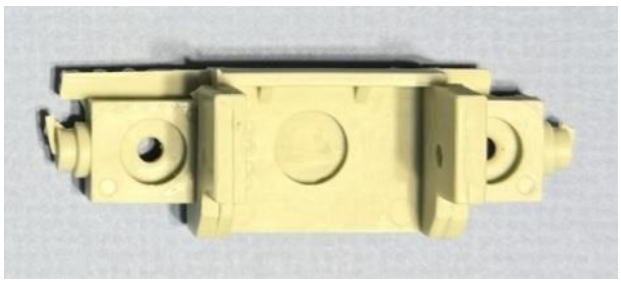
Extra Track Links: Be sure to paint the extra track links that get mounted on the Upper Hull and/or Turret, but do not make them as dirty as the main tracks….these may not have seen any action yet. **NOTE:** You may need these for your track to fit properly around all the wheels, so check first before mounting on the Turret.

8. **Mantlet:** I had originally planned to make the barrel retractable and use Tamiya parts, but there wasn't enough room in the Turret for the Tamiya recoil mechanism. This then means that the mantlet pivot casting from the resin kit has to be used. I figured out how it fit together……see 1st picture. You also have to drill the barrel center hole to a ½" diameter size if you use an aluminum barrel.

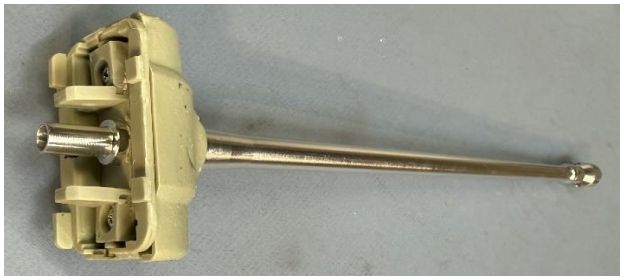
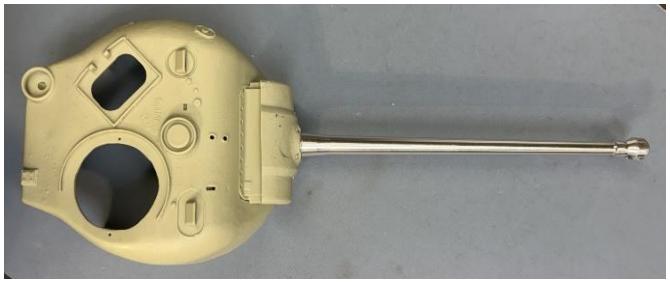




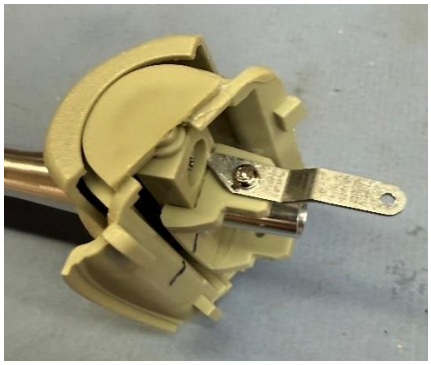
You will have to drill small lead holes in the 2 stubs (see red arrows) so they don't split when trying to twist the screws in. These have to be exactly in the center bc the 3 resin parts have very little room for error when lining up. I also found that to get the rotator piece (blue arrow) to rotate the barrel far enough downward, that you have to grind off some of the resin body. This will result in a very thin structure as shown at the green arrow. This will be overcome when you glue the barrel to this piece. See next 2 photos for details of what to grind off and round. Compare the pictures to your parts.



The final assembly with barrel looks like this.

Next the connector arm to the barrel up/down motor is needed. I used the two corresponding Tamiya parts, but both had to be shortened. Cut the bracket off about 3/16th" to the left of the middle hole and file down. A small screw goes thru that hole to secure the bracket to the resin mantlet part.

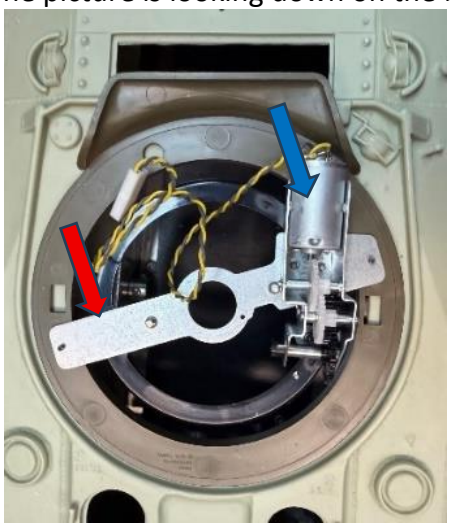



9. **Turret:** The Turret requires a fair amount of work. The hatches need to be opened up (I used a .306" diameter Dremel grinding tool). Lots of resin powder flies everywhere so use a mask. First predrill ¼" holes in the hatch areas to eliminate some of the resin to be removed.

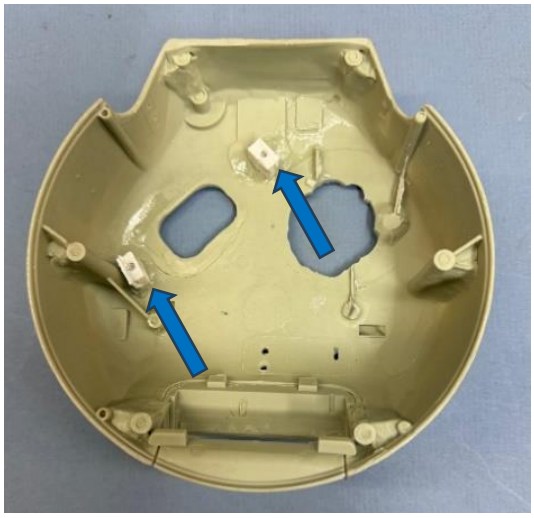
   A. The Resin lower base piece was warped so I substituted a Tamya Sherman lower base piece instead, The Tamiya base fit is not perfect with the upper piece, so some putty filling will be required at blue arrow. But, BEFORE gluing the two pieces together, complete the steps below.

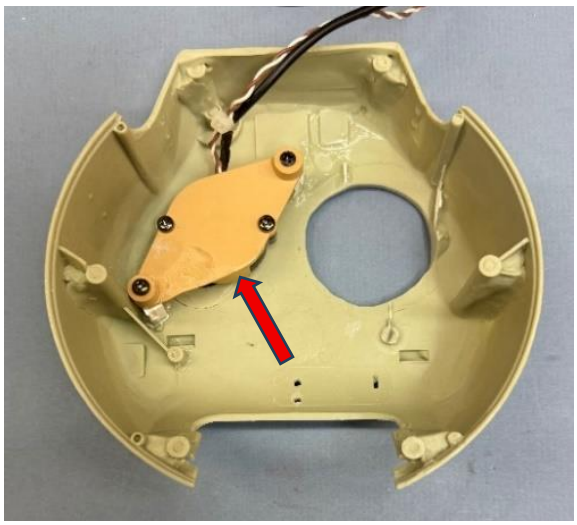

This is how the putty looked before and after.


B. The Tamiya base has the Tamiya barrel elevation motor installed (blue arrow) and the aluminum cross piece (red arrow). The picture is looking down on the base as it sets inisde the Turret

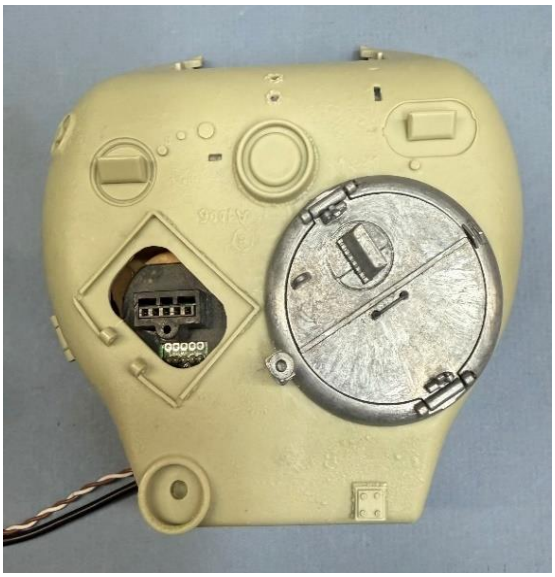


C. To mount the Tamiya TBU IR base to the Upper Turret piece, you will need to glue a couple of spacer pieces (about ¼" thick) as shown in the next picture (blue arrows). The second picture shows the IR unit installed. I had to grind some of the IR base off (red arrow) to permit proper rotation of the Barrel Elevation Motor.

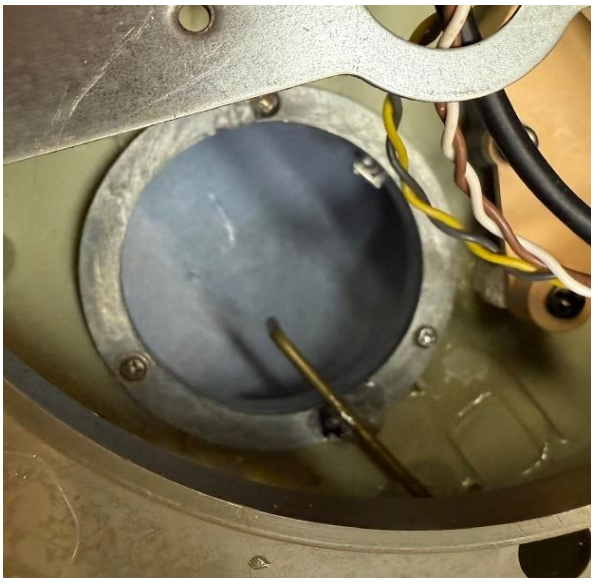




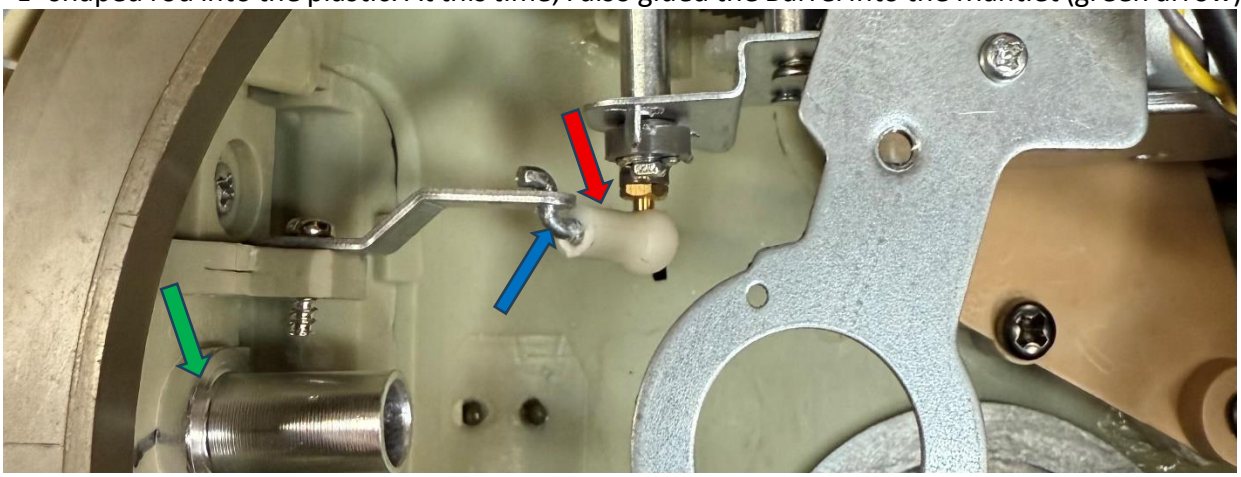
D. **Commander's Hatch Cover:** For the Commanders Hatch I elected to install a Mato Sherman metal hatch, which required making the opening a bit larger and cutting for the 3 screw nubs. I also had to remove the water strip on the Turret top (see green arrow).



E. If you are going to have a Commander figure setting in the Commander's Hatch, you need to build in the mounting rod at this point. The rod is .070" diameter brass with an "L" shaped bend on one end. Be sure you know where your Commander will set before gluing the rod.

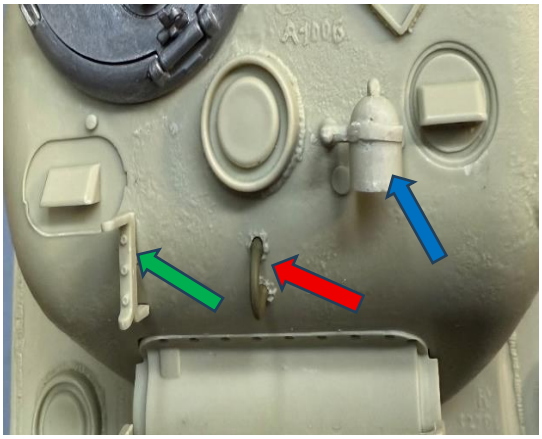


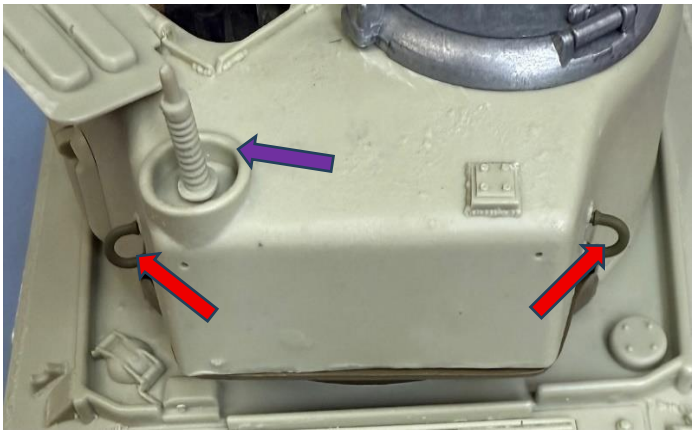
F. The Mantlet should now be glued to the Upper Turret piece. The metal arm on the Mantlet connects to the Barrel Motor and I had to shorten both the white plastic extender (red arrow) and the metal "L" shaped rod (blue arrow) to get the up/down motion to work right. Glue the "L" shaped rod into the plastic. At this time, I also glued the Barrel into the Mantlet (green arrow).



G. Loader's Hatch Cover; 3 Lift Rings; Rear Left Antenna; Open Sight Guide; Search Light: All of these are shown in the photos below. The Loader's Hatch Cover will not fit flush bc the TBU IR base protrudes above the lip. To make the hatch moveable, drill a .039" dia. hole for a brass rod that is ½" long. Lift Rings (3 red arrows) are from my Tamiya stash of extra parts.

I used these rather than the resin ones in the kit. Open Sight is green arrow. Search Light is blue arrow and is not glued in place if an FPV Camera is going to be mounted on the Turret top. See section 10.U.a.



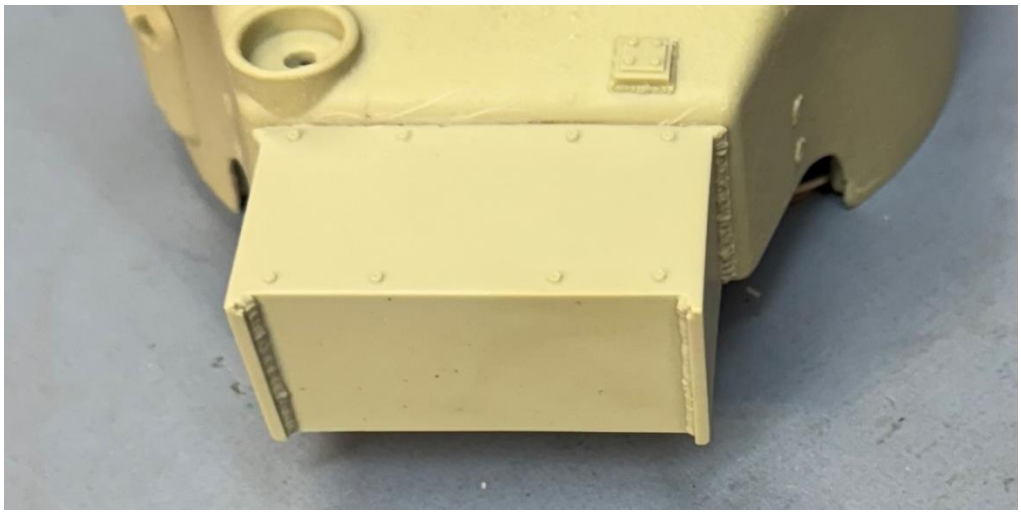


Left Antenna is purple arrow above, but it may be easily breakable, so I replaced it with a better quality part shown below. I always file the metal aerial to almost a point.

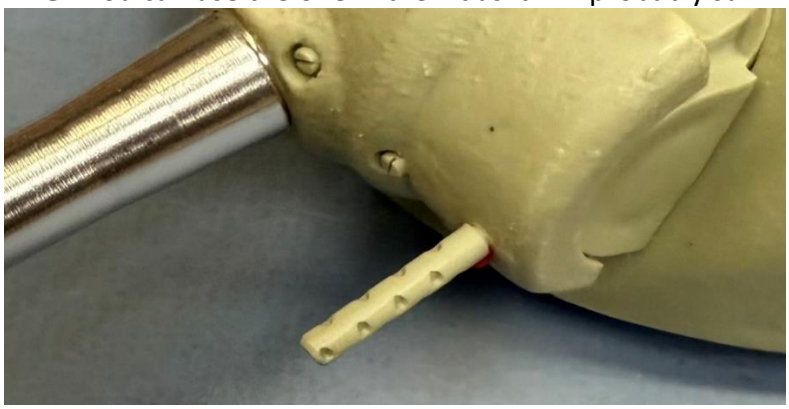
H. **Two Periscope Covers:** Open up and fill with Micro Kristal Klear after the Turret is painted. You may want to tint the Krystal Klear after drying to replicate a glass color.

I. **IR Flash Bulb:** A Tamiya compatible IR flash bulb must be inserted in the end of the barrel with the wires running back and down to the electronic board. Since I chose to use Tamiya electronics, this is fairly straightforward. FRAG uses a Restrictor on the end of the bulb to limit how big the IR beam is. FRAG's is designed so that it is only 6" in diameter at 30'. You can find the design parameters at FRAG Mods to the TBU System…be sure to paint both the inside and outside black.

J. **Radio Stowage Box on rear of Turret:** Glue the Radio Stowage Box to the back of the Turret. Be sure it is facing up the correct way (8 bolts face up).



K. Coaxial 30 Cal. MG: You can use the one in the kit as it will probably survive in that location.

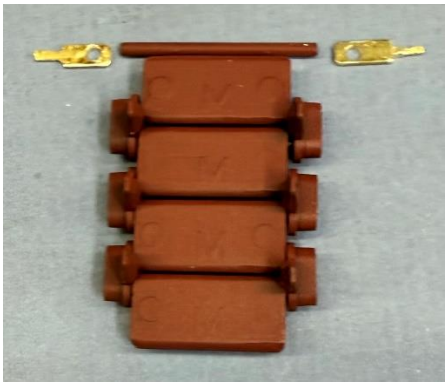


L. Turret 50 cal. Machine Gun: I used the cast pewter 50 cal. MG from AFV-Models.de in Germany, Part No. DT16009A. It has crisp lines and when painted, looks superb. I will add a couple small chains to the gun once it is painted (red arrows).

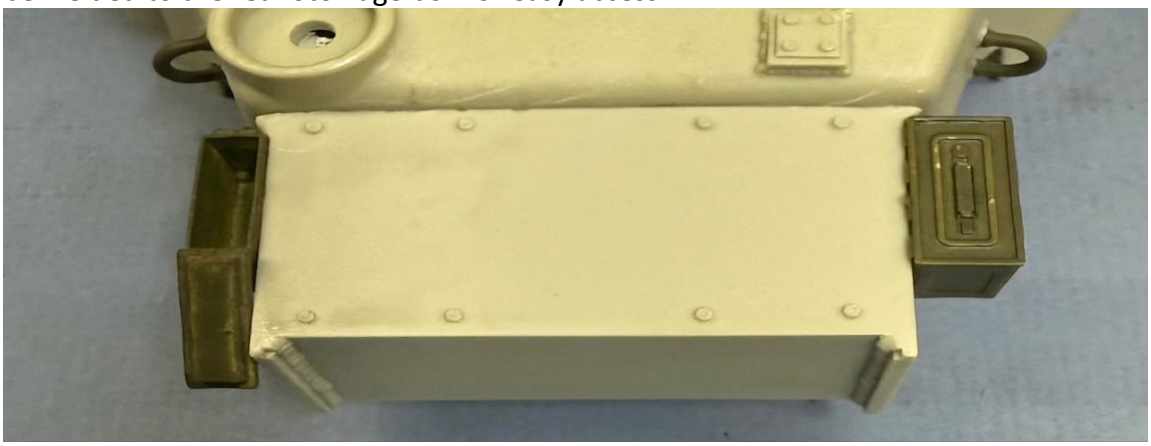
M. A Few Details to Consider Adding to Turret:

a. Vane Sight (also called Blade): Assists the Commander in lining up the barrel on a target. It is located on the top front right of the Turret. Use a brass rod to stabilize the mounting.

b. **Extra Track Links on the Turret:** The extra Track Links can be added to both sides of the Turret for additional protection. The (8) brackets are just brass bar stock cut, drilled and filed to shape.

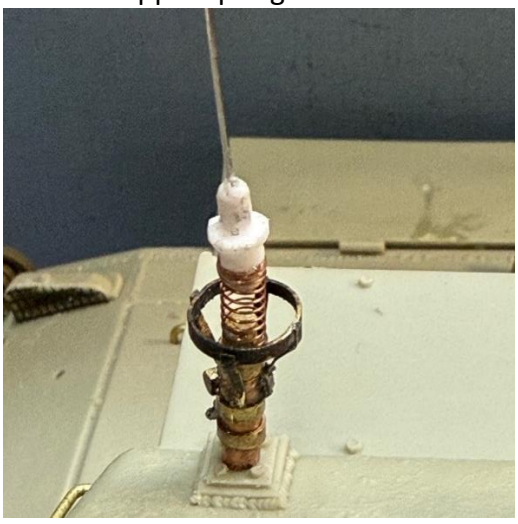


c. **Ammo Boxes welded to Radio Stowage Box:** Both 30 cal. And 50 cal. Ammo boxes can be welded to the rear Stowage box for easy access.

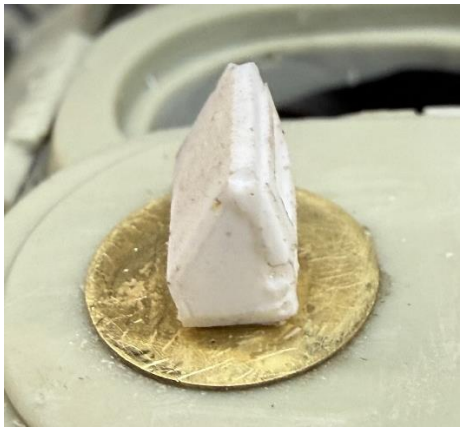


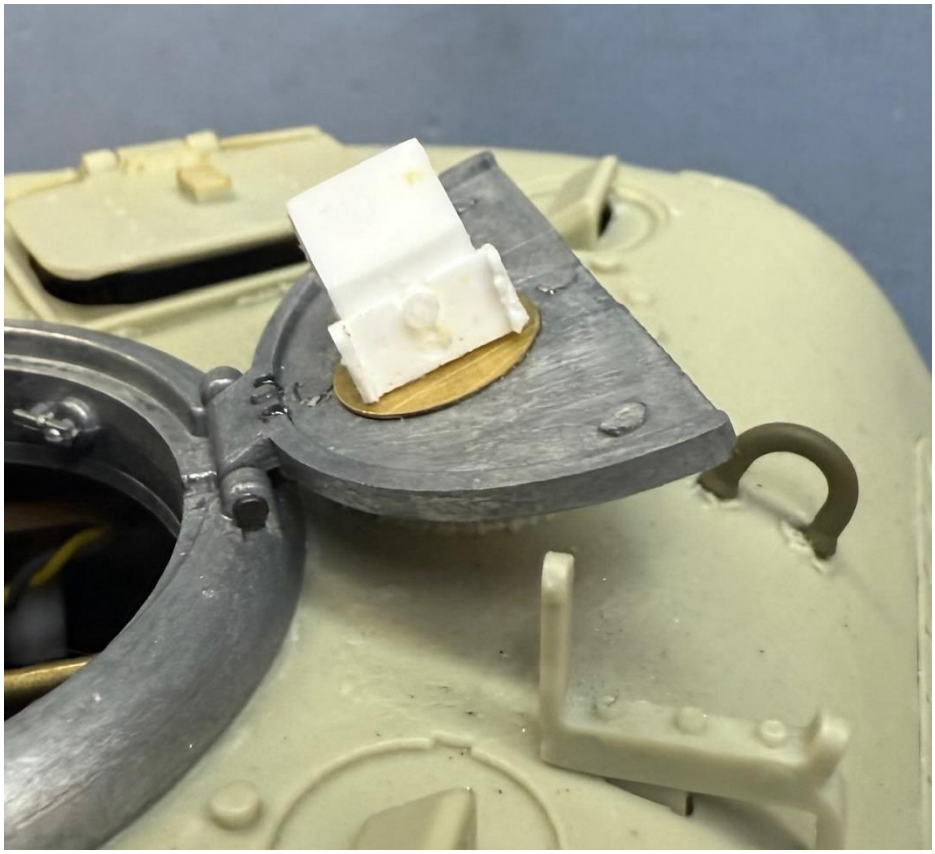
d. **"Spent" 50 cal. shells on top of Turret**: This picture is from a different model, but shows how these spent casings are added after all painting and weathering is done. The casings are brass and come from a couple sources on eBay.

e. **Rear Right Antenna:** This part has to be scratch built from soldered brass parts and resin radio "mast" parts, plus a small copper spring .

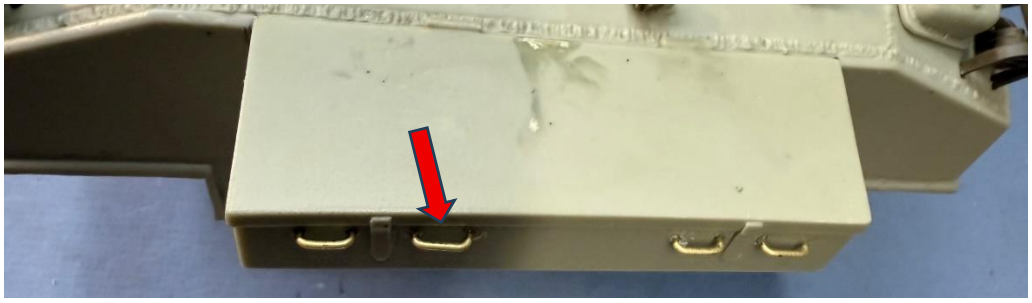


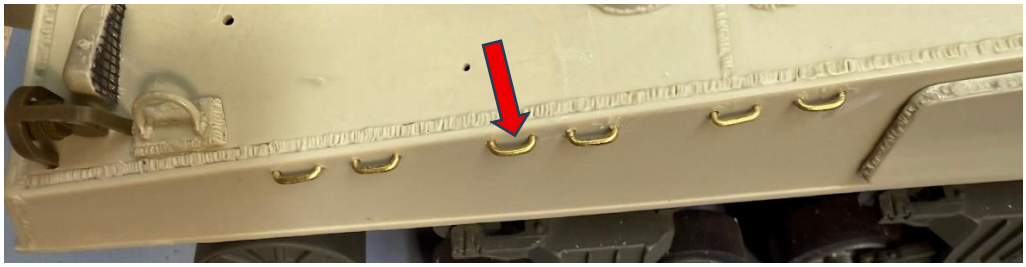
f. **Periscopes inside of Hatch:** When the Driver's and Assistant's hatch were open, they looked barren, so I elected to add the inside part of a periscope to each. I did the same for the Commander's hatch. The 2nd picture shows the material used: a thin brass disc, the scope and the wire which glued them in place. Be sure to line up with the top scope door. The resin part was from a mold I previously made for another model.





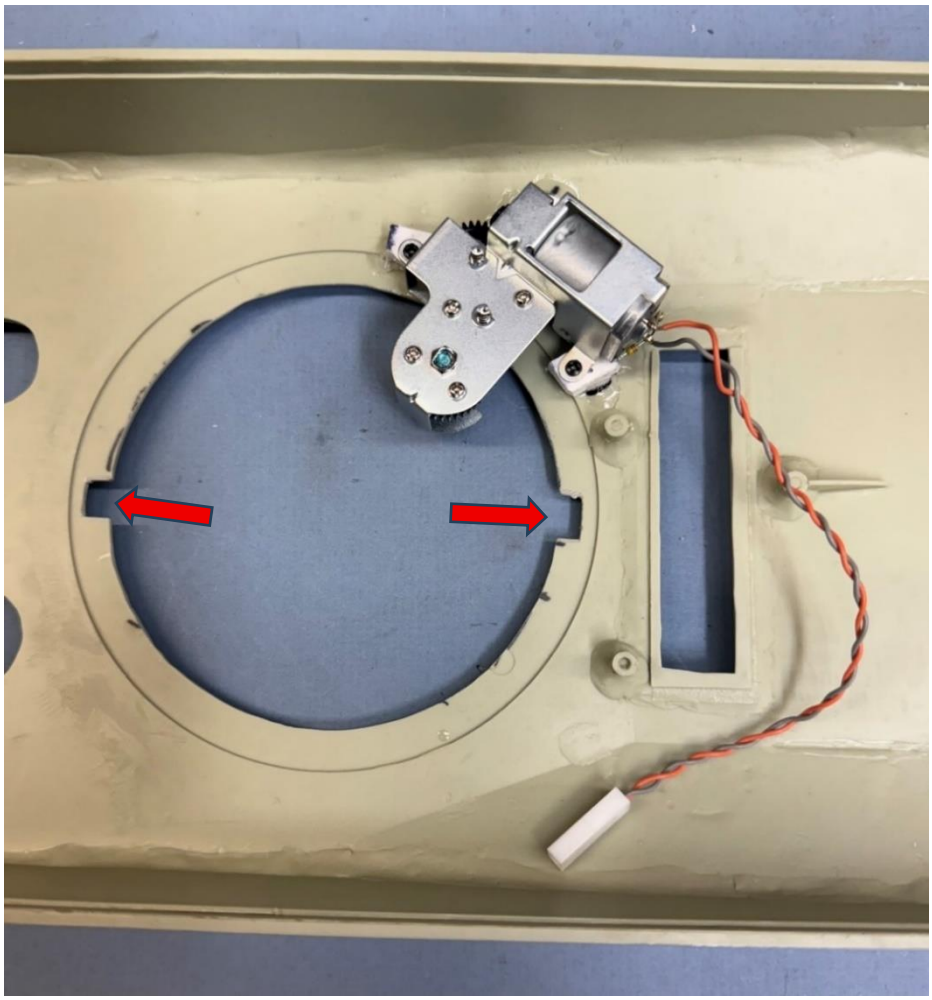
g. **Wire Hanger for Packs:** I like to use actual straps to hang my resin back packs rather than gluing them on, and the easiest way to do that is to drill 2 holes and glue a wire hanger. The wire hanger is a "U" shaped .039" brass rod x .30" wide (OS dimension). You can also add putty around the rod where it enters the Turret so it looks like it was welded. I added a total of 28 wire hangers to the Turret and Upper Hull (red arrows typical).





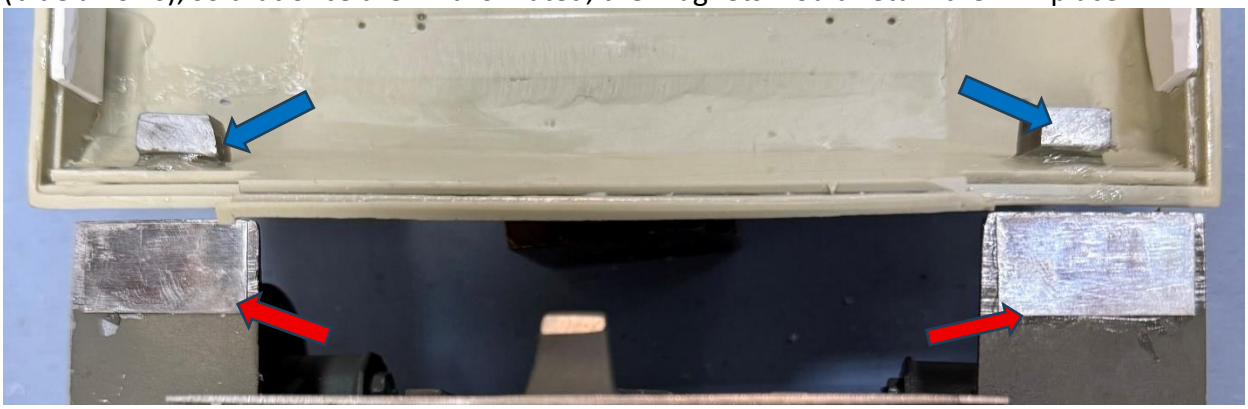
10. Prepping the Upper Hull: Before painting the Upper Hull, there are details that need to be added:

A. **Adding the Turret Rotation Motor:** This is a bit of a challenge in that there are no locator holes for the 3 motor screws to position it properly. I had to raise the motor about 1/4" from the inside of the Upper Hull with foam core board so that the motor's gear which mates with the turning ring, sets flush and all the teeth fully engage. Fortunately, my lower Tamiya Base piece of the Turret sets very close inside the opening in the Lower Hull, so it doesn't wiggle, and the 3 black wheels usually used in a Tamya Sherman to keep the Turret centered, are not needed. I did round and smooth the edges of the 2 openings in the Upper Hull (see red arrows) and the corresponding tabs of the Base piece (used to keep the Turret from falling out) so that as it turned 360 degrees, it didn't get hung up.

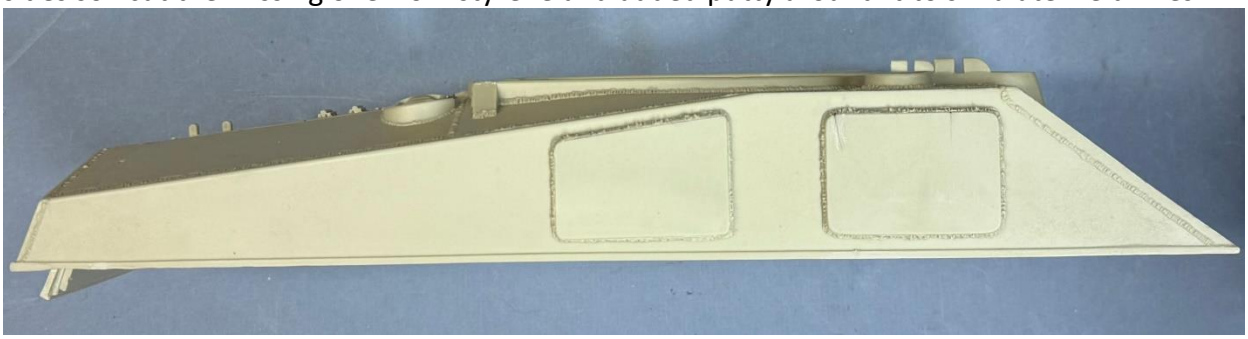


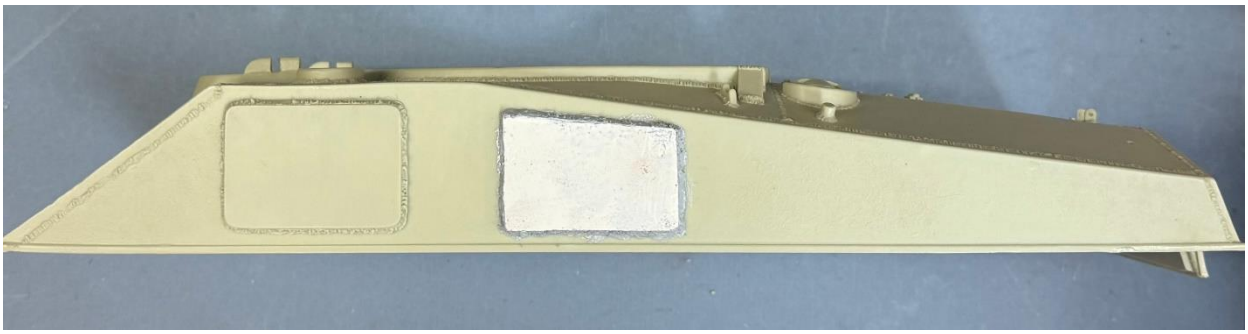
B. Poor Fit Adjustments: Because some of the resin castings were out of size, I had to add some styrene strips and pieces to make everything fit tighter. The first picture is the rear of the Upper Hull so it would fit tighter over the Lower Hull. The second picture is at the front so the upper Hull is snug against the Glacis Plate. All styrene is shown by blue arrows.

C. **Anchor Top Hull to Lower Hull:** I chose to glue a very thin flat piece of steel sheet to both rear corners of the lower Hull (red arrows) and then glue magnets to the inside rear of the Upper Hull (blue arrows), so that once the 2 hulls mated, the magnets would retain them in place.

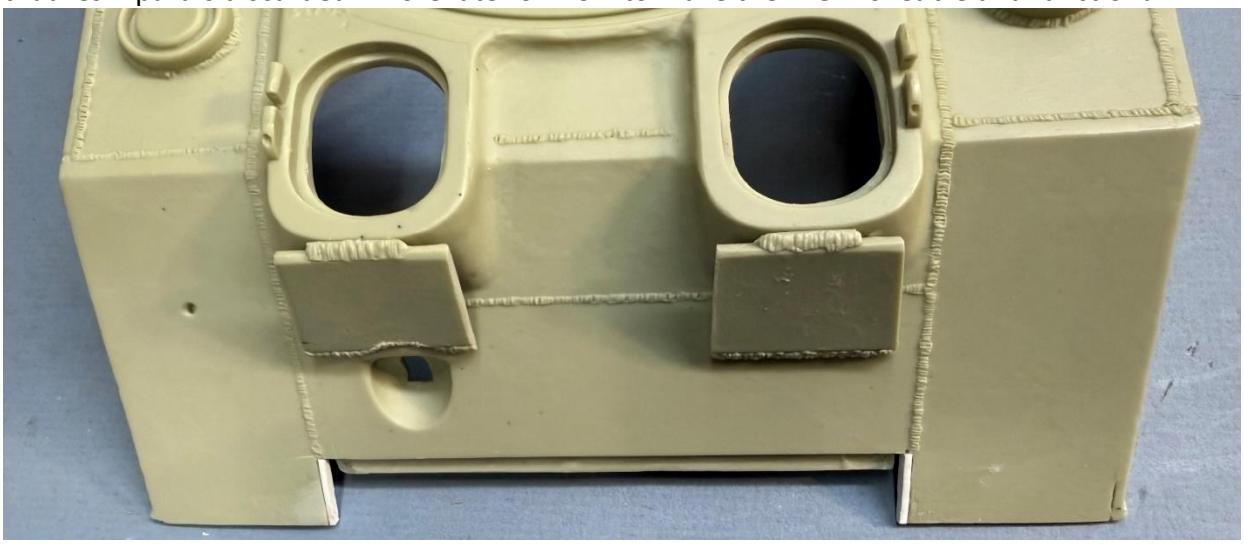


D. **Additional Armor Protection:** The resin kit comes with a few "Applique Armor" pieces that need to be glued onto the sides of the Upper Hull if you are inclined to add them**.** These were typically used to provide added protection for stored ammo inside. I wanted the angular pieces on both sides so I cut the missing one from styrene and added putty around it to simulate weld lines.



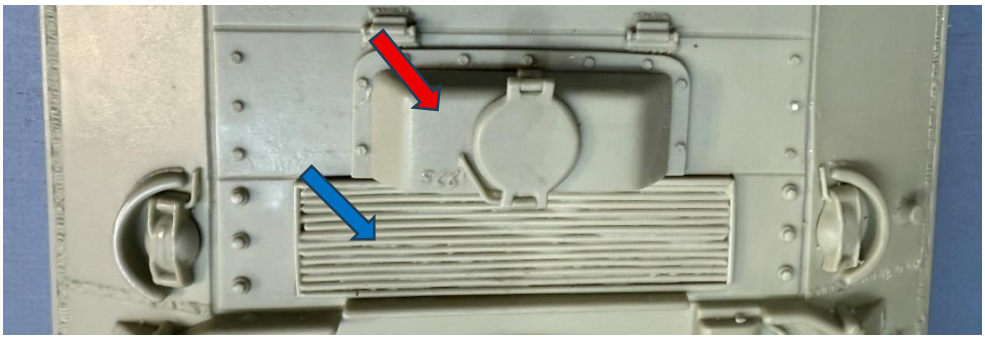


The two front hatches also get a bit of additional protection. I chose not to cover the MG port so that resin part is discarded. More later on how to make the MG moveable and functional.



E. Working Hatch Covers: I drilled thru carefully and used .047" dia. brass wire for both the hinges and handles.

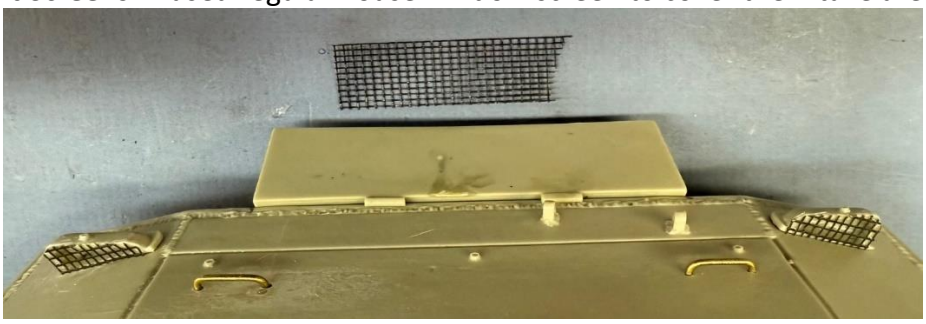
F. Upper Hull Rear Main Vent and Access Hatch: Glue these two resin parts on the Upper Hull as shown. If you are up for it, you could scratch build the Rear Main Vent (blue arrow) so you can look thru it. Red arrow shows the Radiator Cover.



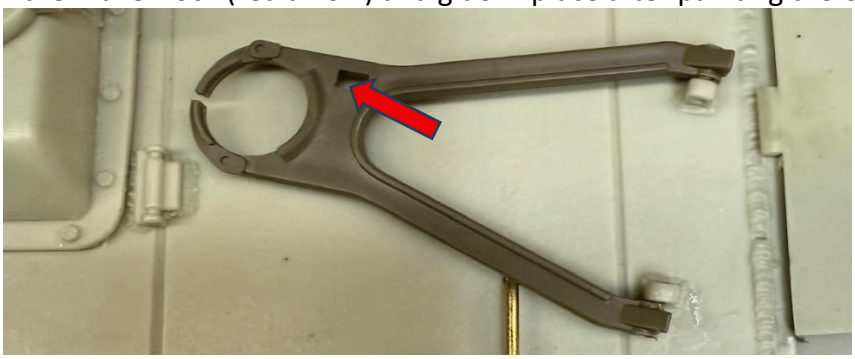
G. Wire Handles: I used .047" dia. brass wire for all the various grab handles thru out.

H. Air Vents & Stowage Box: Add the two Air Vents (red arrows) on the back sides and the Stowage Box centered to the rear.

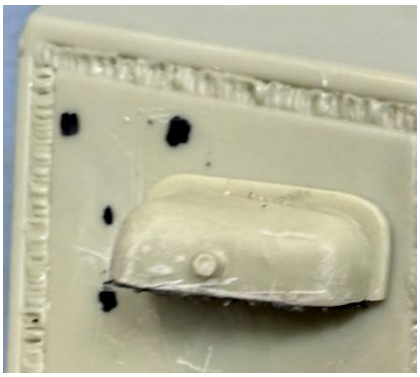
I. **Air Vent Screens:** I used regular house window screen to cover the intake area of the vents.

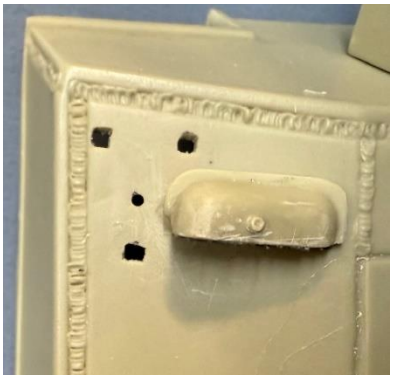


J. **Barrel Travel Lock:** The resin casting for this part is way too fragile, so I decided to use a Tamiya plastic version that I had in stock. I mounted it to the pivot points that were cast onto the hull using .047" diam. brass wire glued to the cast resin hinge points. The second photo is of the locking mechanism to hold the Barrel Travel Lock in place of the deck. Drill a hole in the slot of the Travel Lock (red arrow) and glue in place after painting the Upper Hull.



K. **Rear Upper Hull Lights and Guards:** The resin kit does not provide for these parts so I used extra Tamiya Sherman parts that I had saved. I first located where the holes would be then drilled the holes and cut them square with an Xacto #11 blade. Unfortunately, these lights are not functional.



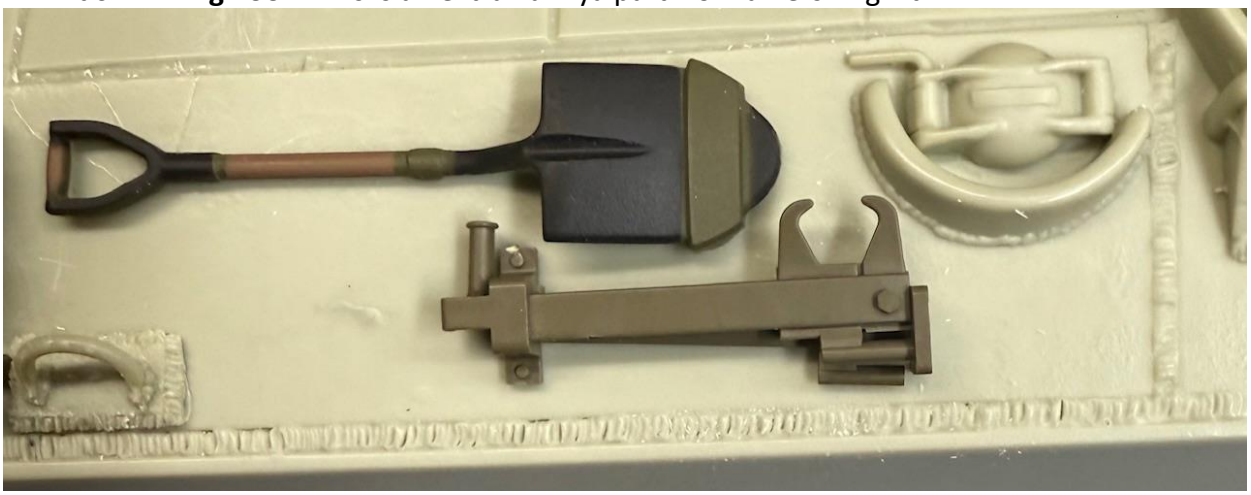


L. Rear Lift Rings: I don't have much hope for these 2 resin Lift Ring parts (red arrow) surviving, so I will try to place bedrolls or something over or around to protect them. Locate them after the Rear Light Guards are glued in place.

Also note placement of plastic Track Wrench (from my Tamiya stock of parts).

M. Tools: Most of the tools are mounted on the rear left side of the Upper Hull by the Track Wrench. The Shovel is mounted on the rear right side of the Upper hull. I used spare Tamiya or Heng Long plastic parts. None are supplied with the DGS resin kit.

N. Track Linking Tool: This is an extra Tamiya part from a Pershing kit.



O. Front Track Fenders: These are hard to line up and required about 1/8th of the side section to be ground off so that it sets low enough to the tracks. I found that gluing them in place is easier without the tracks mounted. Reinforce with glue on the underside.

P. Front Antenna Housing: Mount this part on the upper right sloped front area of the Upper Hull.

Q. Front 2 Lift Rings: I elected to cut off the resin curved parts from the base and replaced them with Tamiya plastic ones for a stability.

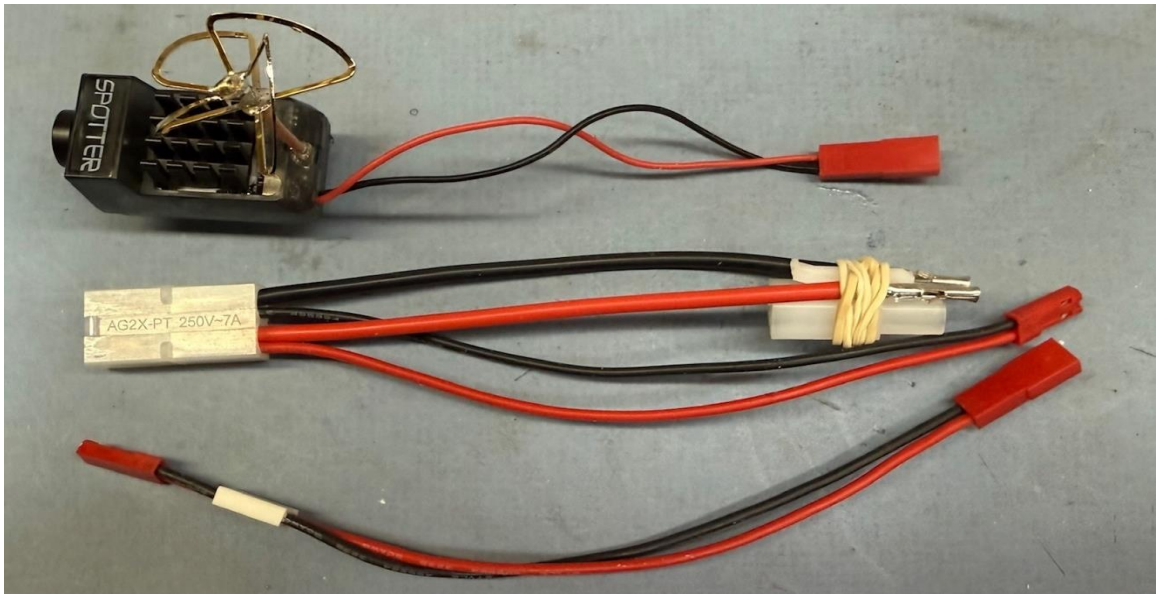
R. Front Upper 2 Hull Lights and Guards: These are Mato metal parts and the lights actually work. You will need to solder wire to the leads and connect to your electronics controller.

S. Bow Machine Gun: I used a Mato metal 30 cal. MG with flash unit. After the Upper Hull was painted. I decided not to make it moveable.

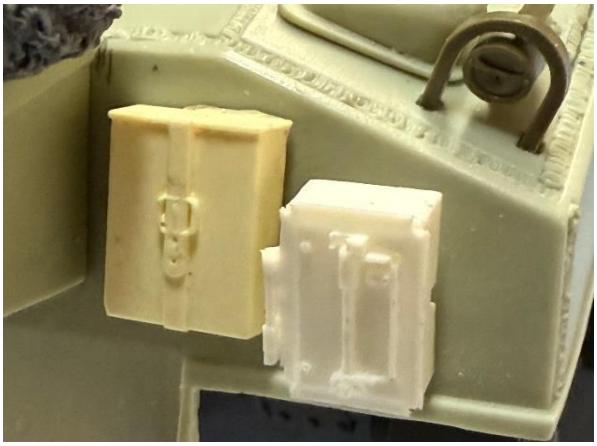
T. Tow Cable across Upper Hull: I used a Schumo metal Tow Cable which comes with various mounting brackets.

U. A Few Details to Consider Adding:

a. Wiring for FPV cameras: FRAG runs its battles using mini FPV cameras mounted on top the Turret. They are anchored either by a magnet glued under the Turret top or w/ Velcrow affixed on top using double sided tape. This installation proved to be very challenging as the camera is supposed to be centered over the barrel and I wanted the Commander Hatch doors to be open, and I still needed enough clearance for the LegoDEI BTU Apple. This first picture shows all the wiring and camera that need to be installed. The camera gets power from the tank battery. The 2nd picture is how I used magnets to hold the camera. The camera has to be offset to the left a little bit to fit. Red wire goes down hole.



b. First Aid and Infantry Radio on corner: I added a First Aid box and Radio on the rear right corner for infantry access. These were from molds I had from other projects.



c. **Wood Board across the Glacis Plate to hold gas cans ect:** I used bass wood, with grain scribed into it by dragging an Xacto hobby saw (fine tooth) across it, them weathered with stain. The 2 “L” brackets are just brass bar stock. The bolts are small brass soldered to the “L” bracket on the underside. Same bolts are used to glue the “L” backets to the metal hull in the holes drilled for that purpose.

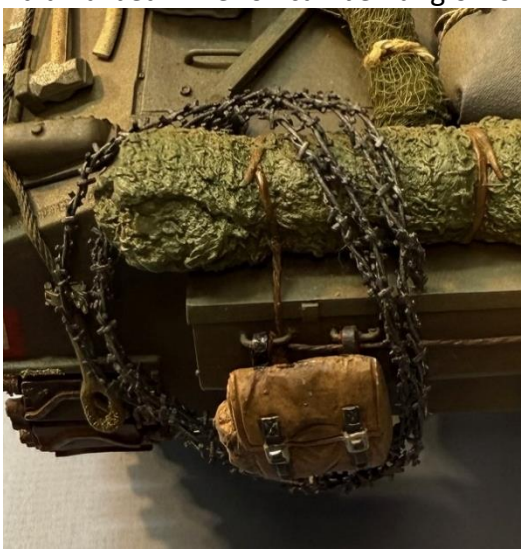
d. Extra Road Wheels: Prototype pictures show extra road wheels pretty much wherever they could be fit, so I placed mine front and center under the barrel on the Glacis. Anchor with a small brass rod glued into the back of the wheel and thru a hole in the Glacis.

e. **2 Towing Clevis’:** I cast 2 from a mold I had and mounted them in the front.

f. **Netting and Stowage in Rear:** Only a few items were used from the Value Gear package that was included with the resin kit by DGS. All of these are anchored with .070" dia. brass rods inserted underneath and will be glued to the Upper Hull after painting.

Home Made Netting: Can be shaped to fit any area & made from First Aid Gauze

g. **Barbed Wire:** Chain and a Barbed Wire roll can be hung off of any pack or tarp.

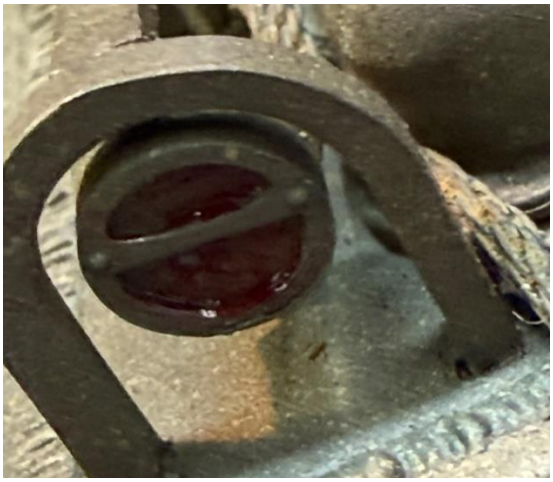


h. **Turret Vision Slots:** Fill with Micro Kristal Klear.

i. **Paint fuel cap handles silver:**

j. Add fuel spills and oil slop:

l. **Paint taillights red:**



m. **Add tie down straps to tools:**

n. **Add netting on barrel:**

11. **Add 2 British Tankers:** The resin kit that I bought for the British Tankers, only had 2 soldiers and it also contained 2 left arms for the Commander. So, I used a long plastic arm from a Tamiya German soldier spru that looked very similar to the British left arm. The Commander's body had to be shortened a bit, and I added a map to the Commander to cover up the large opening of the hatch. A Driver figure was glued in the lefthand hatch opening. He had to also be cut down to fit over the motors. The Assistant Driver's hatch will remain closed. The Commander is setting on a wire "L" shaped piece of brass rod (.070" dia.) This rod was later repositioned from what is shown in the picture below.

12. **Weathering Lower Hull and Suspension**: Before installing the Tracks, the Bottom Hull must be weathered on the bottom and sides, and the Suspension must also be weathered. I daubed splotches of Vallejo 73.807 European Thick Mud all over the place and then then daubed splotches of AIM Products Weathering Powders #110-3107 "Dark Earth" and #110-3122 "Dark Buff" which is then sealed with Testor's Dullcoat. In random patterns over this layer is daubed Vallejo 73.824 "Streaking grime". Notice that the inside of the wheels are not weathered since those areas are not seen.

I then added small amounts here & there of very fine sand, coated and sealed with Testor's Dullcoat.

13. **Lower Hull w/ Wheels and Track:** Once all the weathering is completed, and the tracks are installed, the Lower Hull looks like this. Don't forget to apply some of the Vallejo 73.807 European Thick Mud under the front and rear fenders and mud flaps bc the treads would have thrown mud everywhere.

14. **Decals:** Add the decals before weathering, so the "painted numbering" looks weathered as well. I chose markings to depict Sherman VC Firefly #45 of the 1st British Armored Battalion, 4th Royal Regiment, Guards Armored Division, during the Battle of Arnhem. An American star is added as most all British armor carried a star to signify being a member of the "Allied Forces".

15. **Paint and Weather Upper Hull and Turret:** Time to paint all the remaining main tank body parts. Again, use Krylon Camouflage #4329 Olive Drab spray paint, and weather with AIM Products Weathering Powders #110-3104 “Dirty Yellow” and #110-3122 “Dark Buff” and I also added small amounts here & there of very fine sand, and all was coated and sealed with Testor’s Dullcoat.

Paint Tools, Cables and Extras: Most all of the installation pictures are shown before painting, so now all those extras need to be detailed, painted and weathered before final installation.

16. Finished Pictures: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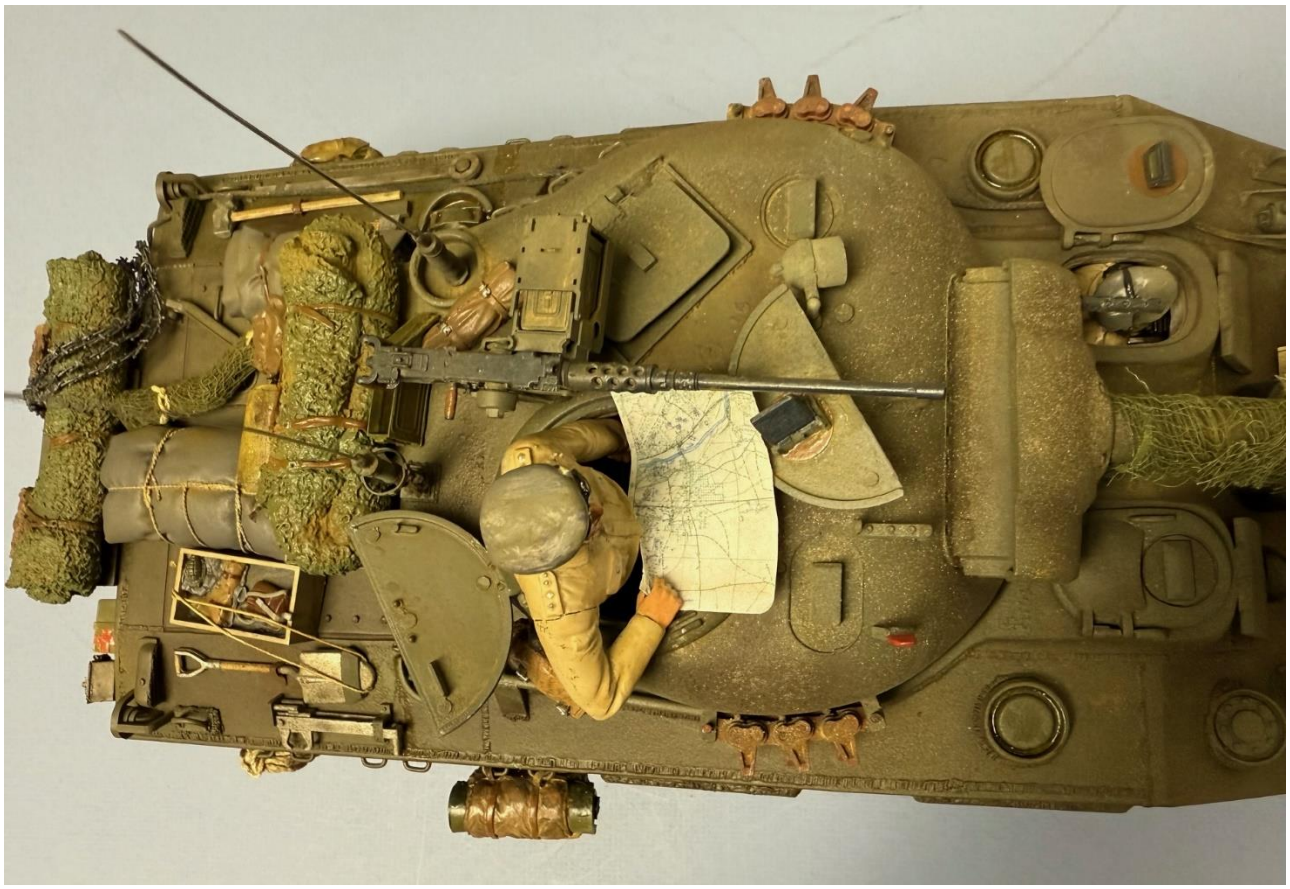


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