

Conversion Instructions for 1/16th 3D Printed M24 Chaffee Model Tank

Started: July 17, 2026 Finished: Sept. 24, 2026

by Paul E. Howald © 2026

Notes:

1. This construction article will discuss the modifications and effort to create a 1/16 scale M24 Chaffee RC model tank.
2. I researched pictures on the internet and referred to all of the books listed below for modeling information, prototype pics, and color choices. The 3D parts were from a member of FRAG, but he was provided no assembly instructions. So, I found and printed 1/35th instructions from Italeri to use as a general guide. Ideally, I would have liked to have obtained the instructions from the recently issued 1/16th Chaffee by Gecko Models, but that was not yet available.
3. **Be sure to read all these instructions below, before commencing work.**

Cost of Project:

1. M24 3D printed parts	\$100.00
2. LegoDEI IR Battle system V4 w mount	\$ 30.00
3. Heng Long (HL) 7.1 Board and Radio	\$113.00
4. (2) Low Profile ML49mm HL Gear Boxes	\$ 36.00
5. (1) resin Tanker	\$ 20.00
6. HL Speaker Unit	\$ 15.00
7. 7.2 volt Nicad Battery	\$ 25.00
8. Heng Long Sherman Tracks for conversion	\$ 18.00
9. Headlight & Taillight Bulbs	\$ 10.00
10. Heng long Turret Rotation Motor	\$ 20.00
11. (2) micro servos	\$ 15.00
12. (8) 40mm long Shock Absorbers	\$ 50.00
13. Resin Stowage items	\$ 40.00
14. 50 cal. MG part...plastic	\$ 20.00
15. Misc. metal, brass, plastic fabrication parts and numerous screws	\$ 80.00
16. Decals	\$ 21.00
17. Modeling time and talent	<u>\$400.00</u>
Total Cost	\$1013.00

Research Materials used:

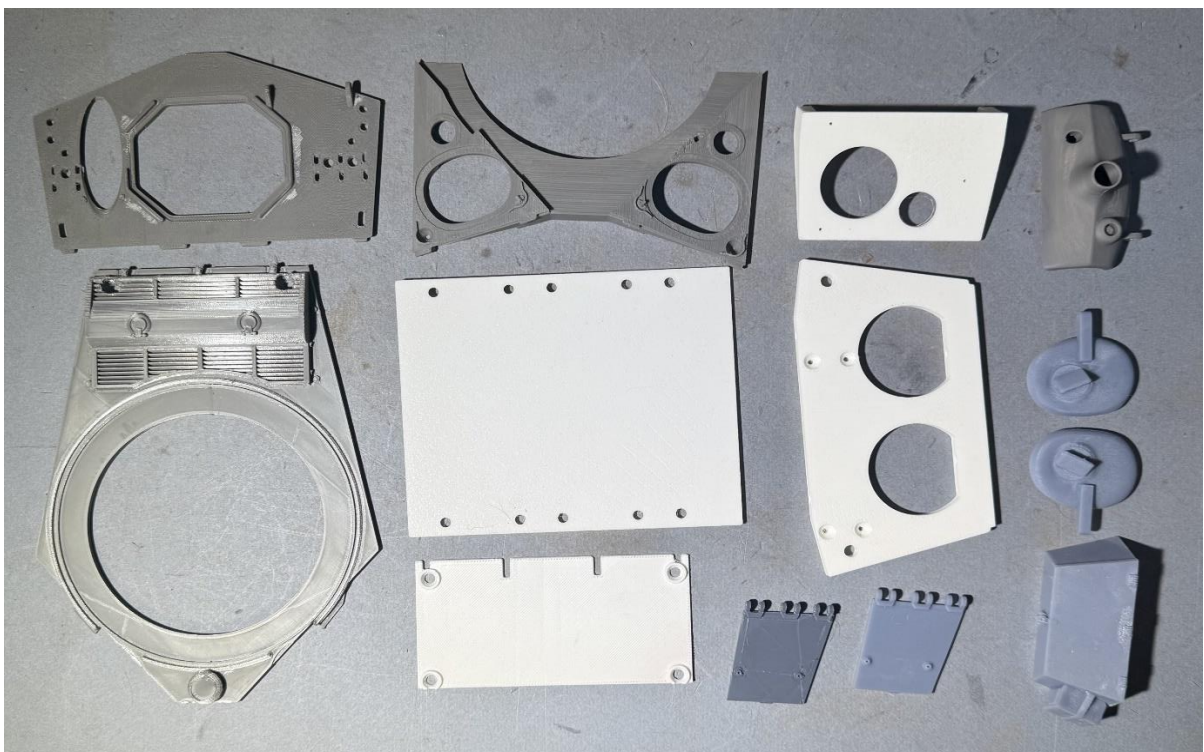
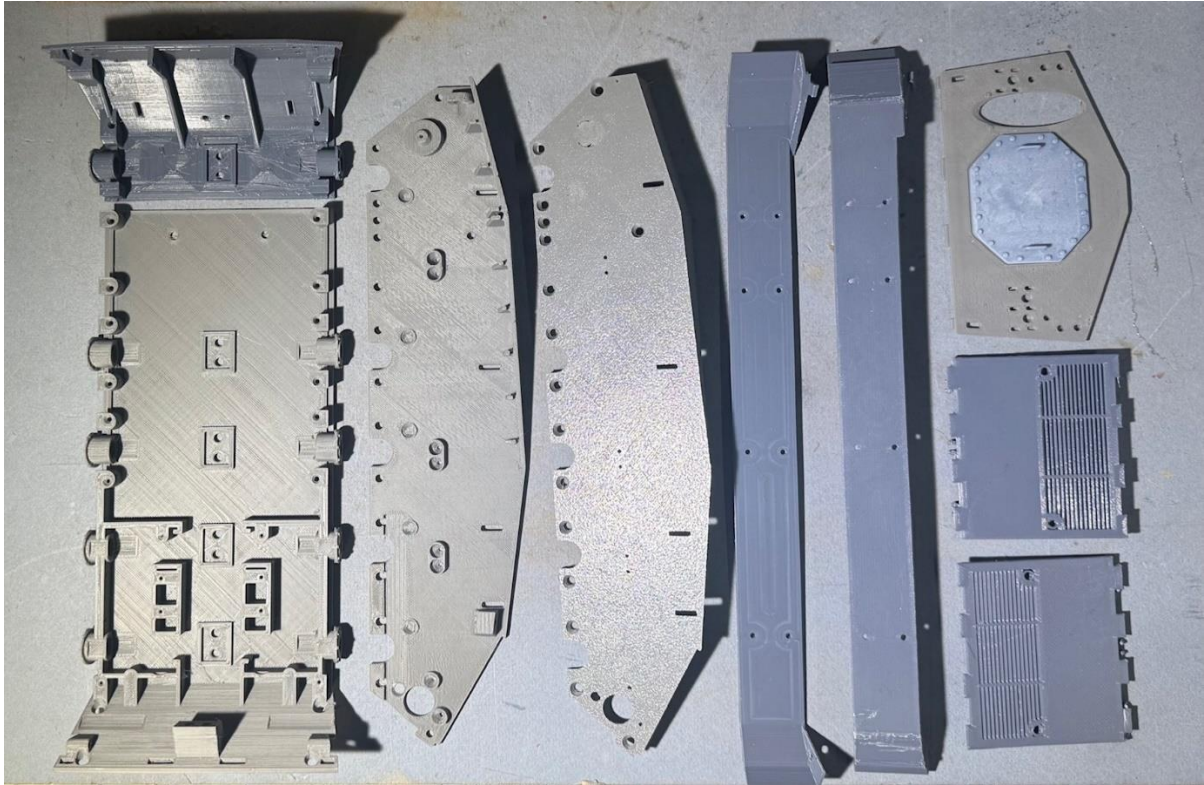
1. Osprey Vanguard #40 US Light Tanks 1944-84
2. Squadron Signal Armor #25 M24 Chaffee in Action
3. Squadron Signal Walk Around #5714 Chaffee
4. Concord #7038 US Light Tanks at War 1941-45
5. Chaffee 3D STL files at: [M24 Chaffee](#)
6. TM 9-1729C: http://www.easy39th.com/files/TM_9-1729C_Light_Tank_M24_and_155-mm_Howitzer_Motor_Carriage_M41_Tracks_Suspension_Etc_1947.pdf
7. AFV Data Base: <https://afvdatabase.com/usa/pics/m24chaffee/m24chaffee.html>
8. Construction Manual for typical 3D Tanks: [Manual - Google Drive](#)

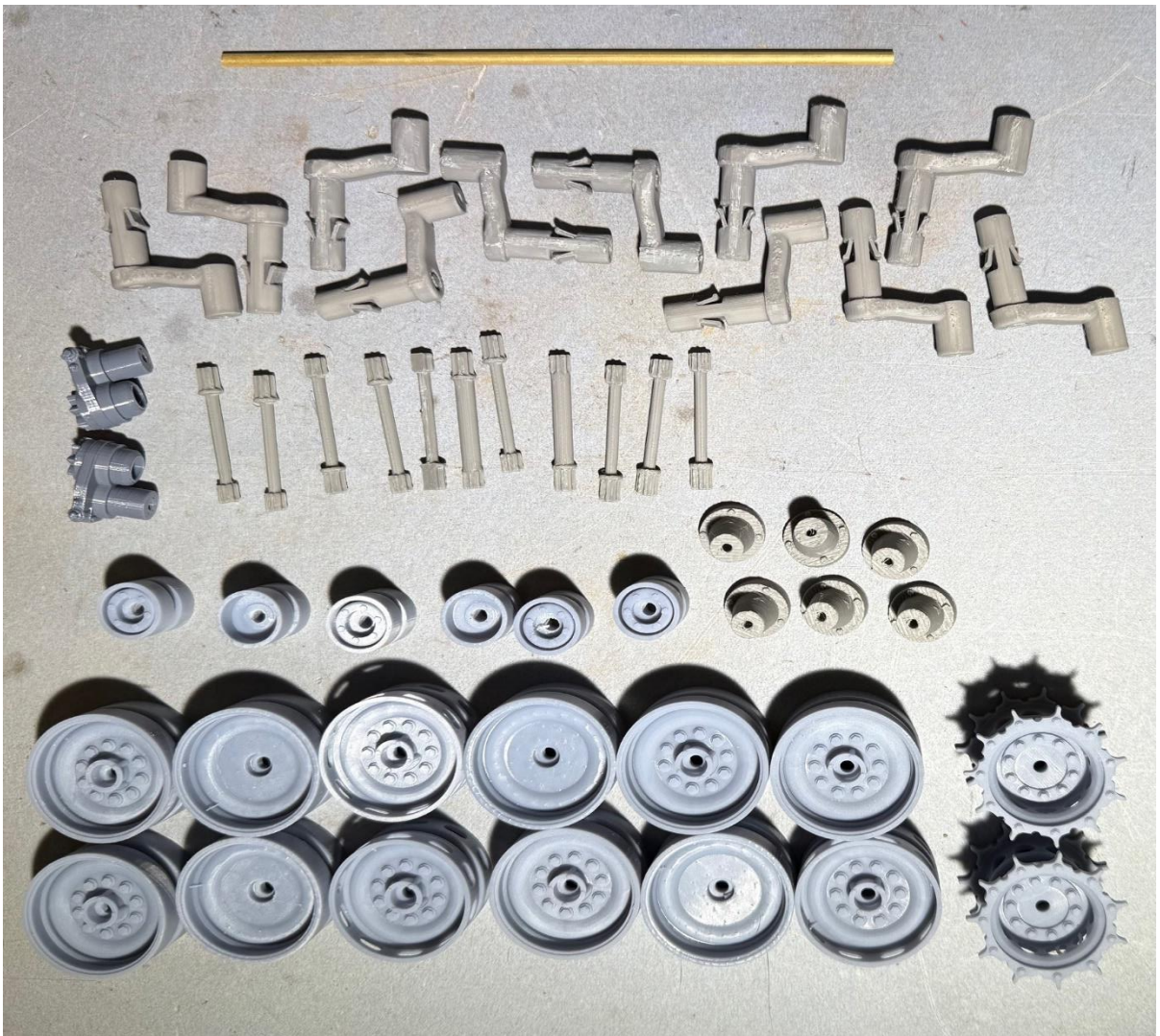
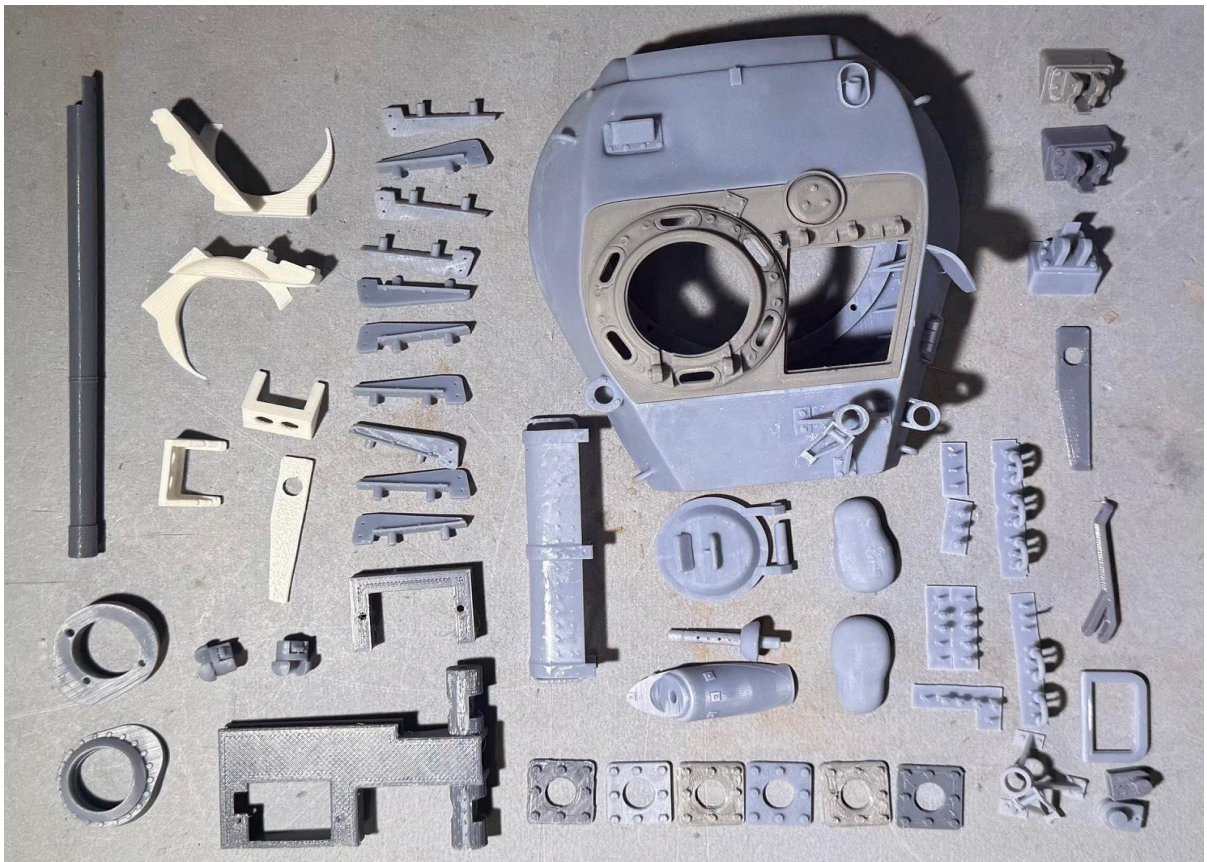
Commence Work:

1. **INTRODUCTION:** I first organized all of the various 3D printed parts into 6 subassemblies: Lower Hull; Running Gear; Track; Upper Hull; Turret & all Misc parts. These would need to be compared against the STL Files to see where and how they are attached. I also ordered the

Low Profile HL Gearboxes, HL Electronics and Radio, Speaker, Battery, track pins, 50 cal. MG, Turret Rotation and Elevation Motor, etc.

2. **RESEARCH:** Before beginning any modifications to the tank body, you need to look at all the research material and books you have gathered. Notate any pictures you want to use for reference (I make copies of many of these pictures), and decide what unique features your model is going to have.
3. **INSPECT ALL PARTS:** Once you unbox the 3D model parts, make sure you have everything that is to be installed. If you plan to add any new features to the model, make sure you have gathered these parts as well. Here are the pictures of all the 3D parts I was sent.

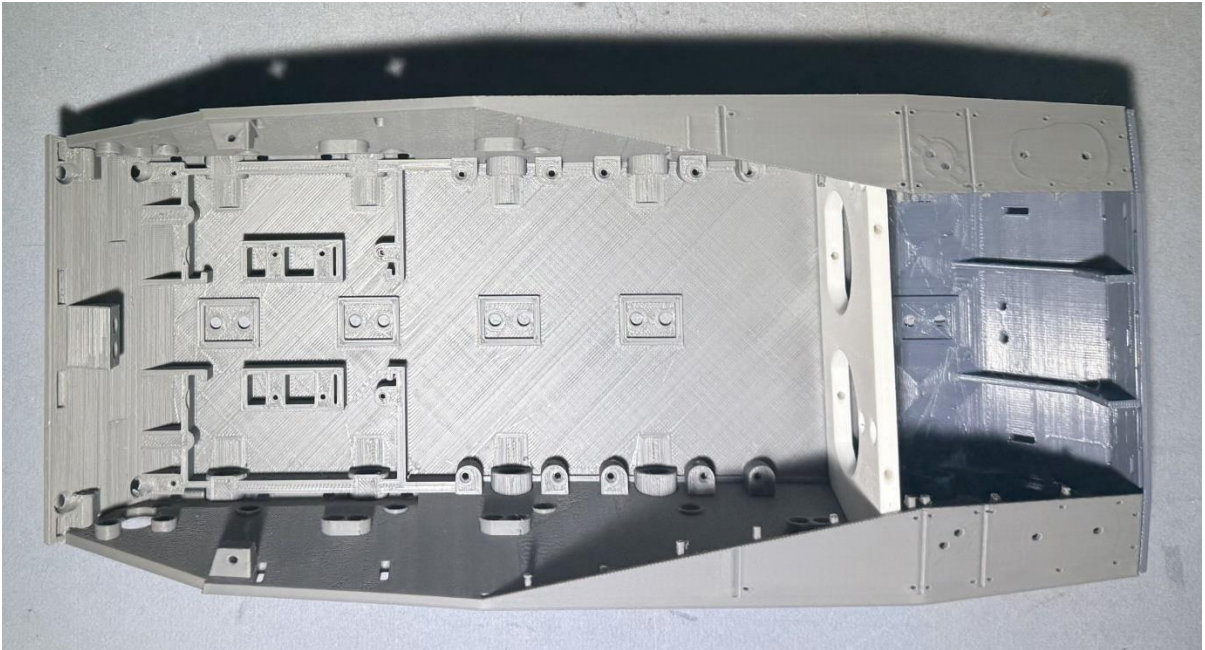








4. **INITIAL FITTING OF LOWER HULL:** Using the STL File pictures, I determined how the 5 Lower Hull parts fit together. **DO NOT GLUE or SCREW any of these 5 parts together yet.**



Note about Screws, Glue, Paint and 3D Hairs: Most of the holes that are provided as screw connections, are oversized and countersunk. You will need to fill these in with putty after the screws have been added and then sand everything smooth.

I use Balsa USA Gold CA glue (both thin and thick) to join most all plastic parts even if they have been screwed together. But sometimes 5 minute epoxy is also used to hold joints together and to fill in gaps. You may have to use putty to seal any wide gaps between parts.

On many of the 3D parts, there are extra printed hairs called “stringings” or “cobwebs” which need to be removed so joints are neat and tight.

I use Krylon’s Camouflage 4293 Olive paint as the basic color for all my US Armor. You may be able to find this large can spray paint at an O’Reilly’s Auto Parts Store.

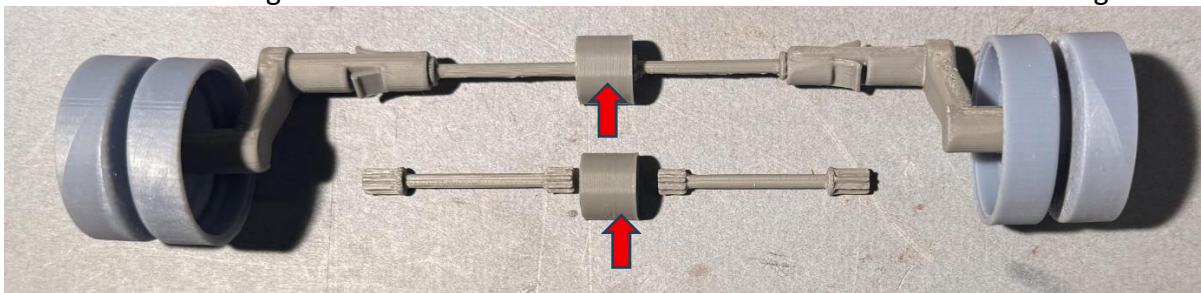
At this time, I also test fit the 2 Low Profile ML49mm HL Gear Boxes and determined what screws would be needed to hold them tight.

5. SUSPENSION SYSTEM AND SIDEWALLS:

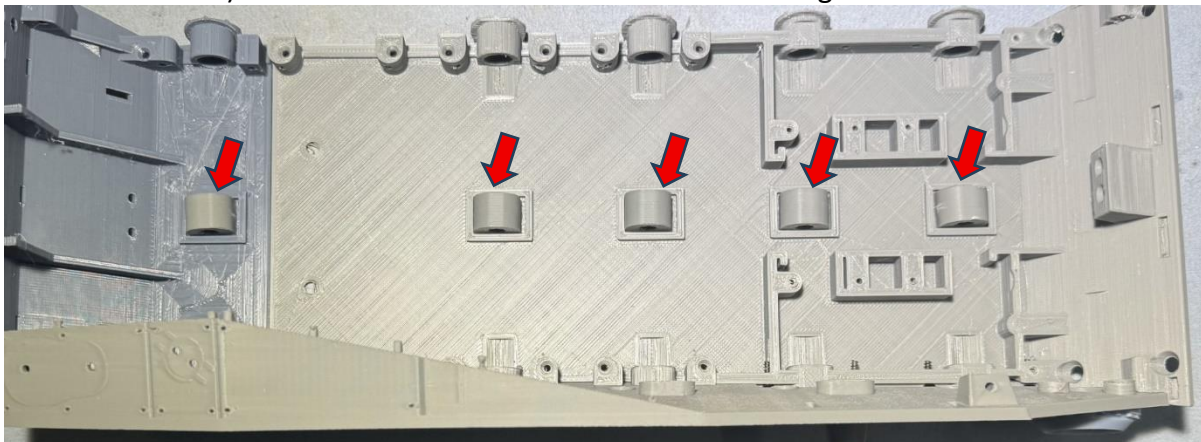
- A. The first step is to sand the Support Arm (at yellow arrow) where it slips into the Side Wall Hub and to also sand or file the corresponding area inside each Side Wall Hub. Be sure to cover these sanded areas with tape so they do not get paint on them. You can also add graphite powder to these areas or coat them with pencil lead to make them more slippery. Now all the parts shown in the next picture can be painted and then assembled. The recessed area on the back of the Wheel is for a small ball bearing but since I planned to use a threaded screw (.665" long by .115" dia. coarse thread) as my axel, a ball bearing would be of no use. But Ball bearings could be used on the 2 Drive Sprockets and 2 Return Rollers (also called the Compensating Wheel). If you do not use ball bearings, be sure to use 1 or more small thin washers between the Wheel and the Support Arm to reduce friction.



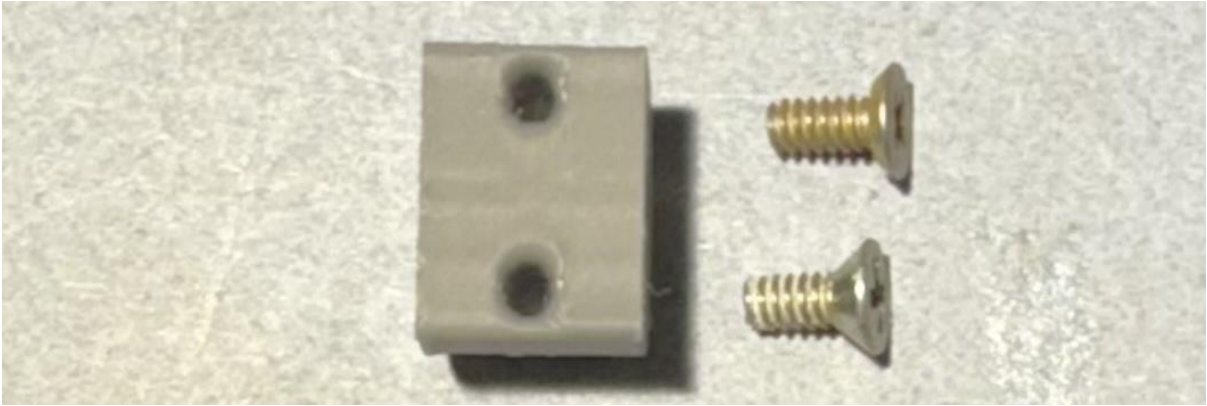
- B. The next step is to clean up the (10) 3D Torsion Rod parts. The 3D supplier has indicated that these are printed in a pliable material and will twist slightly without breaking and will then respond back to their original position.
- C. Here is how the Torsion Rods look assembled to the Support Arms. There are 2 heavy duty Torsion Bars...these go into the front Road Wheels to offset the added Gear Box weight.



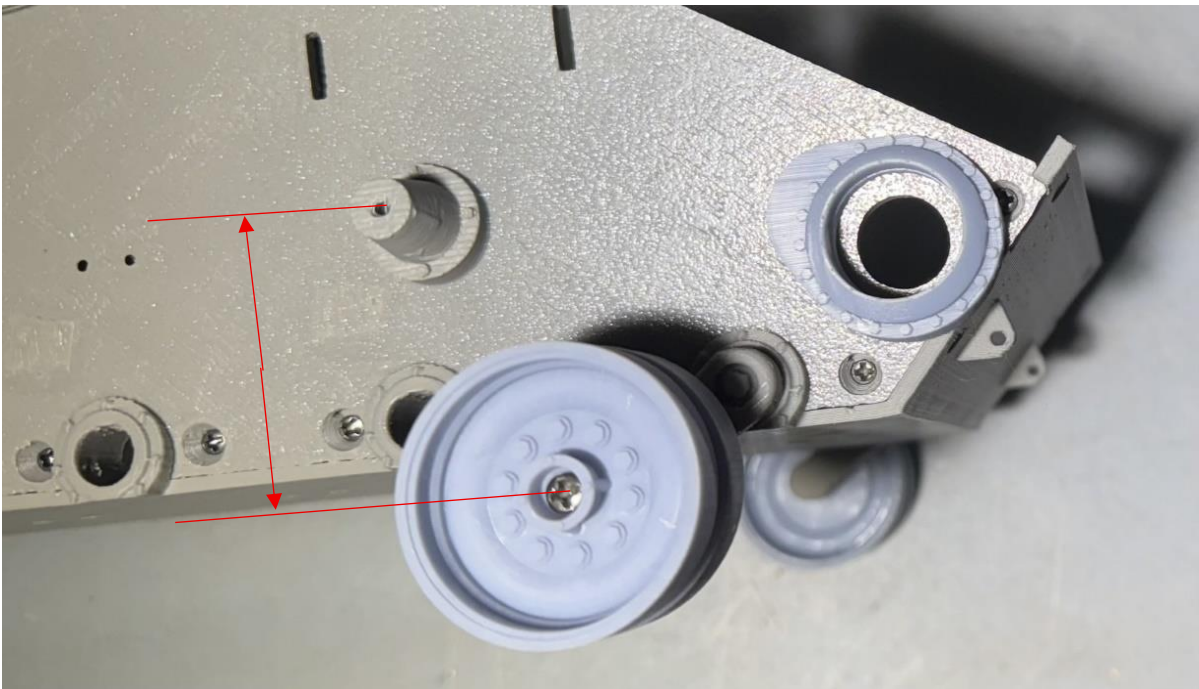
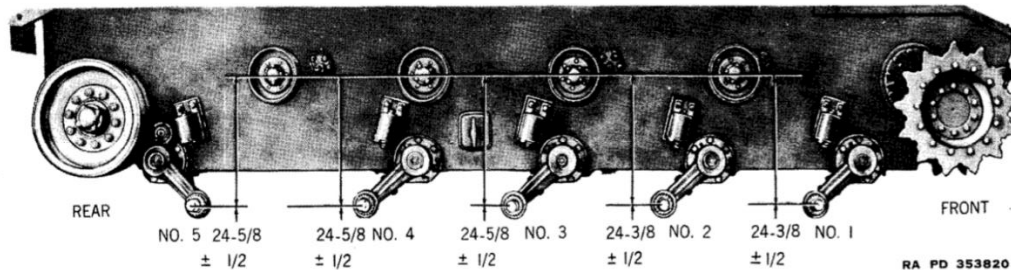
- D. The Torsion Rods are inserted into a Base Plate in the middle of the floor (see red arrows above and below). These need to be secured with screws and glued to the floor.



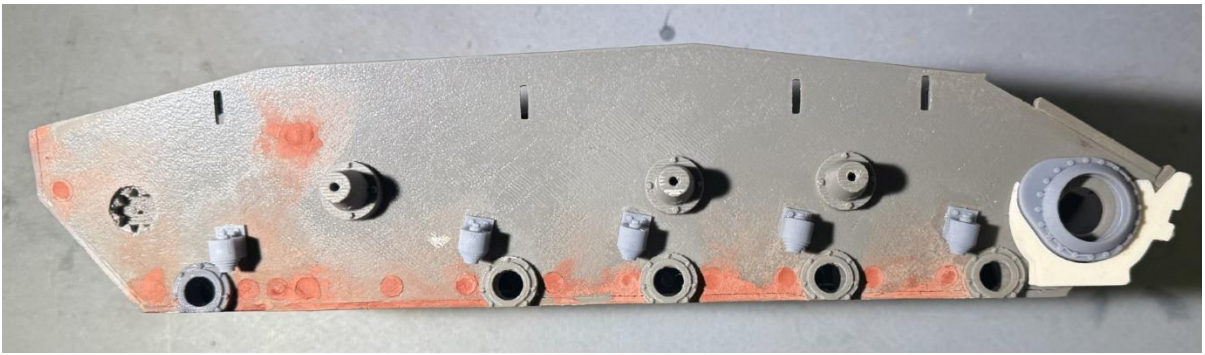
The Base Plate uses 2 small flat head screws like shown below for mounting.



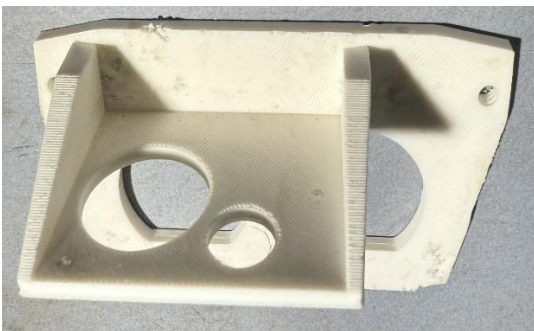
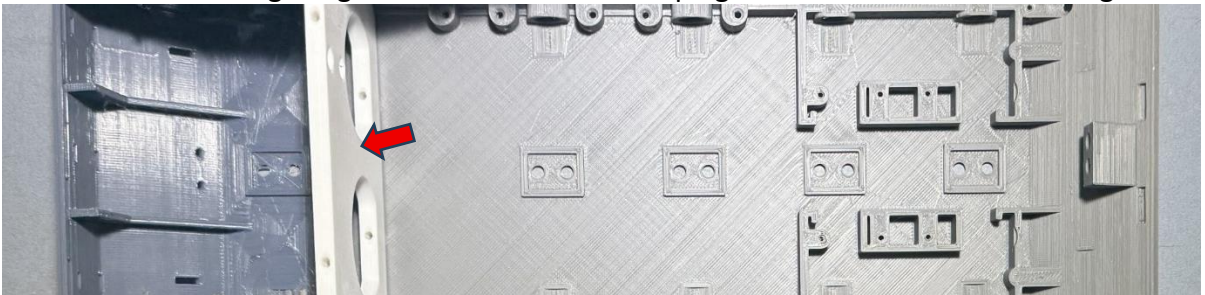
- E. When the Wheel and Support Arm are mounted into the Lower Hull Side Wall, the distance between the center of the Wheel and the center of the Track Support Roller above it, has to be 1.5". See red dimension arrows in 2nd photo below. This 1.5" dimension is 1/16th of the prototypes 24" spacing. Be sure to line up the star shaped head correctly on each end of the Torsion Bar to achieve this 1.5" spacing. The small head size goes into the Base Plate and the larger head size goes into the Support Arm.



- F. Before actually installing any of the Torsion Bars or Support Arms and Wheels, you must complete the following steps: (A) install in each Side Wall; (B) 3 Track Support Rollers, (C) the Drive Sprocket Housing, (D) 5 Support Arm Bumper Spring Brackets and remove the thin printed covering over the Return Roller's Compensating Bracket. See picture below.

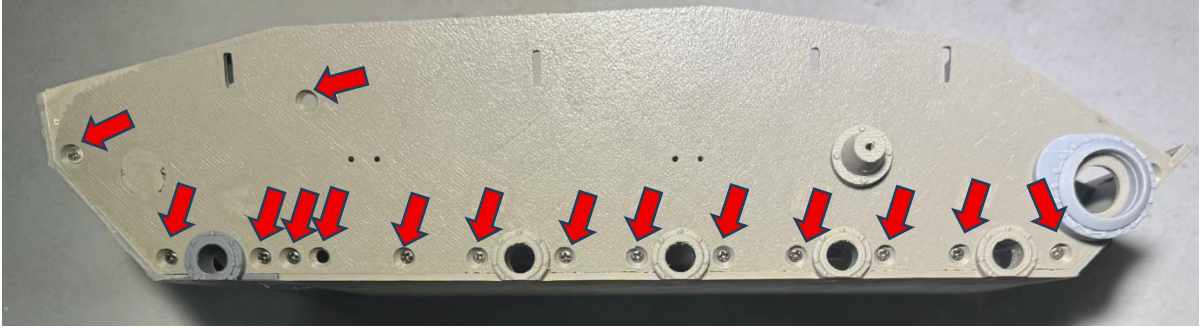


- G.** Now assemble the 2 parts that create the Lower Hull floor. Glue the joint inside and out. Add the 5 Base Plates if you have not already done this. Install the thick Internal Partition Wall (see red arrow below) to the Lower Hull Floor with screws only. Glue this in place “after” the Side Walls have been permanently attached. Be sure that the counter sunk holes in the Partition Wall face to the rear, as this Internal Partition Wall has a small shelf added to it which holds the Heng Long Turret Rotation Motor up against the Turret Rotation Ring.

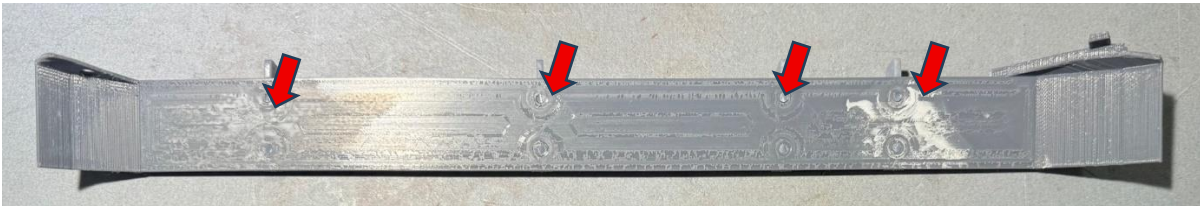
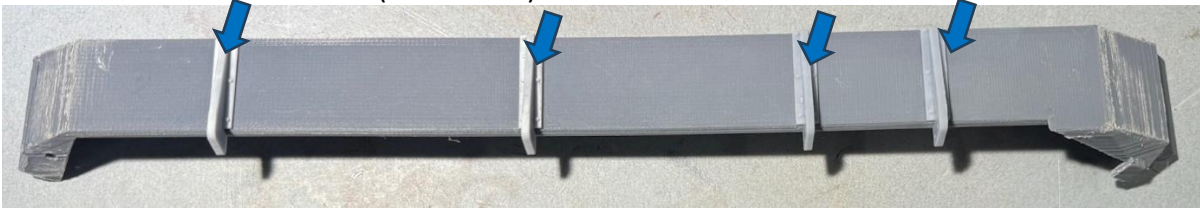


- H.** Attach the Side Walls to the Lower Hull with screws in 15 holes (per side). Then fill the holes with putty, let dry, sand smooth and repeat as necessary for a smooth surface to paint. The screws to be covered are shown at red arrows in the picture below. There is also a 16th screw

per side located inside at the top rear of each Side Wall, which anchors the Side Walls to the Rear Wall. After the screws are all in, you can also add glue as you deem necessary.



- I. Next glue the 4 Fender Stabilizers to the Fenders (blue arrows), and cut off the 8 small nubbins that stick out on the bottom (red arrows).



- J. Now mount the Fenders to the Side Walls. If you plan for a removeable Upper Hull, part of the front outside edge of the Upper Hull needs to be cut off (red arrow in 2nd picture below) and glued in place (blue arrow) on the Side Wall so the Fender can be firmly and permanently attached. The light red areas below are 3D printed material that needed covered with putty and sanded smooth.



- K. Rear Wall:** Next install the 2 square plates and 3 Tow Hook on Rear Wall. I had to fabricate my own 2 smaller Tow Hooks from white styrene. The shackles are brass w/ a nice thick bolt to attach them. The bolts have tiny holes pre-drilled for miniature cotter pins (wire).



- L. Tail Lights:** The Tail Lights need some minor mods. The left one needs a 5 volt red light inserted into the back, and once the part is glued to the Lower Hull, the lens openings need to be filled with Microscale Industries "Kristal Klear" to replicate the lenses. The right taillight needs to be modified with a tiny bit of styrene so that both lens opening are rectangular. Once this part is glued to the Lower Hull, then insert a 5 volt white light and add Kristal Klear.

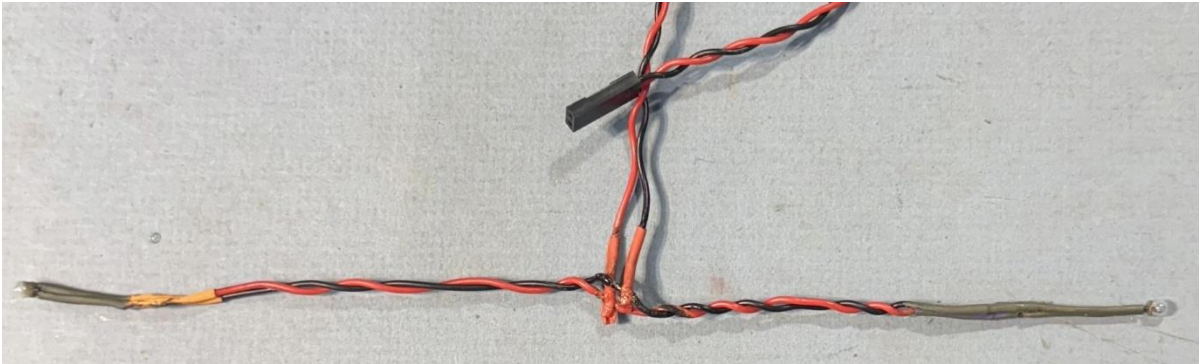


This is the Left one

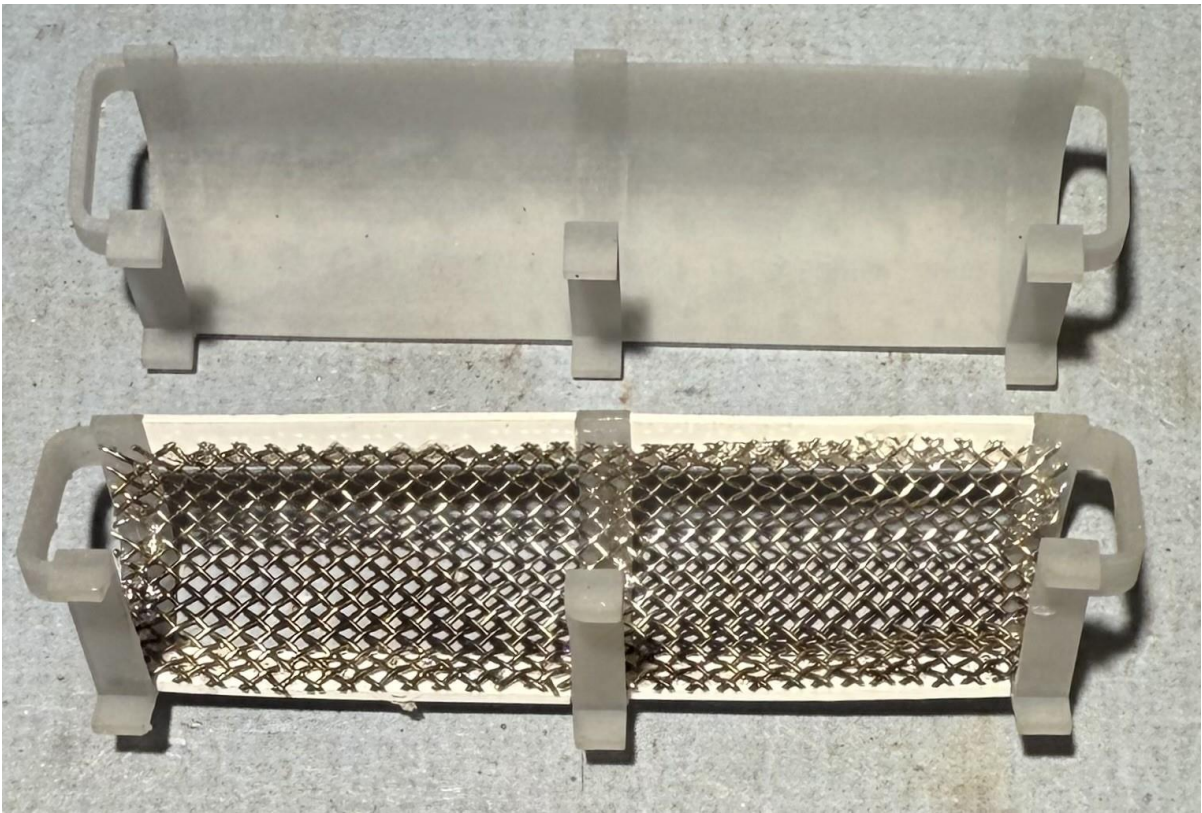


This is the right one

This is how I wired both sets of the Head and Tail Lights. I glued the Head Light wires to the underside of the Upper Hull to keep them out of the gears.

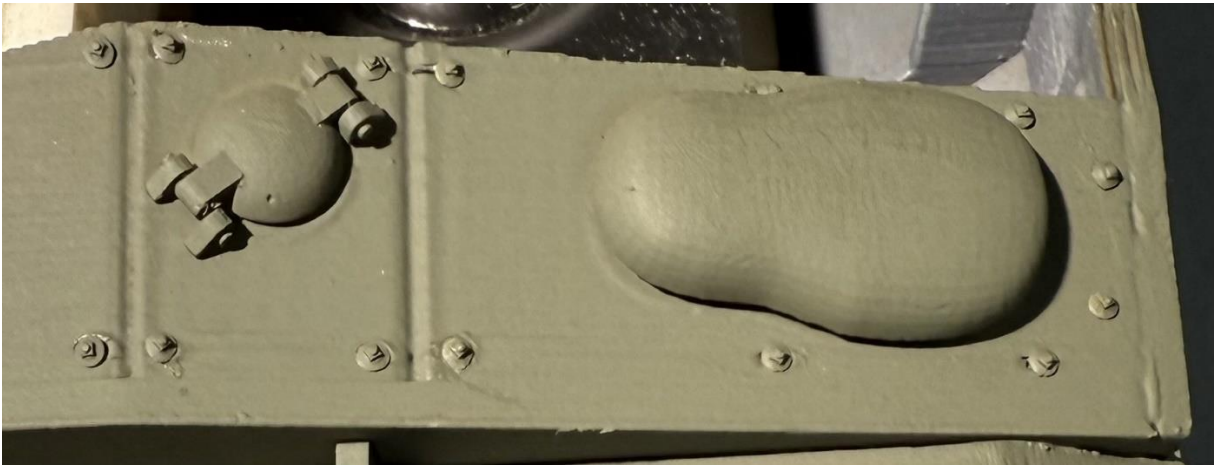


- M. Cargo Basket:** I had to enlarge the 6 mounting holes (rectangle shape) to get the basket to fit properly. The original one with the kit proved to be too fragile and got broken, so I ordered another 3D basket, but also made one from metal. The top picture shows a new 3D basket reprinted, with the unpainted metal basket below. The second picture is the metal basket painted Olive Green.

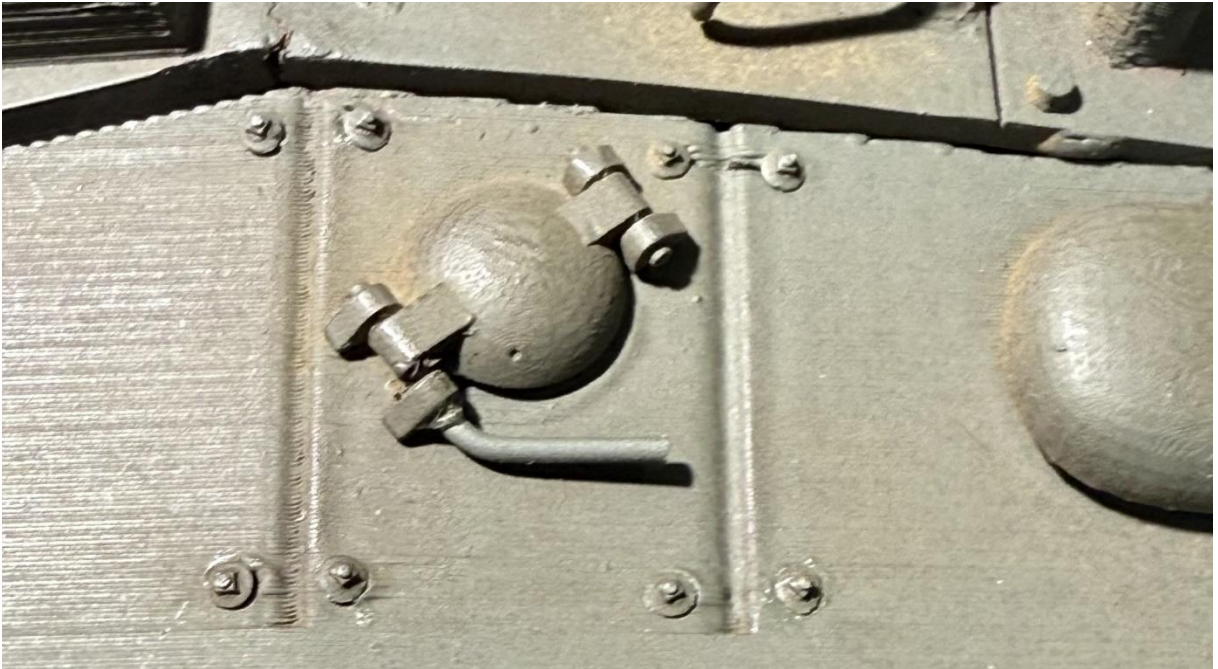


N. Bolts: There are 15 predrilled holes on each side for rear Lower Hull mounting Bolts. Install one of these in each hole.



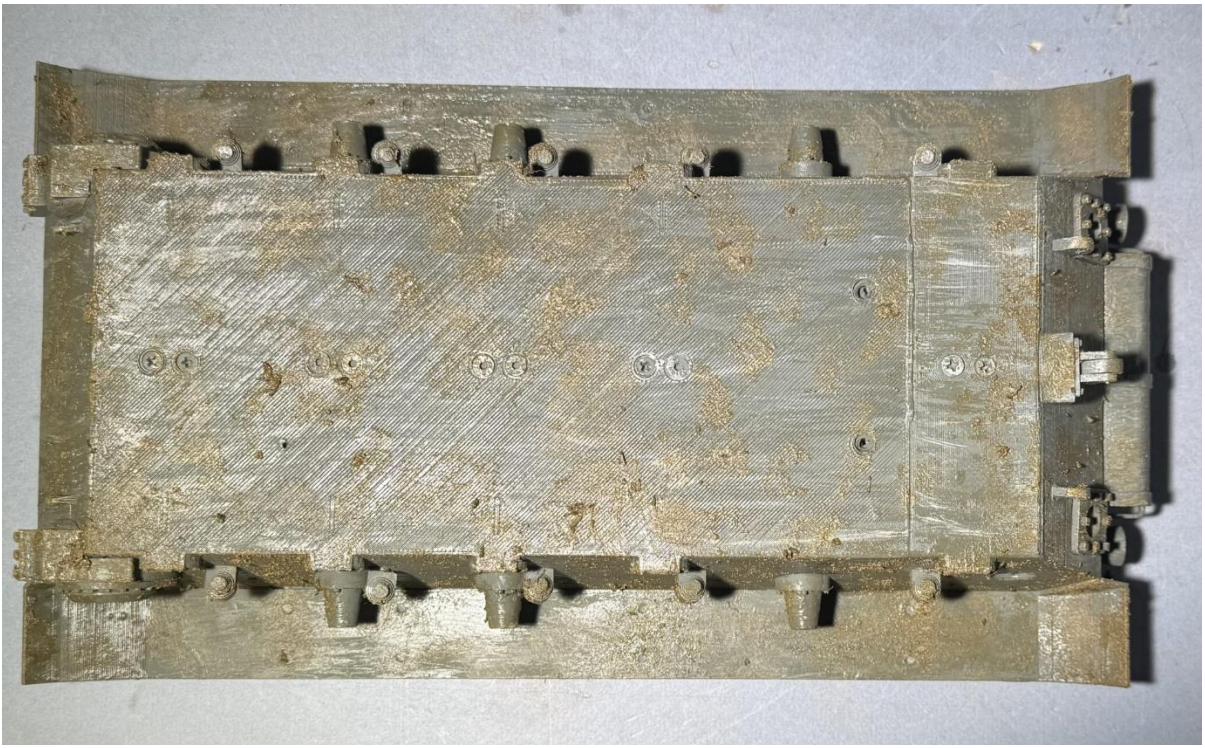


- O. Fuel Cap Cover Handles:** Add handles to the fuel and radiator cover caps. I used .048" diameter brass wire, bent to fit.

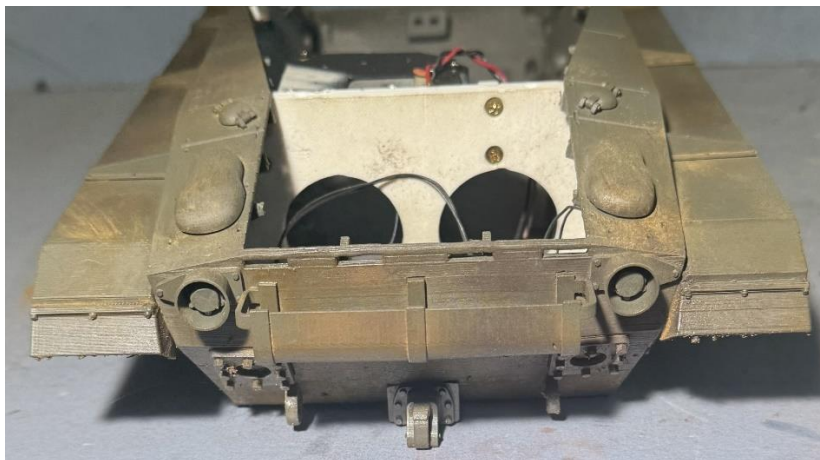
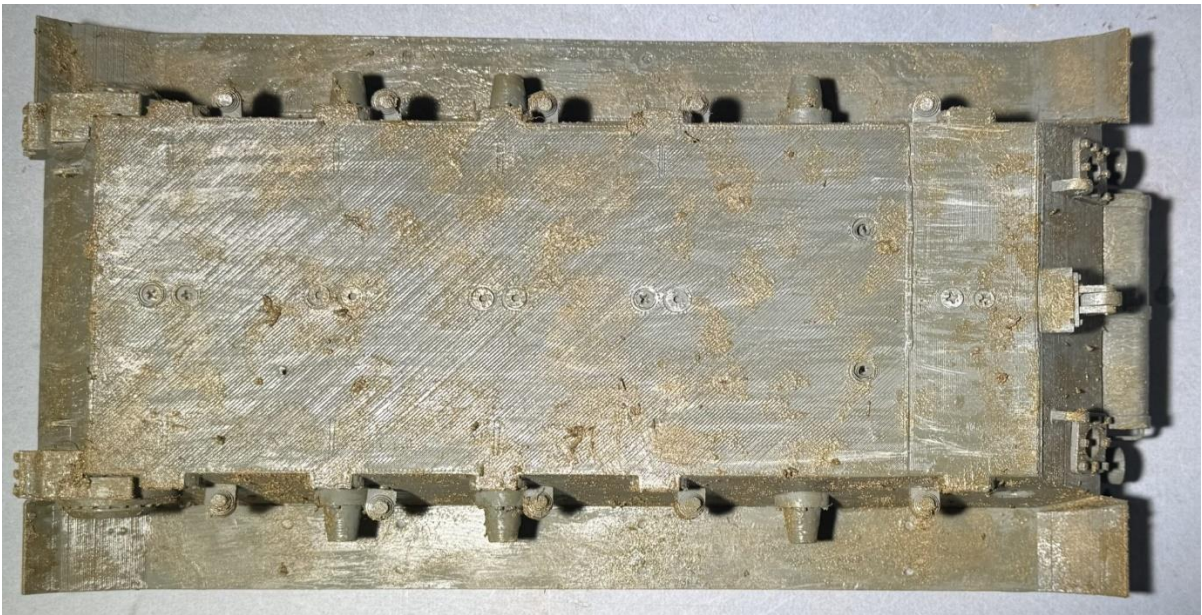


- P. Painting and Weathering:** The Lower Hull can now be painted. Cover up the inside before painting the top area. Add any decals that affix to the Lower Hull after painting.

Weathering is a personal matter. I like lots of mud on the Lower Hull and Tracks. If you do too, the next step then is to lightly add Vallejo #73.801 European Splash Mud and highlights of #73.804 Light Brown Splash Mud. This to the Lower Hull with more on the front than the back. I do this using a brush which is a typical 1" wide house painters brush but 2/3rds of the bristles have been plucked off here and there, so there is intermittent brush strokes on the model. Stroke from front to back, so it looks like the mud splashed on as the tank moved forward. Next add clumps of Vallejo #73.807 European Thick Mud and highlights of #73.810 Light Brown Mud. This replicates dried mud clumps. This next picture is the applied mud still wet.



If you want the Lower Hull to look even dirtier, then after the mud is dry add a light coating of AIM Products Weathering Powder #110-3104 "Dirty Yellow" and #110-3122 "Dark Buff" and #110-3107 "Dark Earth". Then spray everything with Testor's Dullcote to seal the powders.



Q. Shock Absorbers: The 3D kit I obtained did not include any Shock Absorbers for the Support Arms, and I felt they were needed to assist the Torsion Bars in returning to their original positions. A total of 8 are needed and I bought these from RC4WDDrive. I used small screws to mount them to the Side Walls and to the Support Arms. These are not exact replicas of those used on the Chafee, but they will have to work.

Shocks (40mm)

Micro sized for those perfect 1/18 projects.



Specifications:

- CNC Machined
- Billet Aluminum
- Internal Spring Design
- Hole to Hole (Compressed): 1.34in / 34mm
- Hole to Hole (Uncompressed): 1.57in / 40mm
- Overall Length: 1.81in / 46mm
- Shock body OD: 0.25in / 6.5mm
- Shaft Diameter: 0.07in / 1.85mm
- Each Weight: 0.1oz / 3g

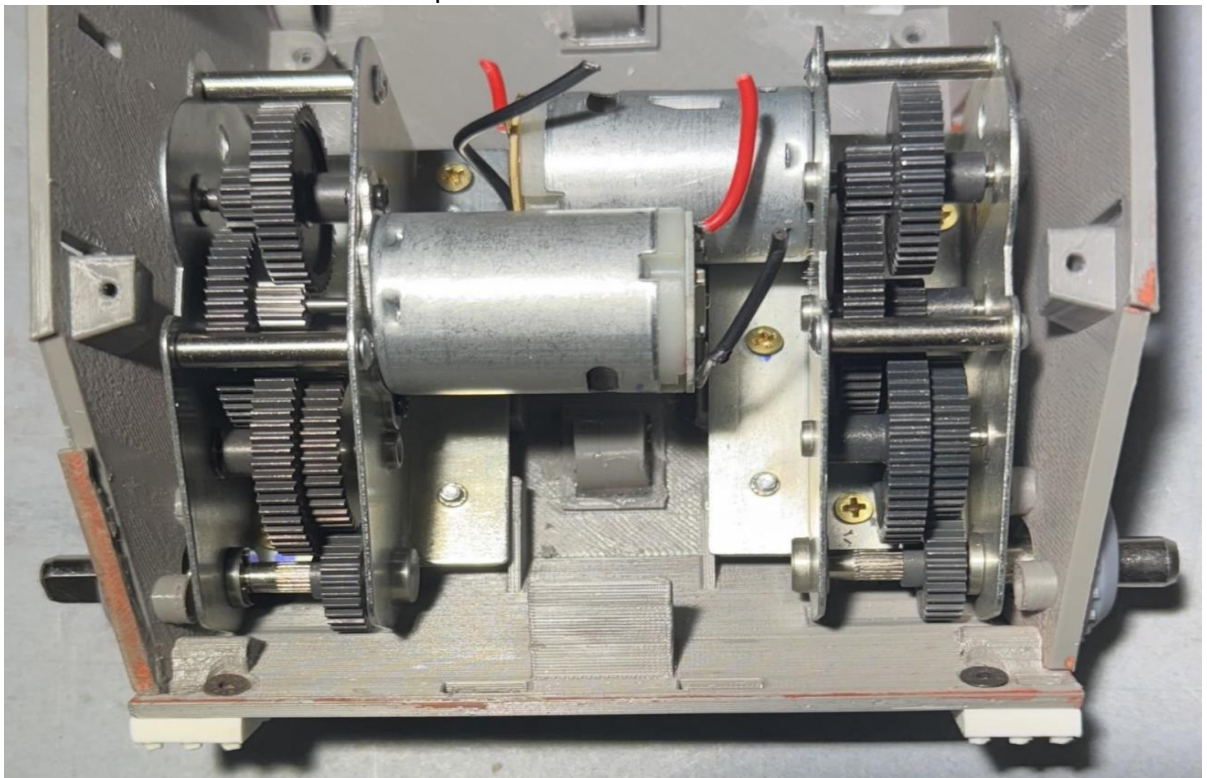
R. Assemble Wheels, Arms, Shock Absorbers and Torsion Rods: Once the Wheels, Support Arms and Shock Absorbers are all painted, assemble them and add the Rubber Tires. At this point you can add the same weathering treatment to match what you did for the Lower Hull and then add the Torsion Bars and insert the entire assembly into the Lower Hull. Don't forget to use the Graphite Powder (I mixed it with drops of oil to make a paste) on the areas of the Support Arms that were not painted (see red arrow below).

Also paint the Shock Absorber and Return Roller's Compensating Bracket when you paint the Support Arms, Wheels and Track Support Rollers.

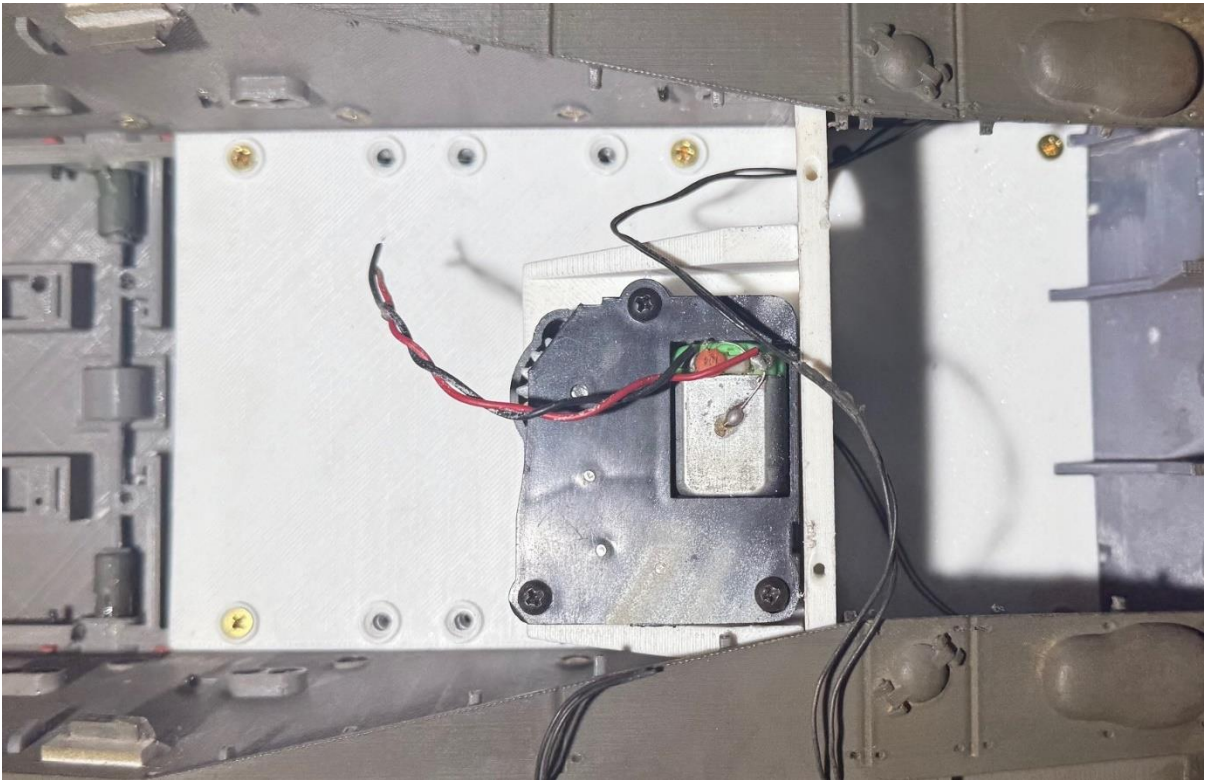




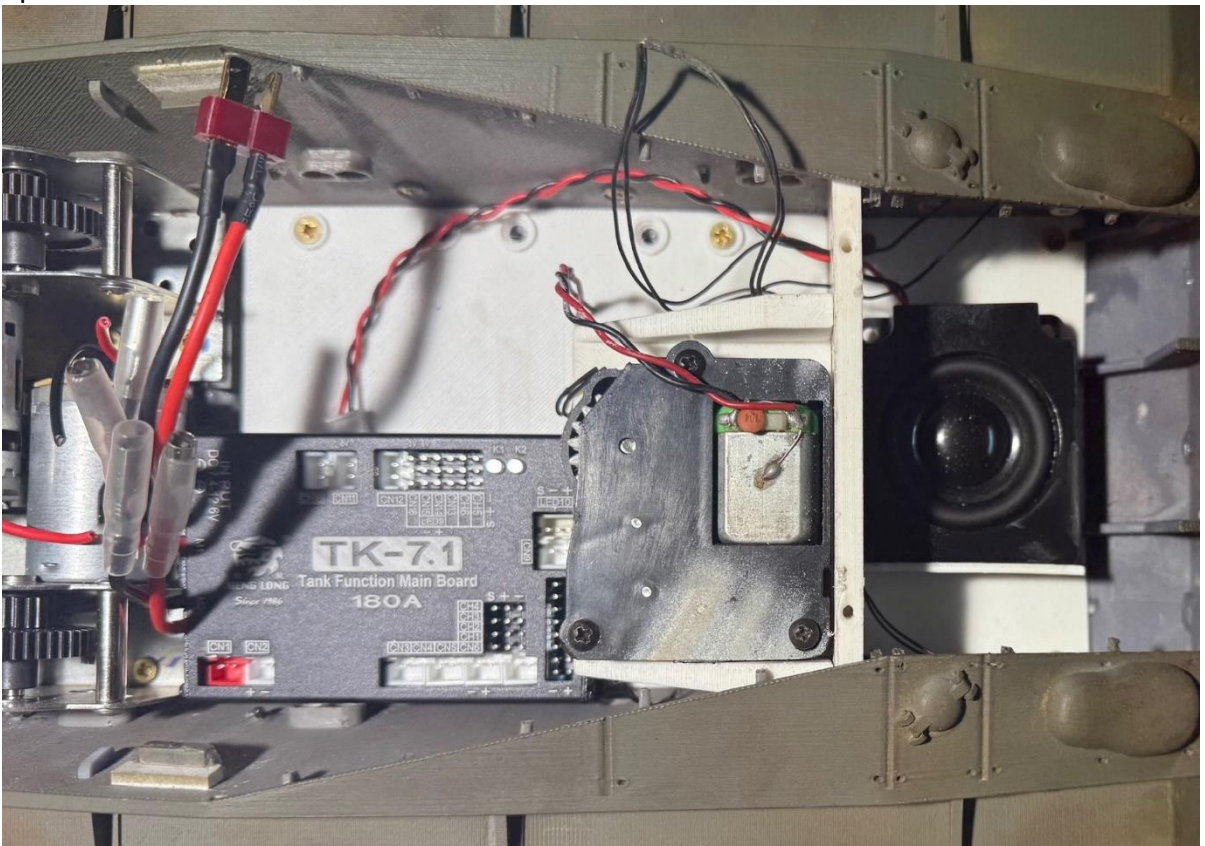
S. **Gear Boxes:** Now install the low profile HL Gear Boxes in the Lower Hull Floor.



- T. White Floor Boards:** Now you can add the two white Floor Boards. One is 5"x4" and the rear one is 2"x4".



- U. HL Electronics Board and Speaker:** Time to now install the Heng Long 7.1 Board and Speaker inside the Lower Hull. The open area at top is for the battery. It will have to be a 4 cell Lipo as a 7.2 v NiMH or Ni-Cd battery is too long to fit. See Heng Long instructions for how to hook up all the wires and circuits.



- V. Hub Caps for Road Wheels and Return Rollers:** None were supplied as part of the 3D kit, so I made my own by using a hole punch with 2 mm thick styrene for the Road Wheels. Put a

notch in it to help removal when needed. Paint green, spot glue to one tiny area of the wheel's hub (do not glue to the screw). Treat with weathering to match the wheel.

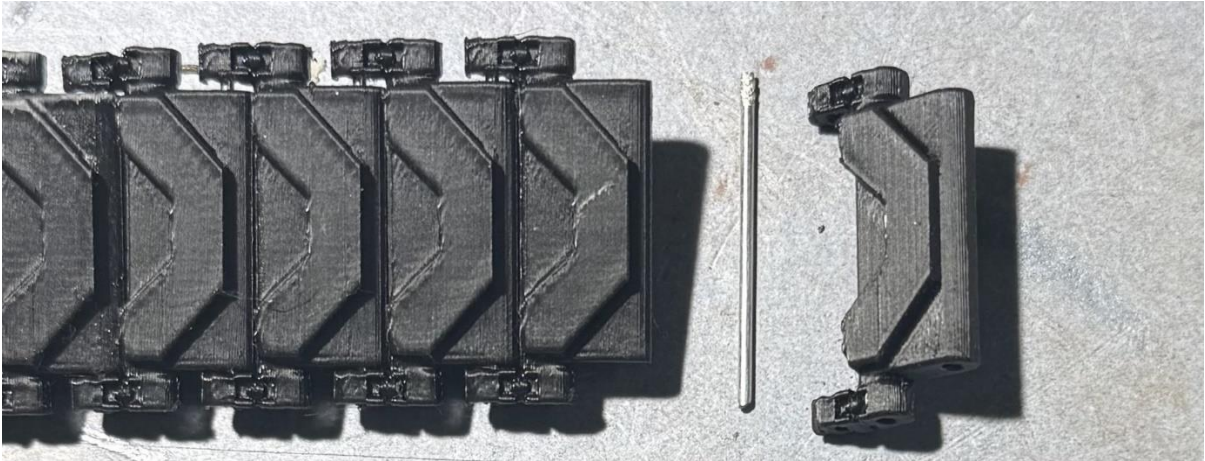


Hub Caps for Track Support Rollers: This Hub Cap is a bit bigger diameter than those of the Road Wheel so you cannot use a punched spacer. Instead I hand scribed and cut a 7mm diameter circle from 1mm thick styrene and then filed to fit each roller. These are weathered just like the Road Wheel Hub Caps. You will need 6, but make some extra in case you lose any during battles.

Hub Caps for Drive Sprockets: I chose not to add a Hub Cap to the drive sprockets and instead mounted an M3 x .50 metric flathead socket screw to hold the Sprocket in place. I weathered this screw head like the Hub Caps and it looks appropriate.



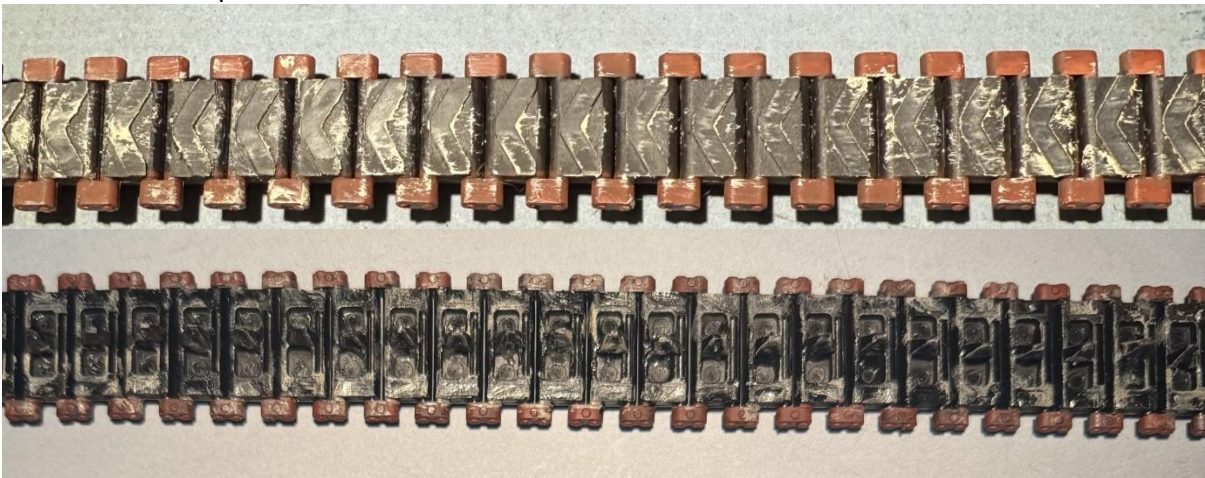
6. **TRACK SETS:** The first step making the Tracks is to assemble all the Track Shoes together. To do this, you need 28mm long tracks pins (not supplied) and to clean up the Track Shoe between the 2 end connectors. That area binds up if the printing lines are not smooth. I also drilled out the connector holes and the long shaft area down the center shoe area w/ a .040" diameter drill bit. You need to assemble 75 track shoes per each Track Set.



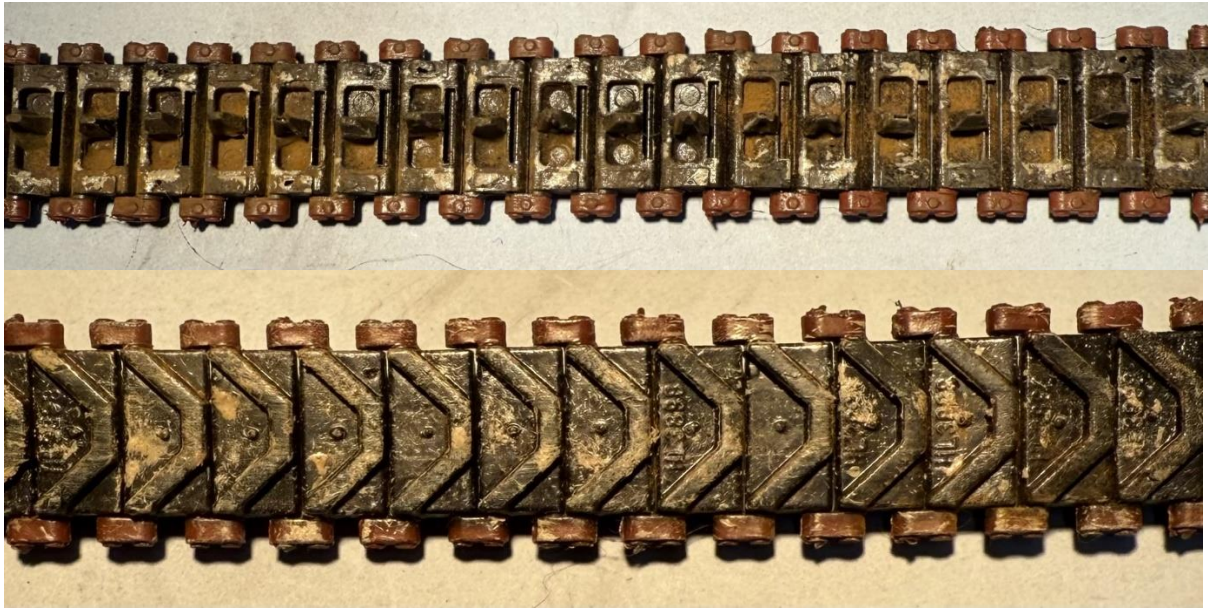
After both Track Sets are complete, I painted the Track Shoes a flat black primer on both sides. Once dry, then paint the end connectors with a red primer to replicate rust. To do this, I cover the Track Shoes with painter's blue masking tape on both sides before spraying red, and I then hand paint any missing area of the connectors red and scrape off or paint over any red overspray that accumulated on the bottom or top of the Track Shoes (see arrows below for where red usually accumulates on the black paint).



The next step is to lightly add Vallejo #73.810 Light Brown Mud to the outside and bottom of the teeth and to the bottom of the Track pads (to replicate dried mud from having driven thru muddy areas)...some of the mud would have dried and fallen off. Be sure to use your fingers to rub the outside pads so very little mud is on the flat chevron areas...only down in the crevasses of the pads.



If you want your Tracks to look even dirtier, then add a light coating of AIM Products Weathering Powder #110-3104 “Dirty Yellow” and/or #110-3107 “Dark Earth” to both sides of the Track and then spray everything with Testor’s Dullcote to seal the powder.

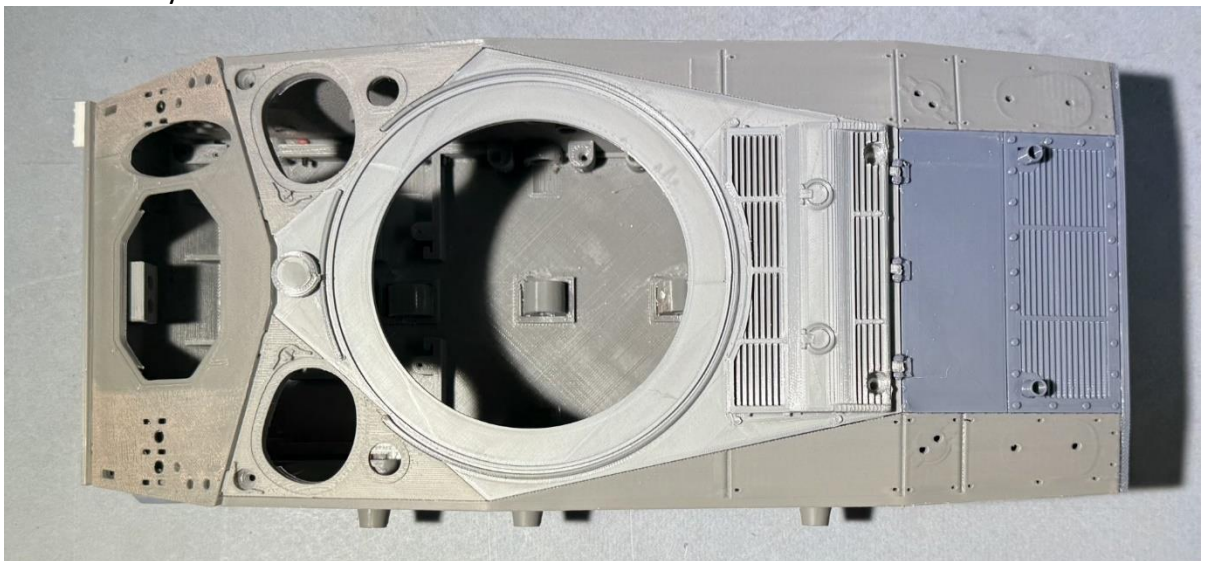


The last step is to add “spots” of silver paint to the center guide teeth where a “steel on steel” look would occur because the teeth are wearing down to the bare metal surface as the road wheels move.



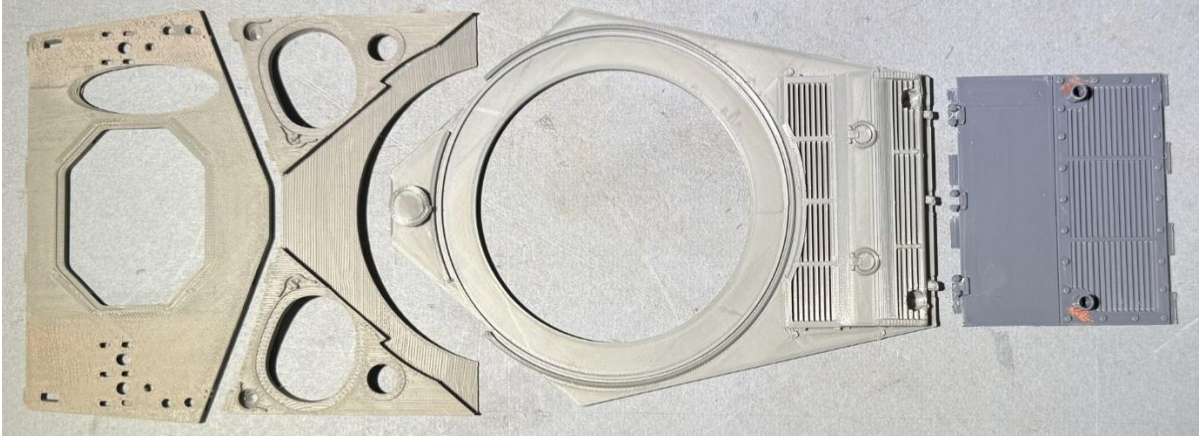
7. UPPER HULL:

- A. The Upper Hull consists of 4 lateral pieces that fit together very nicely and are intended to be held down by 4 screws.

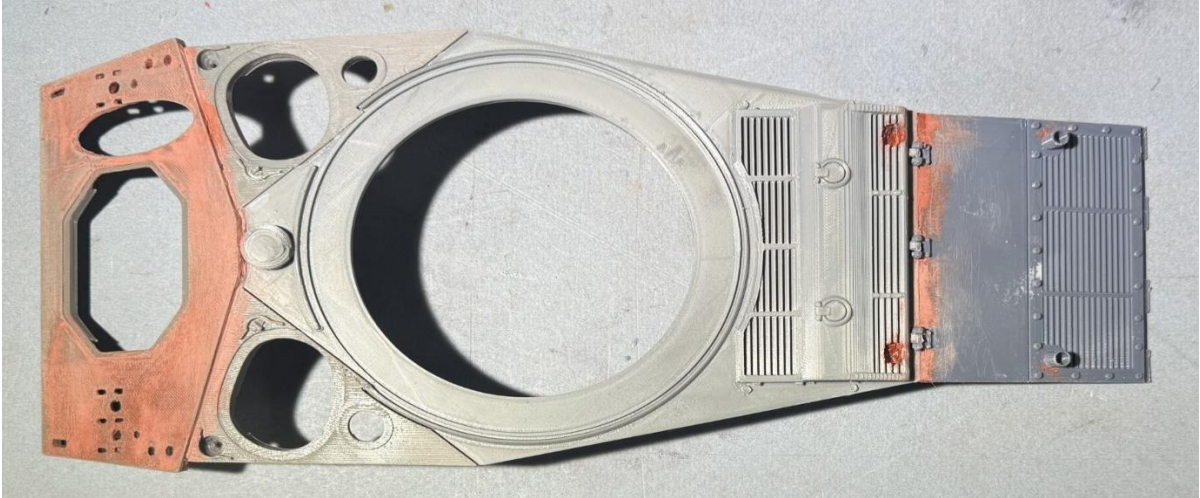


However, I plan to have a “lift out” Upper Hull for easy access to electronics and battery, so it will be held in place by magnets. The rear piece will slip into 4 slots in the back wall, and the front piece slips into 4 front slots. The 4 pieces look like this, but some putty work will be

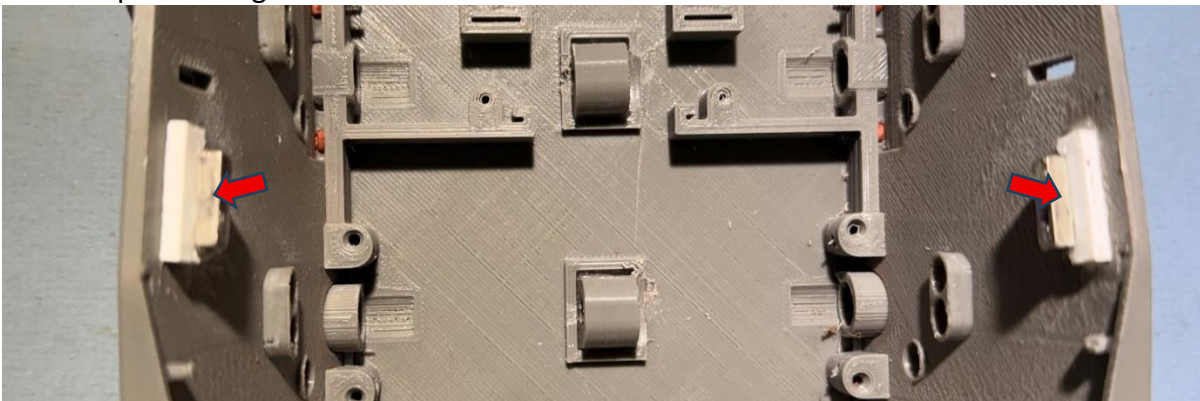
needed to fill in the joint of the front piece and piece numberer two, and to fill the screw holes.



After the Upper Hull was assembled and glued together, I cleaned up the joints w putty and also smoothed out the casting lines (ridges that come from 3D printing) in the front piece. Using fingers with the putty is the best way to apply and achieve a smooth finish.



- B. Magnets:** I only had to add magnets to the center area (piece #3) because the tabs on piece #1 and #4 held everything together nicely and the 2 magnets then pulled the center down and into place. Magnets are shown at the red arrows.



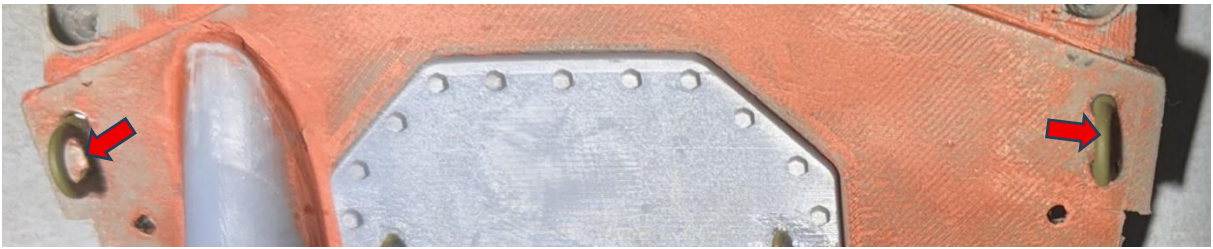


- C. Hexagon shaped Door:** I added 2 brass handles in place of the 3D printed ones because I felt those were too fragile.

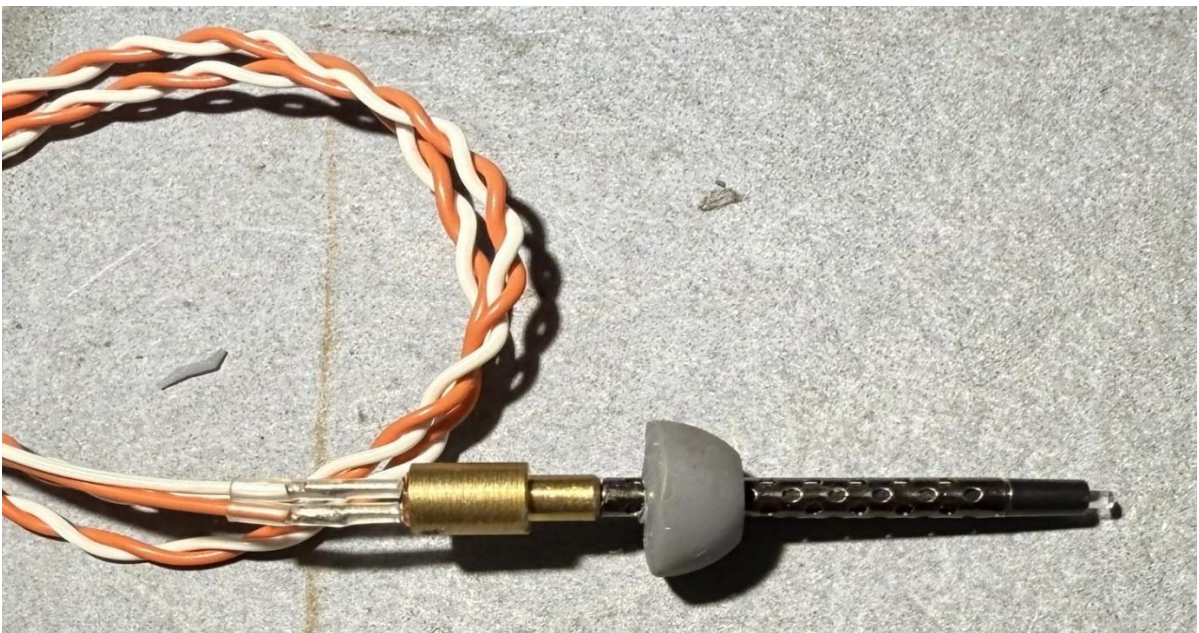


- D. Other Hand Grabs/Handles:** I also chose to install other metal hand grabs and some plastic ones left over from other projects (see red arrows)





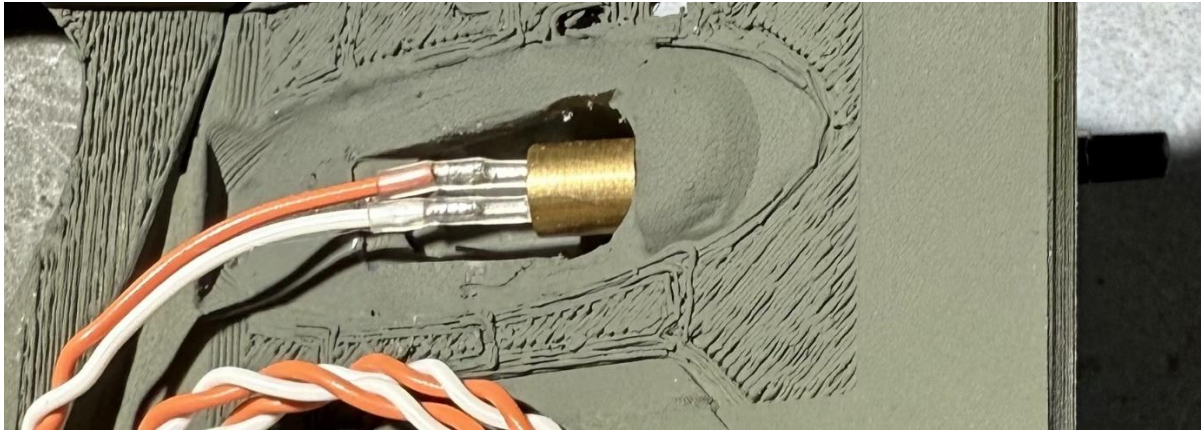
- E. **30 cal. Hull MG:** I decided to install a working Tamiya 30 cal MG system, and to only use the half-round 3D printed hub. This required cutting the 3D part (at the 2 red arrows), and drilling a 2.86 mm hole to glue the Tamiya parts in place. However, these final steps can only be completed after the Upper Hull has been painted and weathered. The Tamiya parts look like this, plus the brass coupling that holds the bulb (I forgot to include it in the first picture).



The first step is to glue the 30 cal MG Pod in place and fill in any openings with putty, and to cut out some of the plastic in the rear



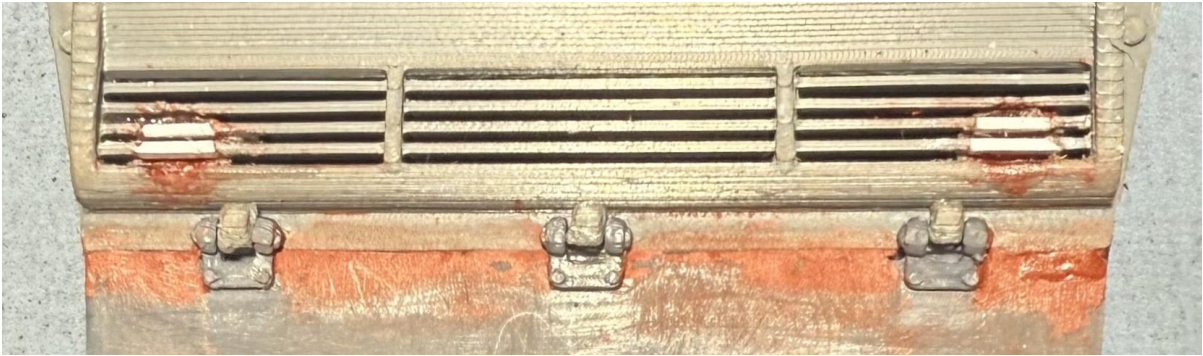
The Tamiya brass coupling needs to be inserted and then eventually glued as shown below. Open up the plastic area behind the coupling.



- F. Headlights and Brush Guards:** First you must install the Headlights and bulbs (I used 12 volt Grain of Wheat type bulbs) but do not glue the bulbs in-place until after painting and weathering. Also install the siren. Next install the 2 brush guards, You may have to cut open the holes a bit for a proper fit. Remove the bulbs till after painting.



- G. Inlet Grille Repair:** Because the 3D part had 2 holes that are not on a prototype Chaffee (these were for screw), I filled in the Grille holes with .030" x .050" styrene strips. Once painted these will not look out of place.



- H. Hatch Covers & Periscopes:** I wanted to add 3D printed Periscopes to the underside of the Hatch Covers (so they showed when the Hatches were open), but they would have interfered with the motor gears and since I also could not have any Driver figures, I abandoned the idea. The Hatches can still be operated like the prototype, so I used a 090 bolt and nut as the axel for the Pivot Arm, but decided to leave the cover shields (not supplied anyhow) off of them.



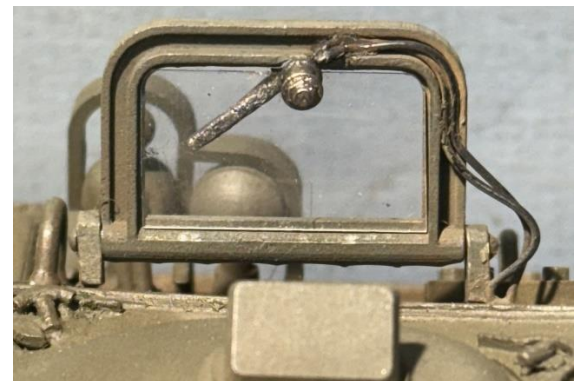
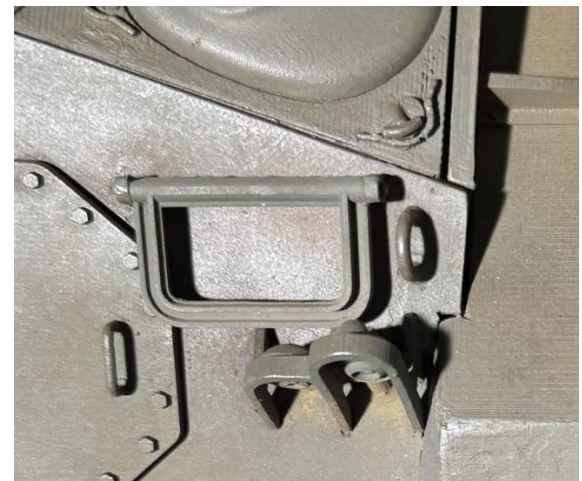
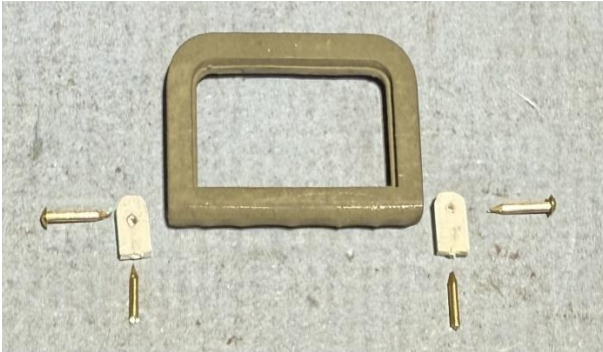
I also wanted to make each of the in-board door latches (w/ T-bar handles) which set at the 5 & 7 o'clock positions of the 2 Hatches. These lock down the Hatches when closed. However, after careful examination, I determined that the predrilled holes that I was going to use, were located too far away from the Hatch for them to actually work, so I only installed the parts that would look like the latches and said "good nuff". It ended up being very tedious work making them out of brass parts,...cut, filed, fitted, ground off, soldered, formed, etc.



Final Note: I also wanted to add brush guards over the opened viewports in the Hatches, but these were printed a bit too large and metal brush guards would not fit over them, so the

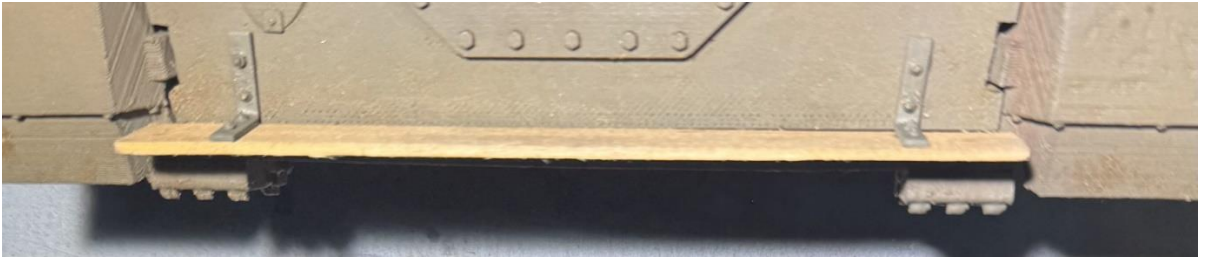
model ended up with none, unless you choose to scratch build them from brass rod a bit bigger than they should be.

- I. **Driver Windshield & Wiper:** The prototype Chaffee had a Windshield screen that could be raised and lowered during inclement weather. My 3D model kit did not have this so I scratch built one with an electric motor and wiring. The glass window is clear plastic. The wiper motor is a piece of G scale brass train parts I had laying around.

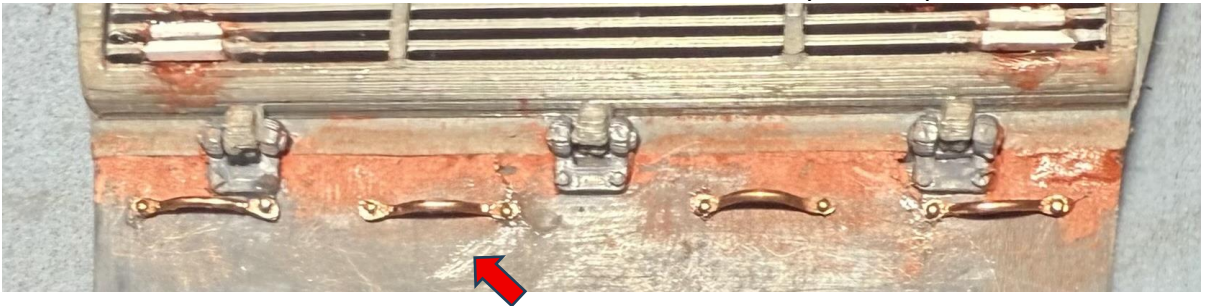


- J. **Wood Shelf on Front:** I wanted to add some Gas Cans and Stowage to the front of the Tank and to do this, I needed to mount a wood plank (balsa wood 4.65" long x .5" wide x .60" thick). I scarred the balsa wood to give it some texture and wood grain (then stained it), and mounted it to the Glacis Plate with brass "L" brackets (.50" leg x .50" leg x .032" thick x .125" wide) and tiny bolts. **NOTE: Mount this shelf after painting the Upper Hull.**

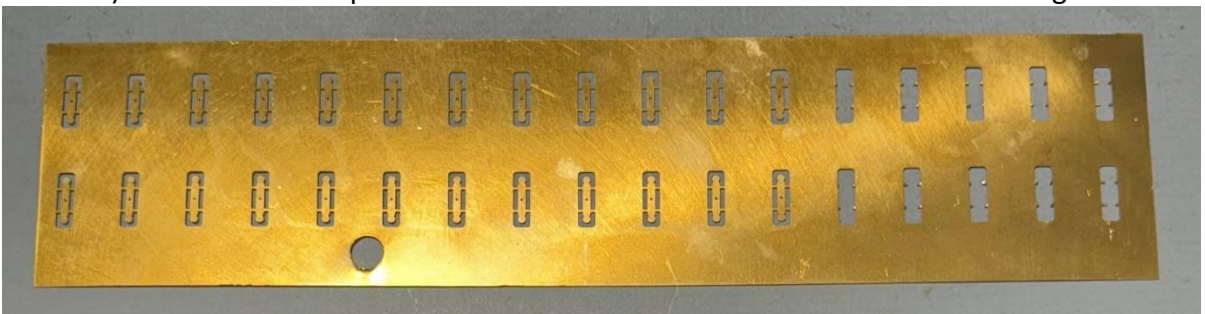




- K. Footman Loops:** I added some tie down brackets (officially called Footman Loops) for attaching stowage, packs, bedrolls, gas cans, etc., to the solid rear engine access panel (see red arrow). These brackets are made from .030" dia. brass or copper wire, bent to shape, with ends flattened and each drilled with an .023" hole for tiny anchor pins.



Footman Loops are also needed along the sides of the Upper Hull so Stowage could be tied down on the Fenders. Note that I used a different type Footman Loop (much thinner material) bc I found some premade ones in a PE set I had. This saved time making them.

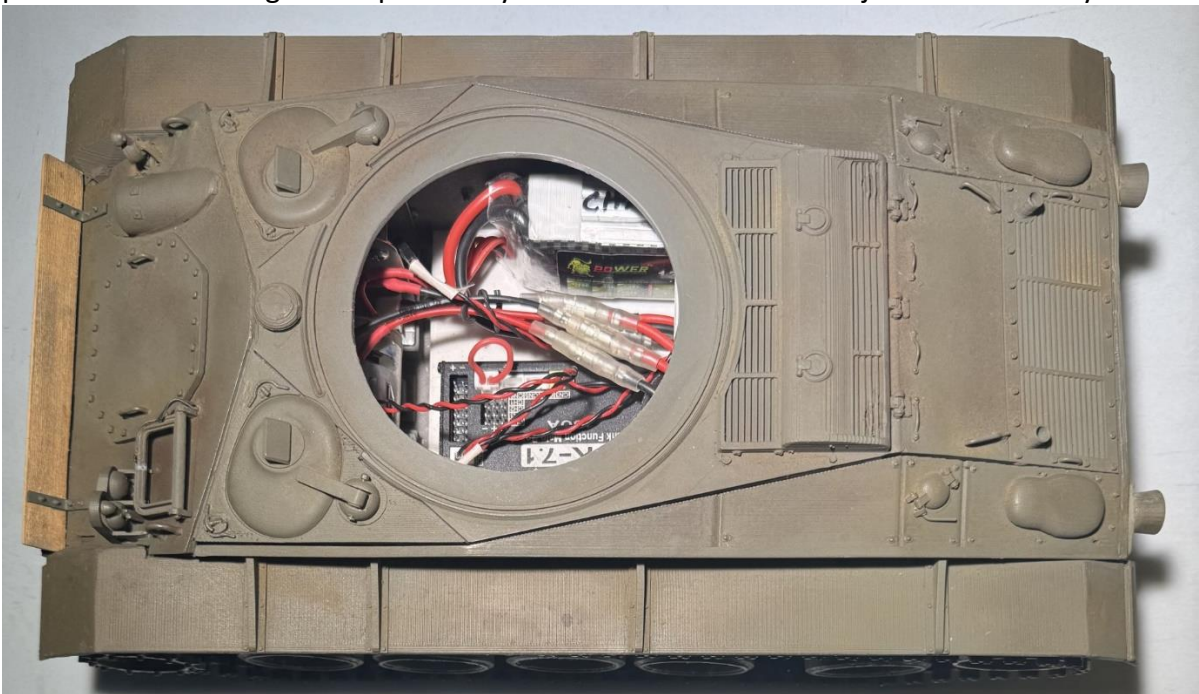




This shows the Footman Loops mounted with brass pin heads to the Left Fender (see Red Arrow for typical mounting). I also added 2 Footman Loops to the Wood Shelf on the Glacis Plate.



- L. Paint Upper Hull:** It's time to paint the Upper Hull and add some weathering. Use the same paint and weathering techniques that you did on the Lower Hull....just don't add any mud.



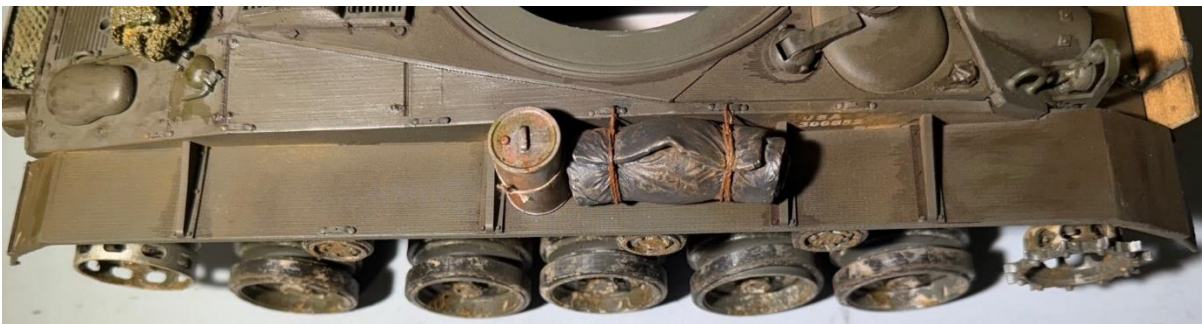
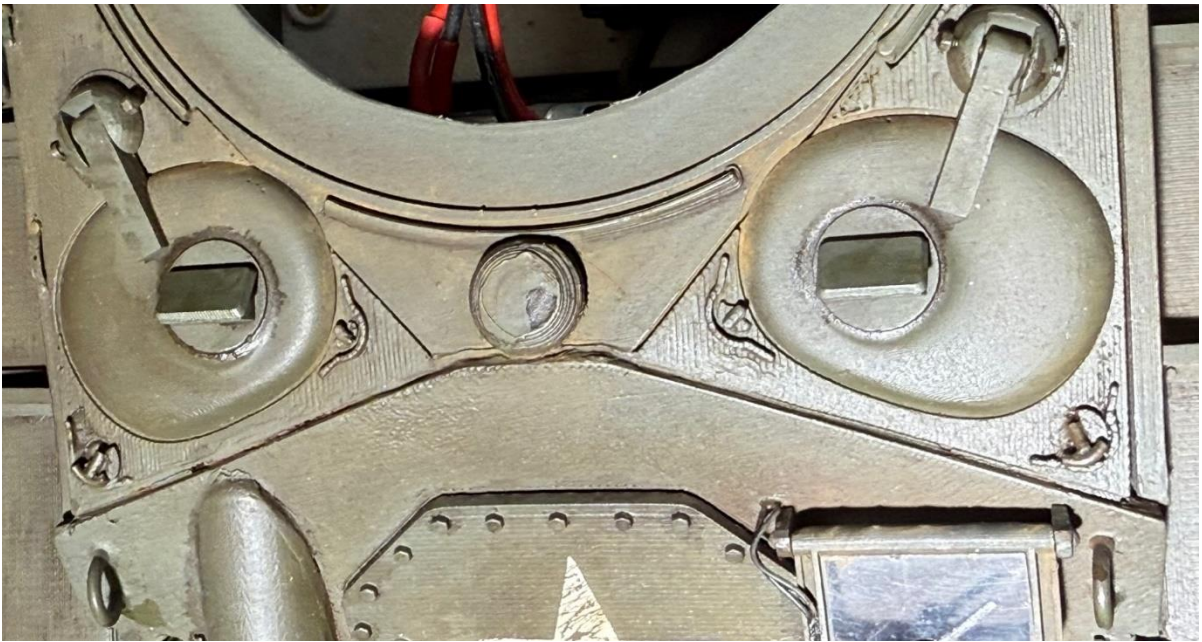
- M. DECALS:** Add decals to the Upper and Lower Hull at this time. Note that there are not many pictures of late WWII Chaffee Tank unit markings in the reference books available. So, I chose to free-lance a bit and placed a US Star on each side of the Turret and on the octagonal front access plate of the Upper hull, and some unit numbers on the sides. The numbers go on both sides. There is only one star, placed on the front Glacis Plate. I usually show decals like stars as being heavily worn...paint scratched and missing.



N. Grime and Oil Treatment: The final painting treatment to the Upper and Lower hull is to apply oil stains, fuel spillage, and to apply a wash to accentuate details and show surface relief. I do this by dropping small amounts to joints, grooves, around fuel cap covers, radiator vents, bolts, hatch covers and just about anything else that you want to stand out. I use AK Products AK045 Dark Brown Wash for Green primary tank colors, and Vallejo #73.815 Engine Grime and #73.814 Fuel Stains. Here are a series of pictures showing these applications.







- O. Infantry Radio and First Aid Box:** These 2 boxes are added to the rear of each Fender. I used resin castings I had made for other projects. The Infantry needed some way to communicate with Tankers inside when under fire, so on some Tanks a radio was mounted in the rear. Once the box was opened, a handset was accessible.



A First Aid box was also mounted on some Tanks, to be accessible to anyone needing it.

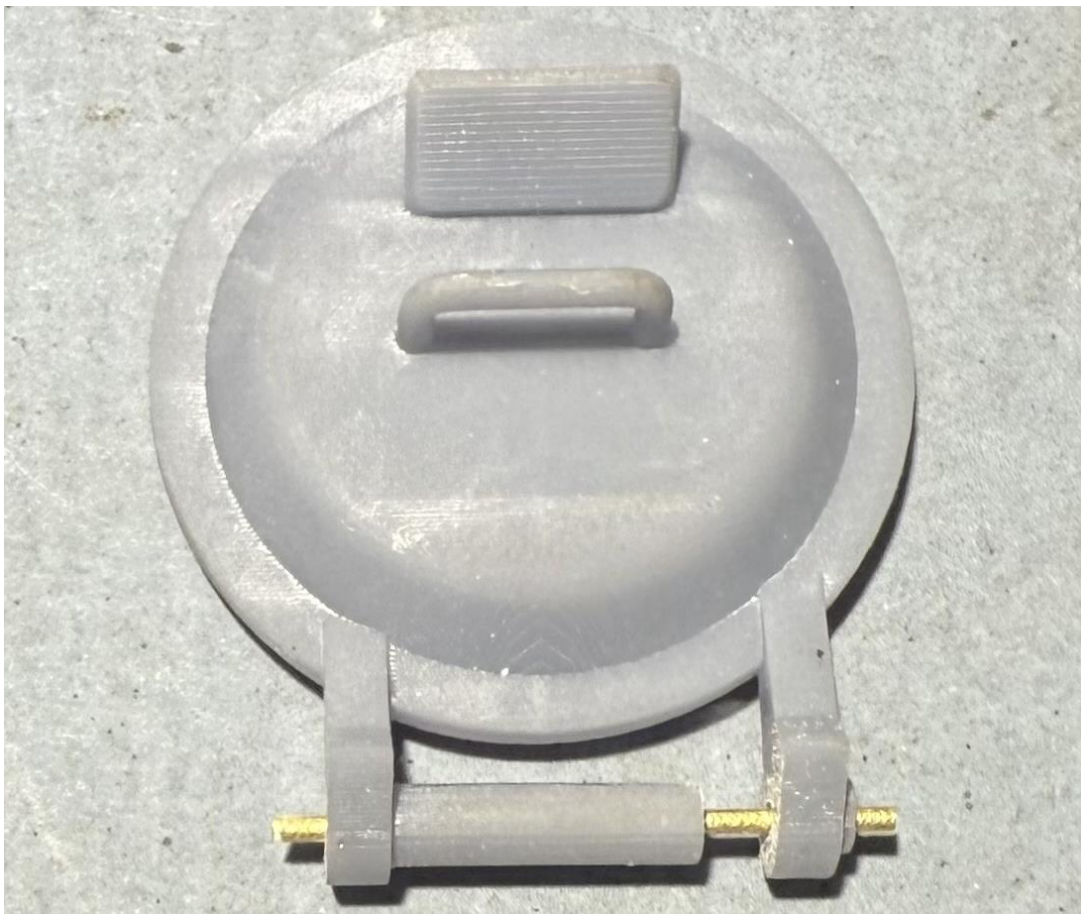
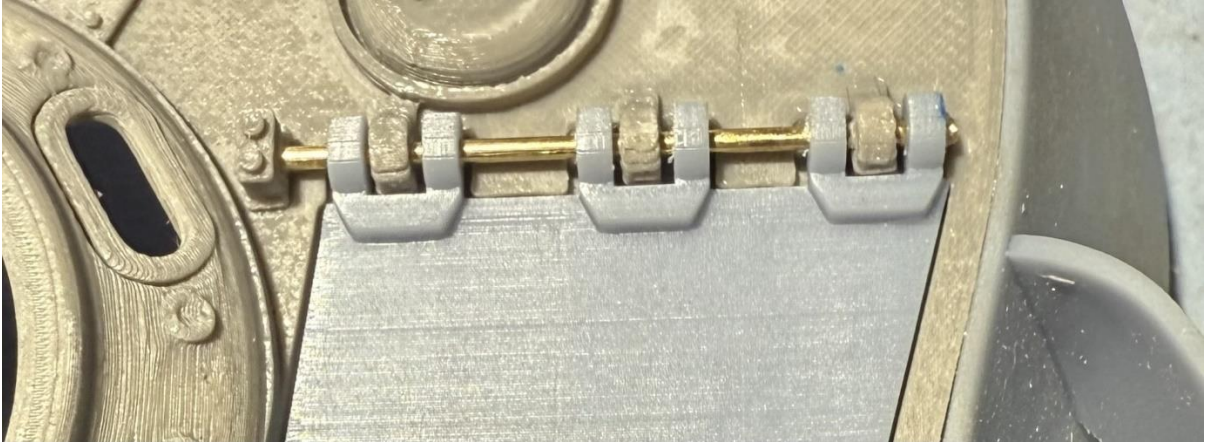


8. TURRET:

- A. **Install Rear Bustle Storage Box:** This part can be installed by using 4 screws, but the holes in the box need to be enlarged and deepened a bit. And you will need a long thin Phillip's screwdriver to reach the holes in the back of the Turret.

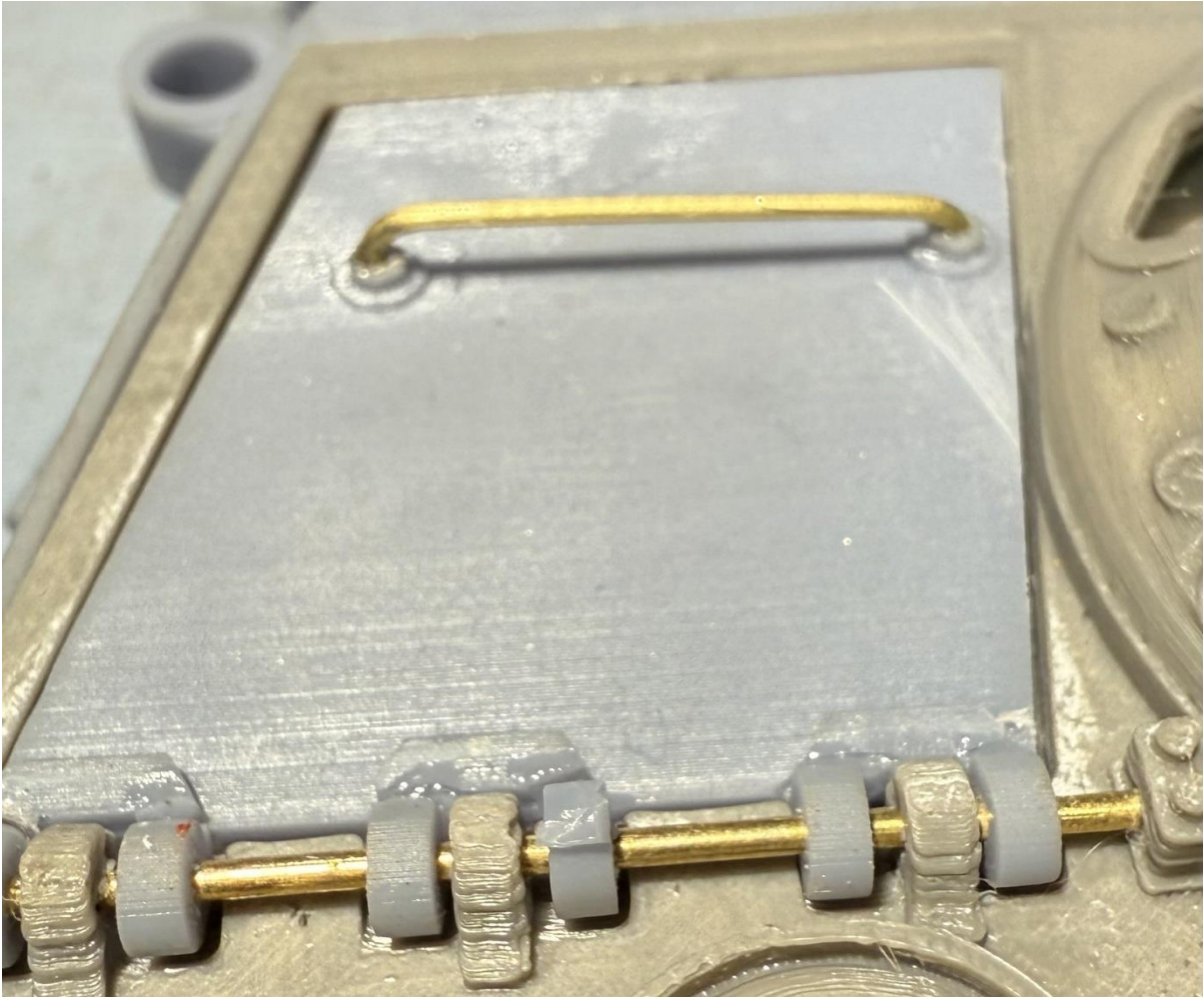


- B. Install 2 Hatches:** These can be made to operate by drilling an .046" diameter hole in the Loader's Hatch for a same sized brass rod, and a .042" diameter hole in the Commander's Hatch for a same sized brass rod.

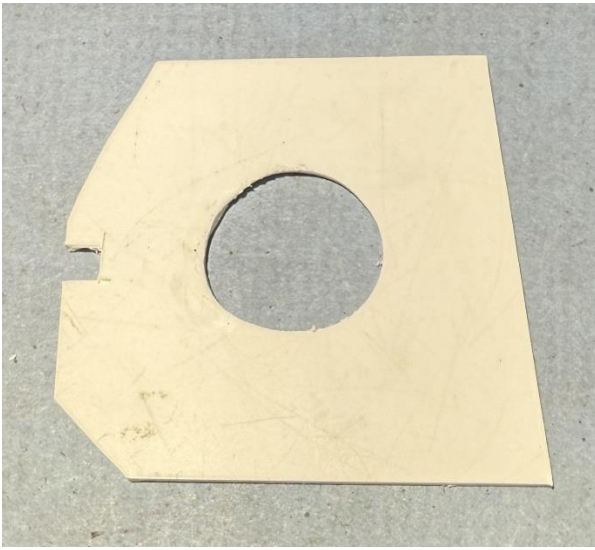




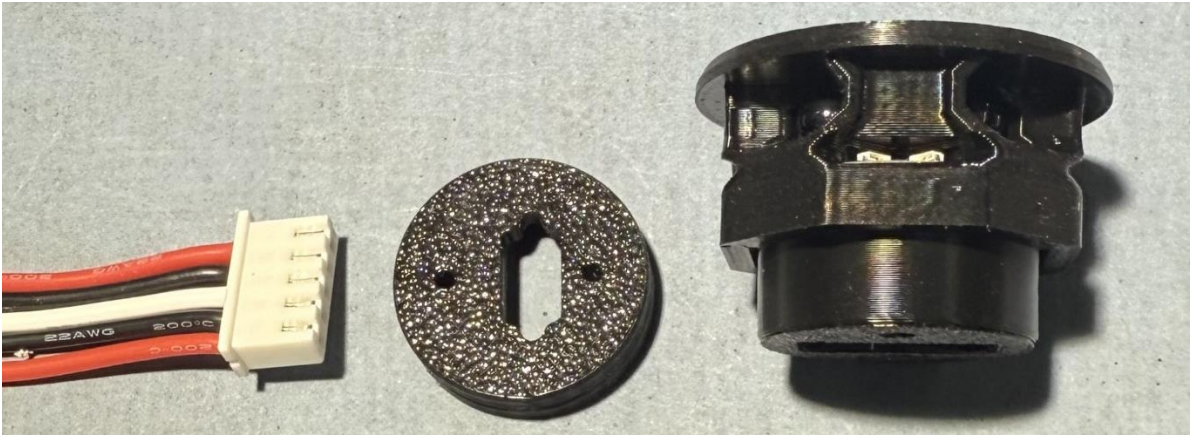
Also add a metal hand grab to the Loaders Hatch. I used .039" diameter brass rod.



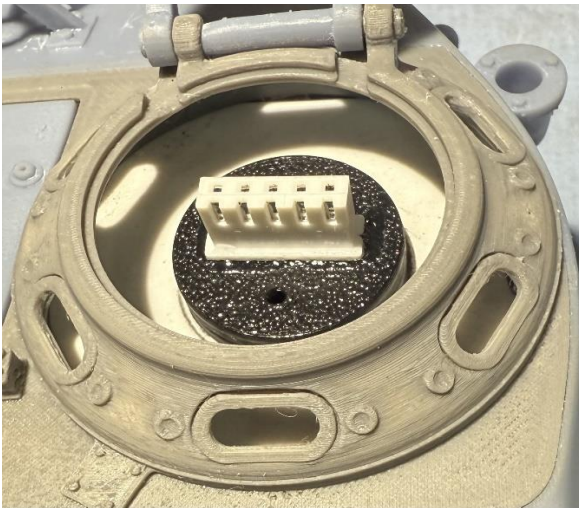
- C. **LegoDEI Installation:** The LegoDEI Battle Unit for Heng Long boards ([Products – LegoDEI Shop](#) order the latest version) needs to be installed in the Commander's Hatch. To do this first cut out a flat styrene piece to hold it in place, which is glued inside just under the Commander's Hatch opening. The hole in the center is for the 5 LegoDEI wires, which will be glued off to the side, so they do not interfere with the Barrel movement.



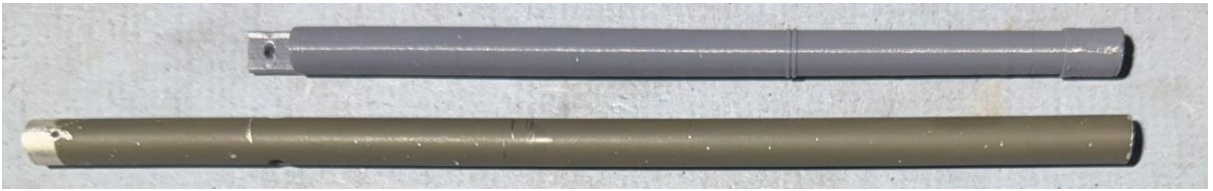
Here are the LegoDEI components. I cut off 3 of the bottom rings (from the lift ring piece in the center of the picture) so that the Commander's Hatch would close.



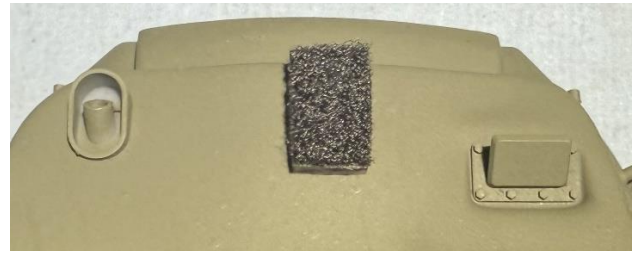
I also plan to set a Commander figure over top of the wire harness plug. Paint this piece and the lift ring white to match the interior of a Tank, and paint the IR Receiver green to match the outside of the Tank.



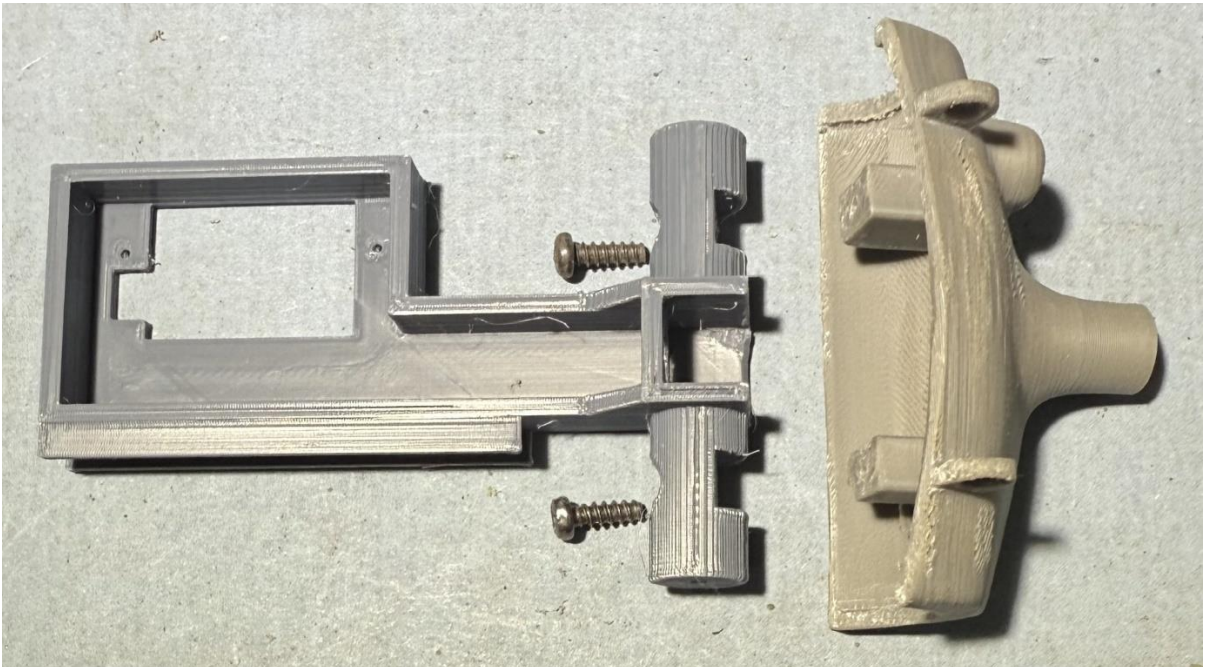
- D. **Barrel:** I prefer metal barrels, so I swapped out the 3D printed one. The inside diameter of the metal one is .234" which is the right size for a FRAG Restrictor. I also drilled and tapped a hole on the end across from the Servo Arm, for a 1-72 screw to hold it in place. My Barrel is longer than what came with the 3D parts bc I calculated 4" should stick out from the end of the Mantlet and another 3.25" is needed inside to line up with the servo. So, my total Barrel length was 7.25".



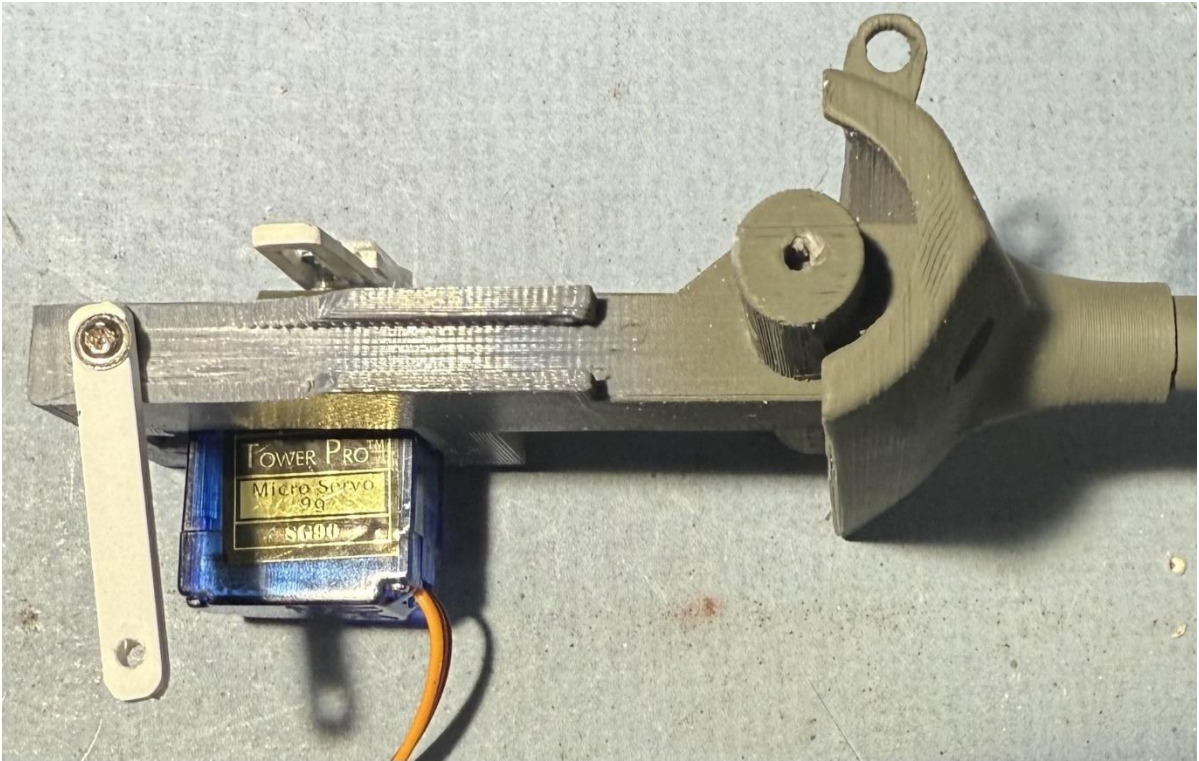
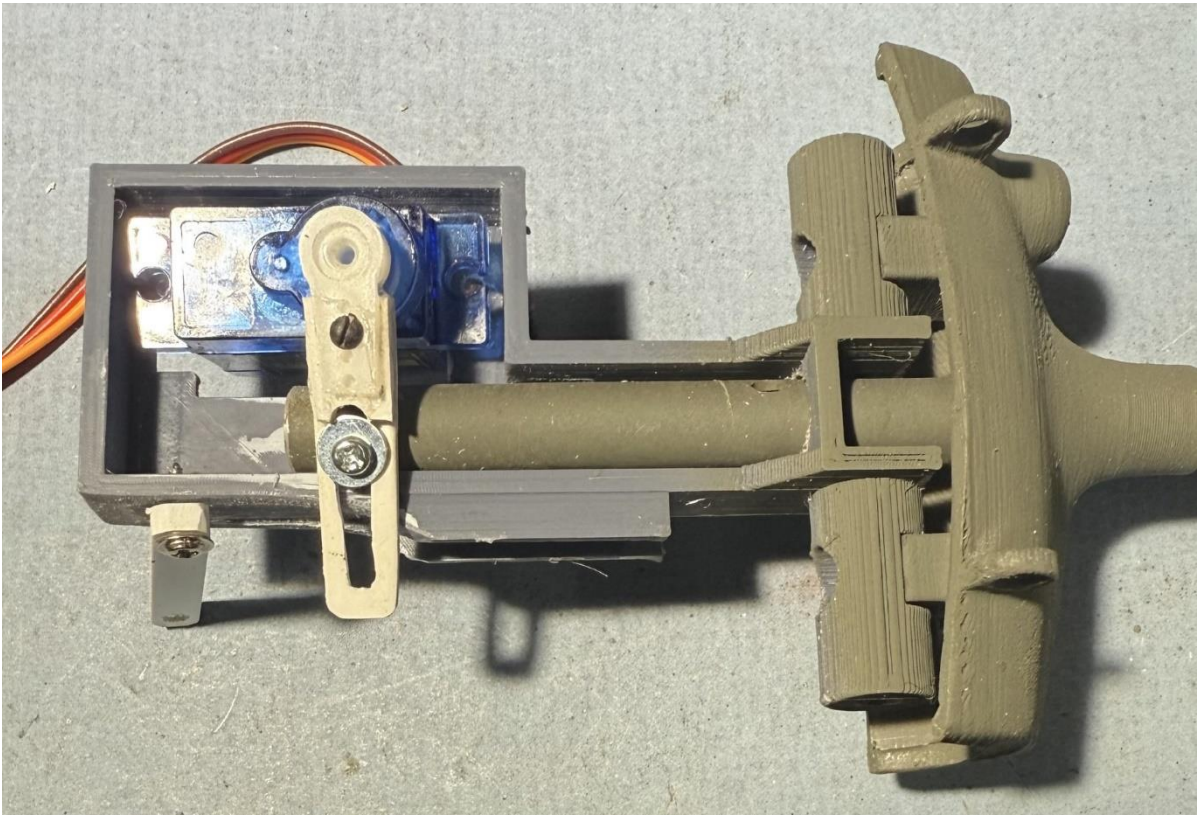
- E. FPV Camera:** FRAG plays battle games using FPV cameras, which are centered on the top of the Turret and held in place with magnets. The first pic shows the magnet glued inside under the roof of the Turret (rectangle shape with arrow pointing for magnet orientation). The second picture shows the outside magnet w/ Velcro attached (for camera).



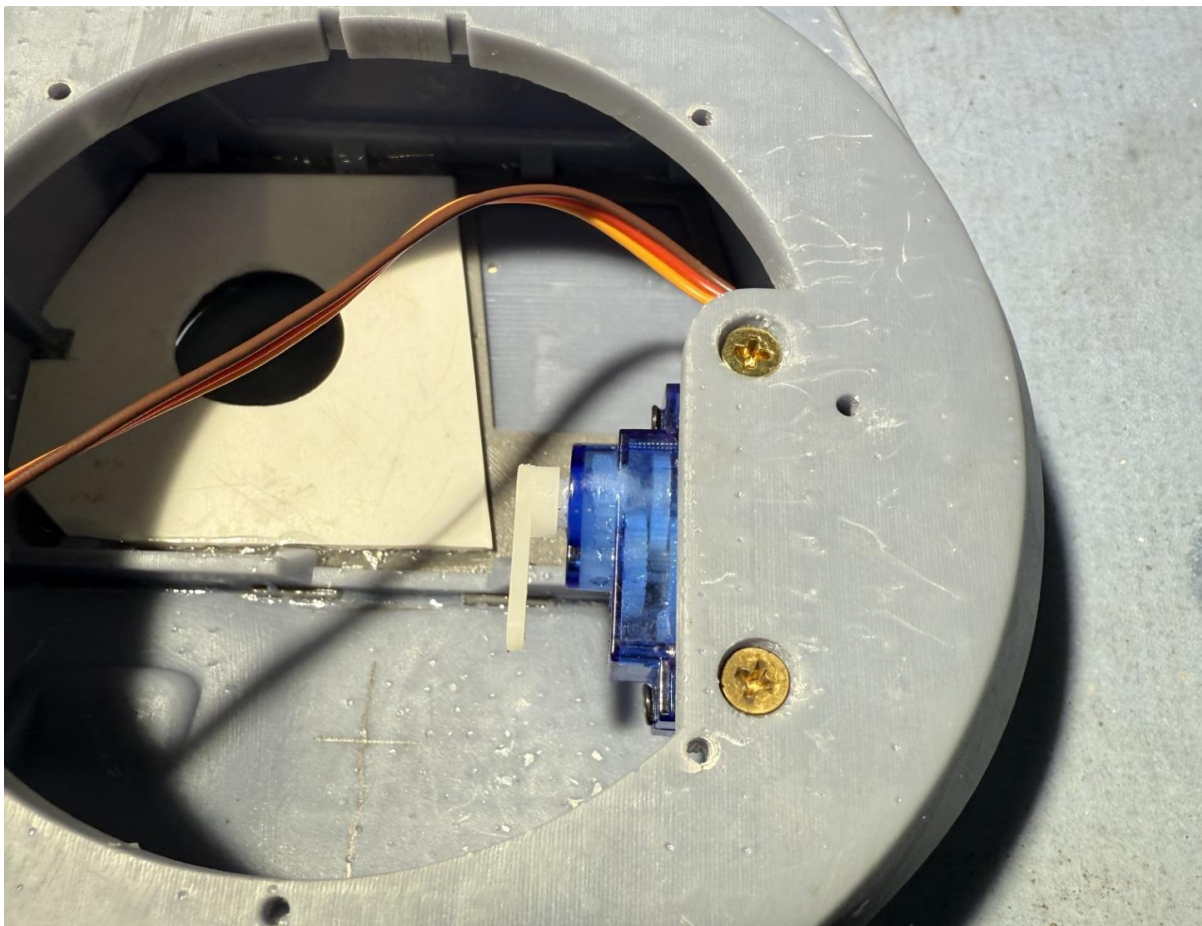
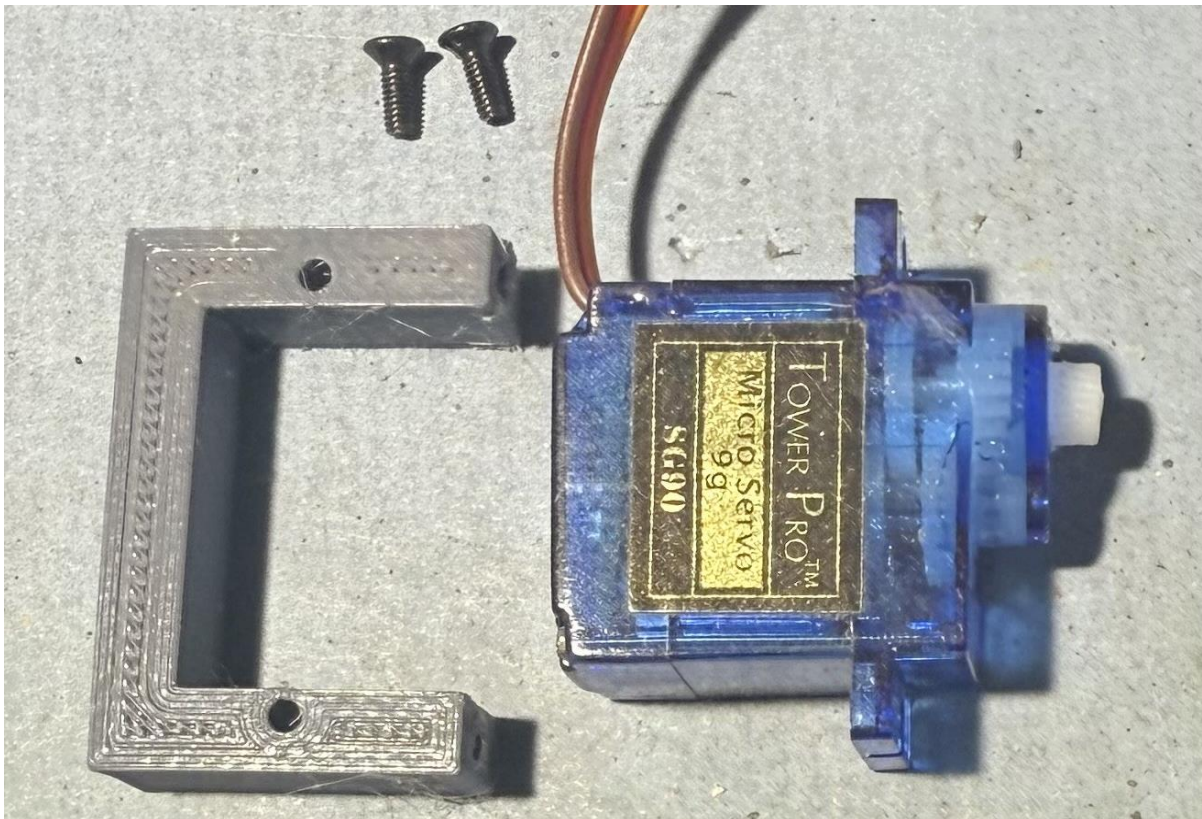
- E. Barrel Operating Mechanism:** The recoil and elevation mechanism is comprised of the following parts: Mantlet, Rotation Unit, various screws, some styrene, the Barrel and 2 Servos.



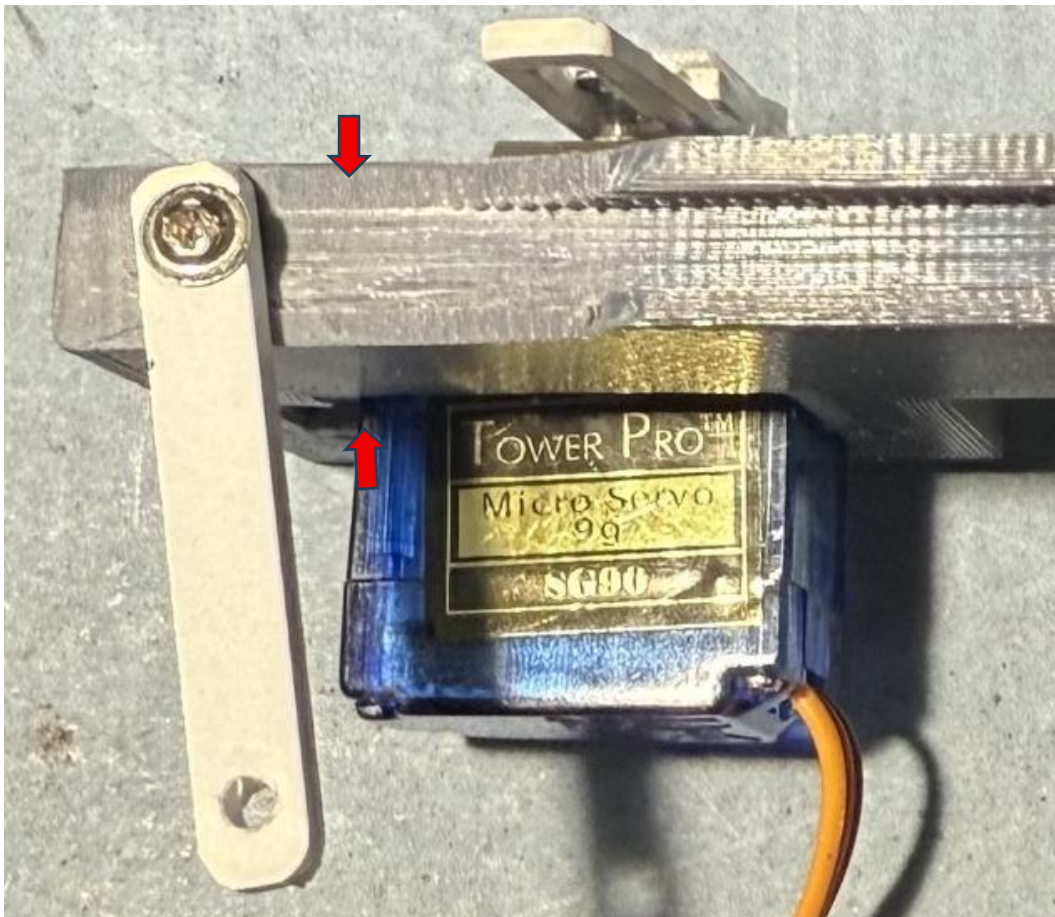
The first Servo is mounted as shown in next picture, and I made a styrene slider bar which is glued and screwed onto the Servo's pivot arm. The slider bar allows for the barrel to be pulled backward (when a shot is fired) and then slowly returned forward to its normal position.



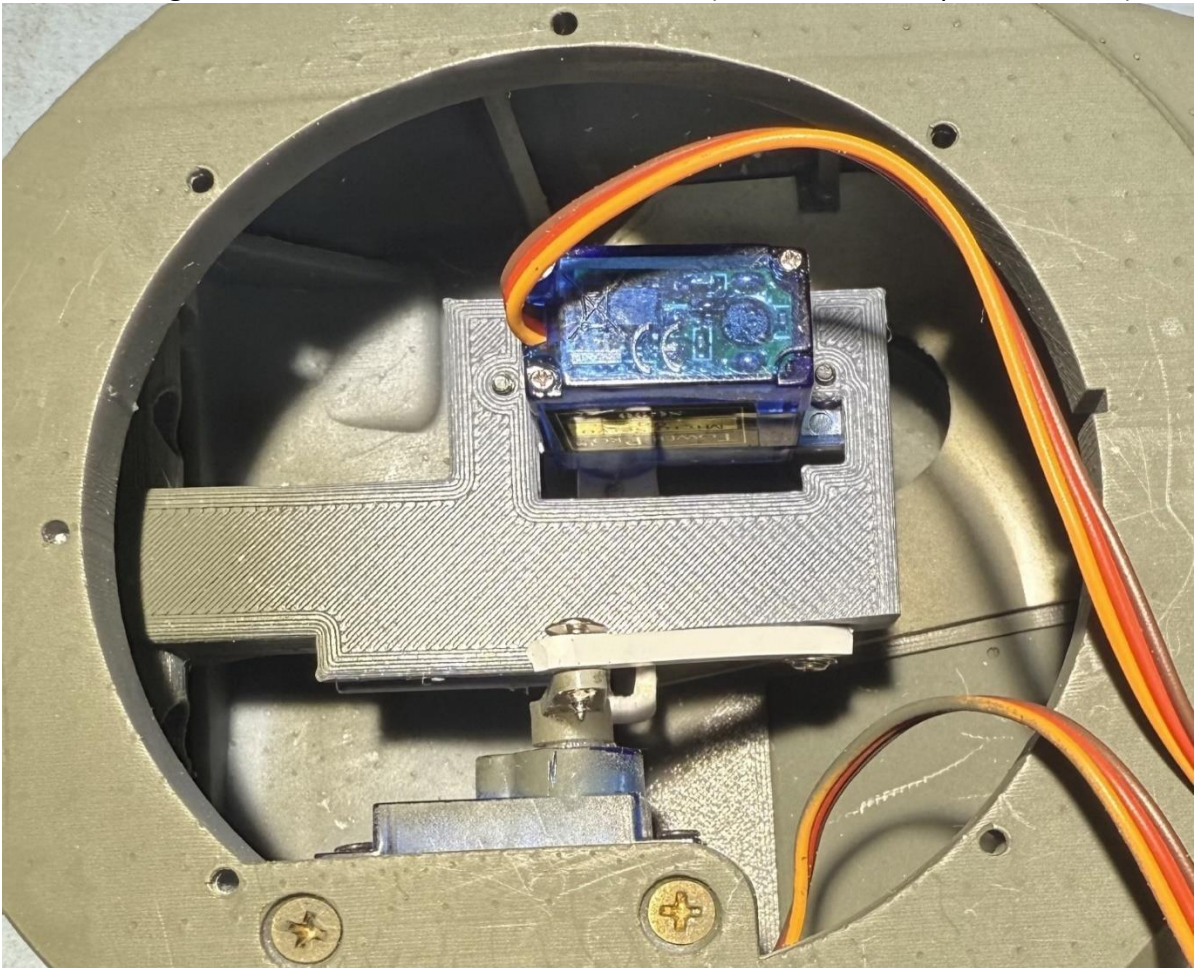
The second Servo is for Barrel Elevation and fits as shown in the next 2 pictures. The “U” shaped bracket mounts inside to the bottom of the Turret.



Next make a styrene arm (33.3 mm long x 5 mm wide x 2.5 mm thick). The 2 screws are 26.7 mm apart. You also need to cut down the 3D Rotation Unit so the styrene arm does not bind when it moves up and down (see red arrow where I cut the part back a bit).



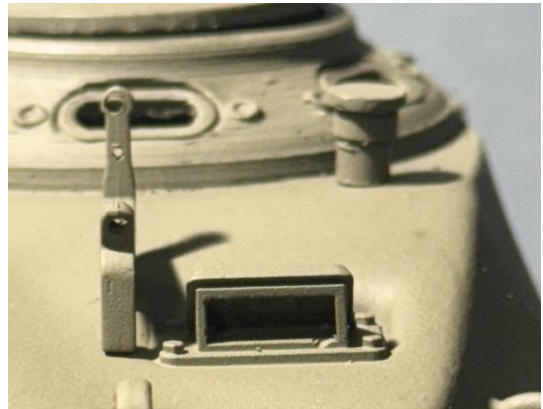
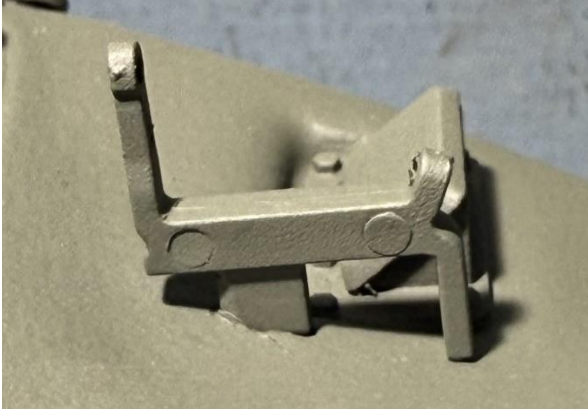
Once everything is mounted, the mechanism looks like this. I used a brass 2-56 hex head bolt about $\frac{1}{4}$ " long, to mount the mechanism to the Turret (instead of a Phillips head screw).



Last note: The Elevation Servo is plugged into CN4 and the Barrel Recoil Servo is plugged into CH1 in the 7.1 Board. If either of these Servo functions are in reverse, use the tiny K1 and K2 buttons on the 7.1 Board. See the Board instructions on how to do this.

- F. IR Bulb & FRAG Restrictor:** The last major installation in the Turret is the IR Bulb mounted in the barrel. I used a 5 mm Tamiya coded bulb shoved to the front of the Barrel, with 2 wires running back down the Barrel and dropping to the HL Board. See [FRAG Mods to the TBU System](#) to make the Restrictor.

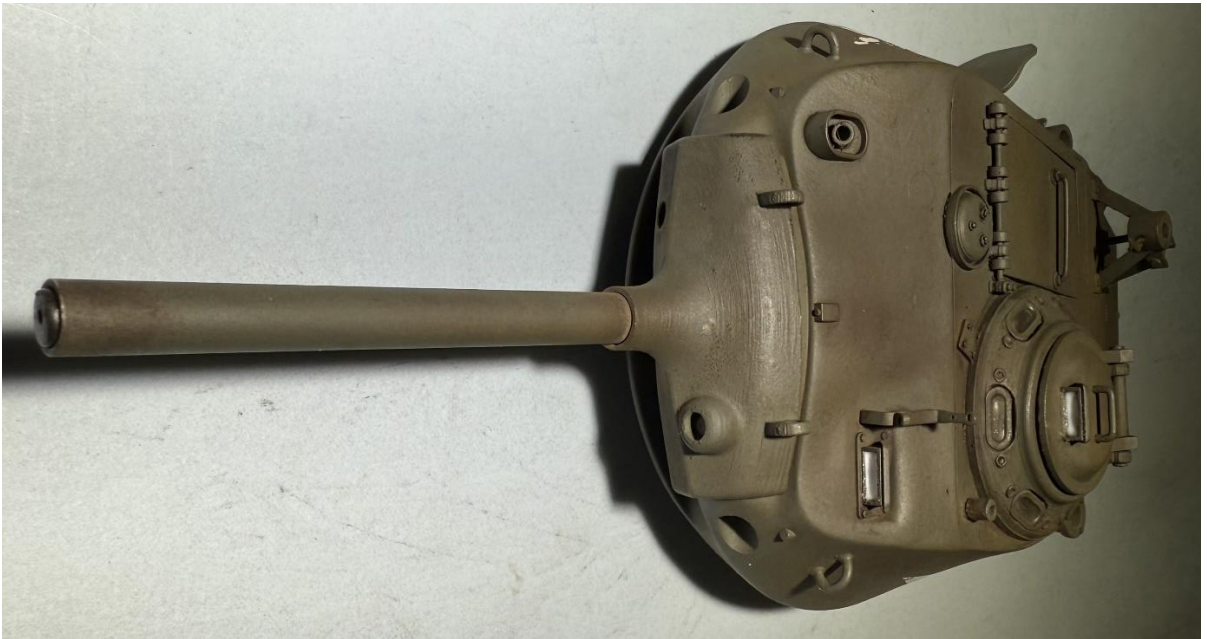
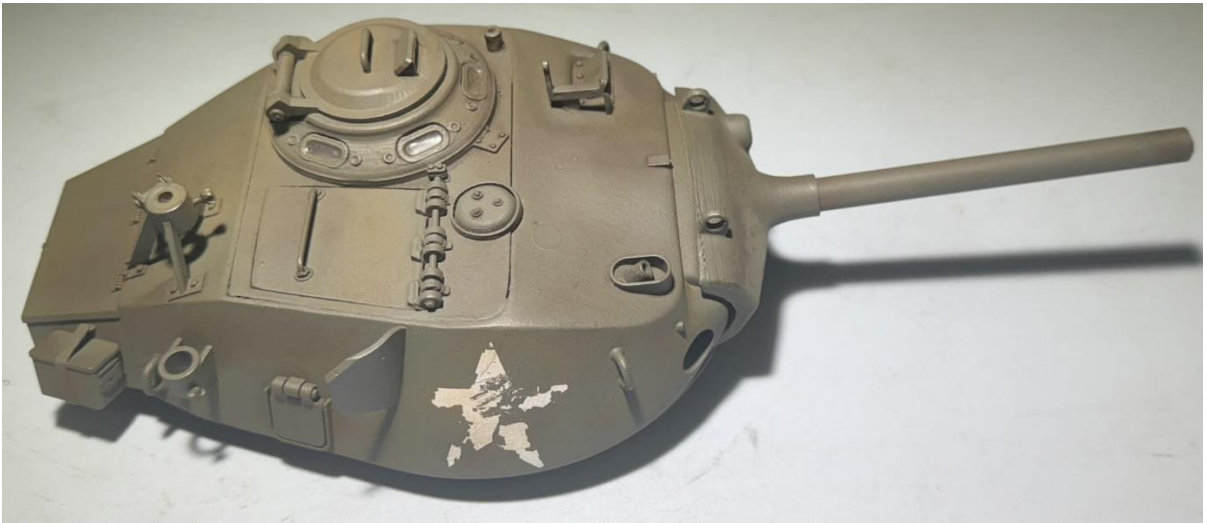
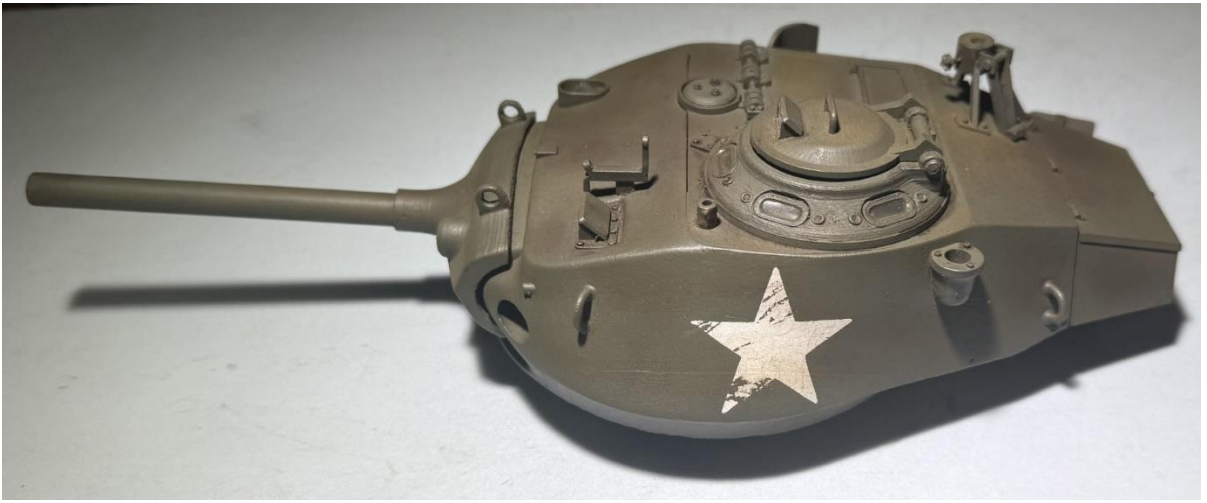
- G. Sighting Vane:** I added a Tamiya Sherman Sighting Vane with appropriate holes drilled in it.

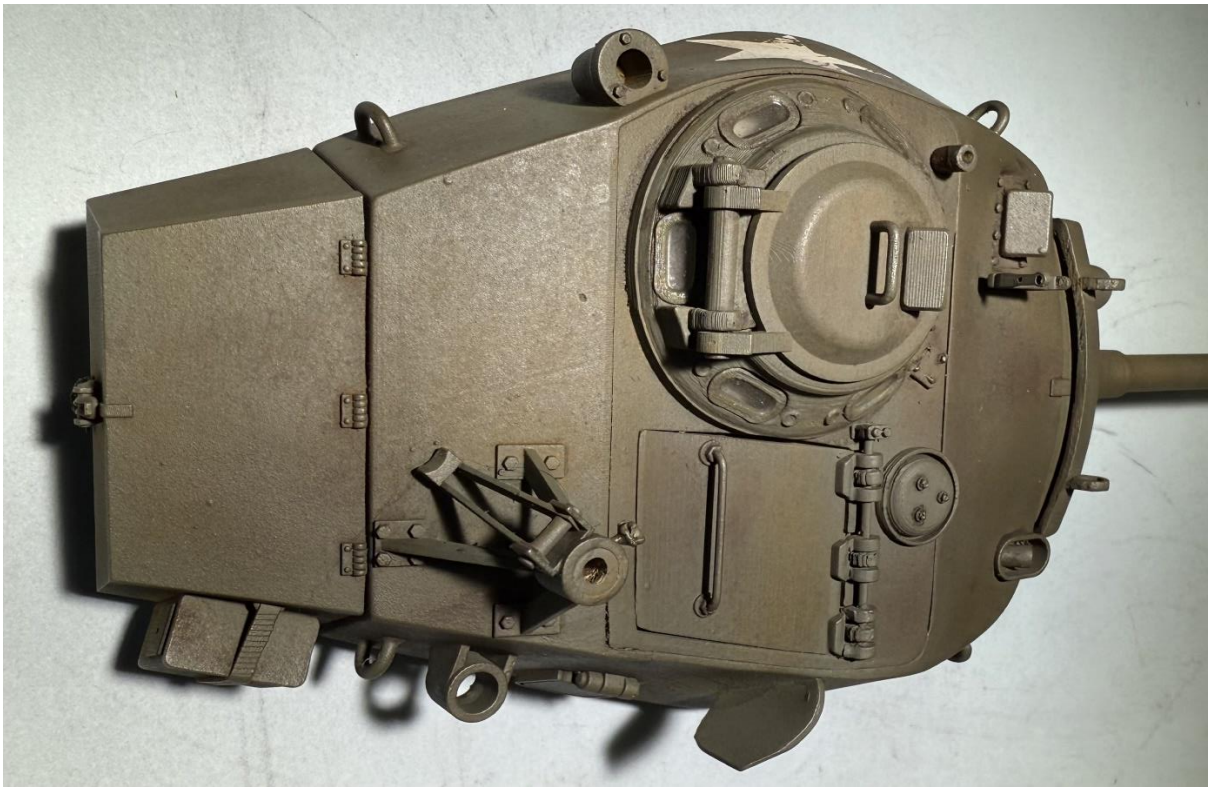


- H. Spotlight:** I also added an extra Tamiya Sherman Spotlight. I installed a brass tube as the mount and created a Cap to go over it when the Spotlight was not in use. The Cap is connected to the mount with a chain so it cannot be lost. Fill the Spotlight with Micro Scale Industries's Krystal Klear for the lens. This white liquid dries clear.



- I. PAINTING TURRET:** If you haven't already done so, paint the Turret like the Upper Hull and add Decals.

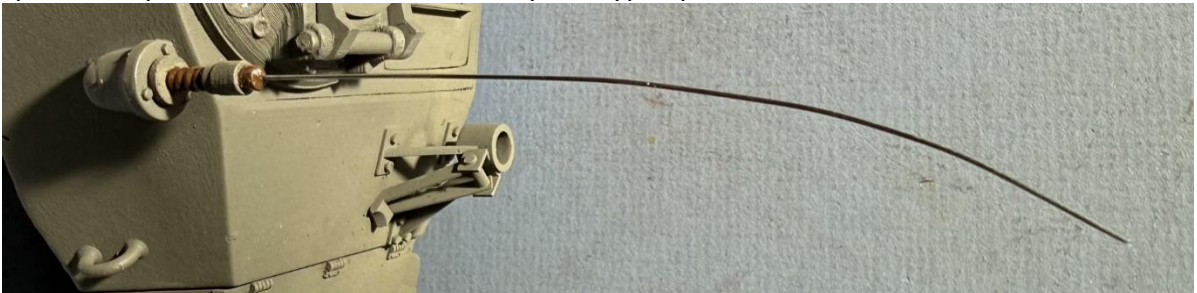




- J. Commander View Ports and Periscope Lens:** Fill each port and lens with the same Micro Scale Industries Krystal Klear.

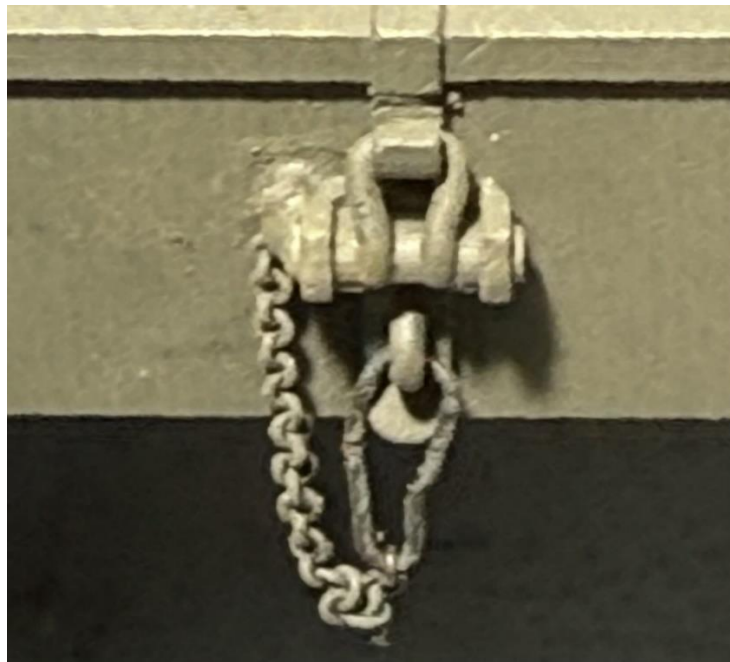


- J. Aerial:** The 3D kit comes with a Aerial mount, to which I added a .023" dia. Aerial wire that is 4" long, and curved on the top end. The following picture is rotated 90 degrees to save space. It is painted as shown in the last "prototype" picture.

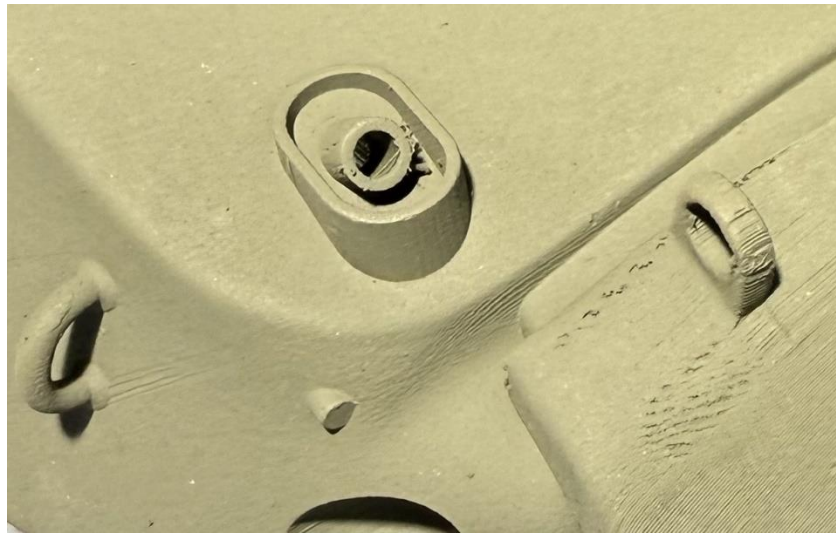




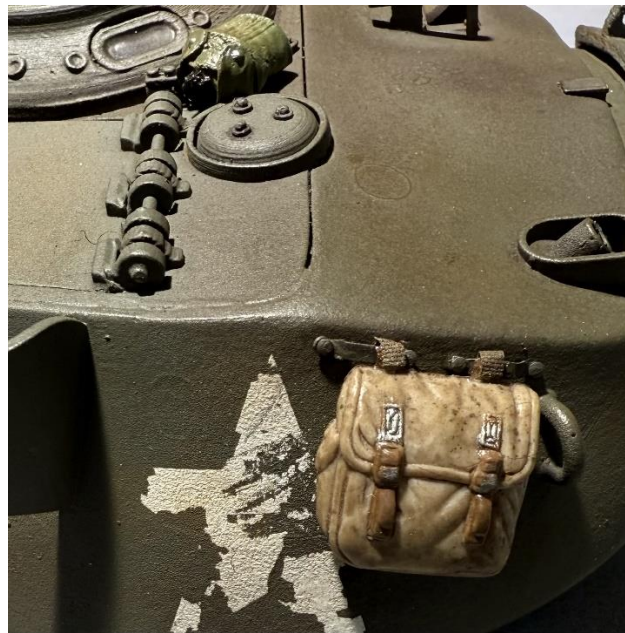
- K. Chain Lock on Storage Bin:** The Storage Bin has a nicely 3D printed latch, so I added a wire lock with chain.



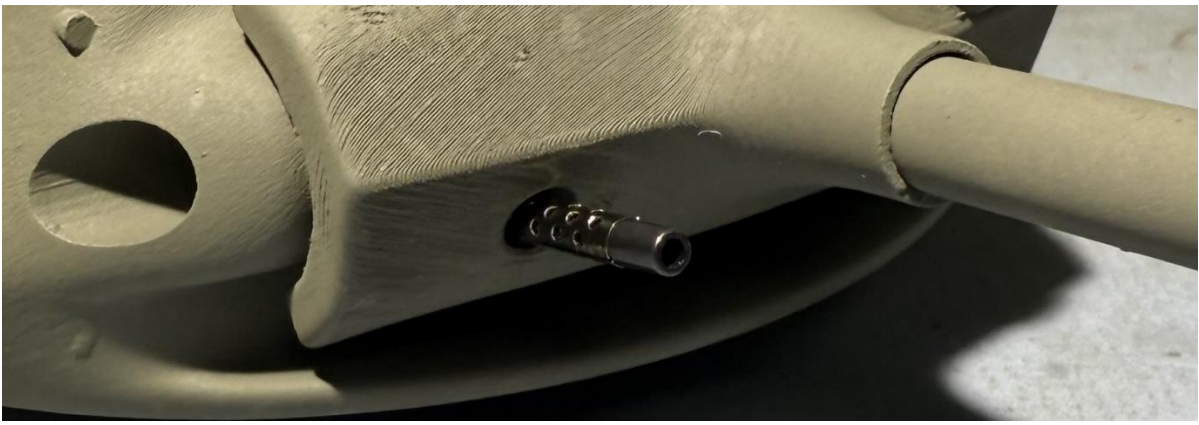
- L. Smoke Mortar:** Some prototype Chaffee's had this feature converted to an Aerial mount, but I left mine as a Smoke Mortar.



M. Footman Loops on Turret: Because I'm going to hang some Backpacks on the Turret, I needed to add some tie-down brackets (Footman Loops) to hang them from. I added 6 loops.



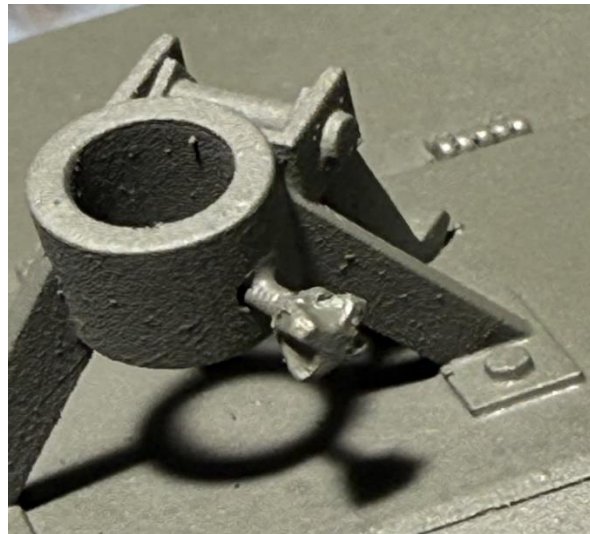
N. 30 cal Mantlet MG: The Mantlet has a 30 cal MG mounted in the lower right corner and I elected to glue an extra Tamiya MG barrel into the hole rather than using what came with the 3D kit.



- O. 50 cal MG:** I chose to use a Tamiya Sherman 50 cal MG which is all plastic. But to get it to sit correctly in the tripod mount, a brass spacer had to be glued into the tripod. I also added some chains to the MG to make it look more realistic.



- O. Knurled Knobs:** There are 2-3 places where a Knurled Knob is used to tighten down parts..... like an MG post pin that slips into a tripod. I had made the knob for another model project, so I cast some parts for the Chaffee from the mold. I glued a flat head 0-90 brass $\frac{1}{4}$ " long threaded bolt to the resin Knob and then drilled the appropriate 0-90 hole for tapping where the Knurled Knob was to be mounted. The Knurled Knob was then threaded into this hole and glued. Some pictures showed this nob also attached to a small chain, but I skipped that step.



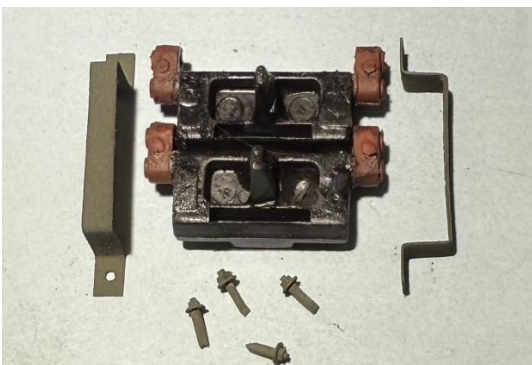
- P. Periscope Brush Guards:** I wanted to add Schumo #SH0017 brush guards to the 3 hatches in the Turret but the Periscope tilt up covers were too large so I could not add any brush guards
- R. Extra Wheels:** I had 2 extra wheels made but after trying to place them on the Tank, they were just too big and stood out too much.
- 9. Miscellaneous Items:** After all painting and decals have been added and everything is operational, add all the Stowage and other items to the tank.
- A. General Stowage:** Stowage includes, Bed Rolls, Fuel Canisters, Ammo boxes, K Ration Boxes, Camo Netting, Rolled Tarps, etc., which are mounted all around the Upper Hull of the Tank and some are on the Turret, but most is on the Fenders and Rear Engine Deck. All are tied down with tiny rope to the Footman Loops.



B. Tools: Tools are placed on the Left Fender midway toward the rear.



C. Spare Track Links: I made 2 straps for each set of spare Track Links that were added to the front area of the side Fenders.



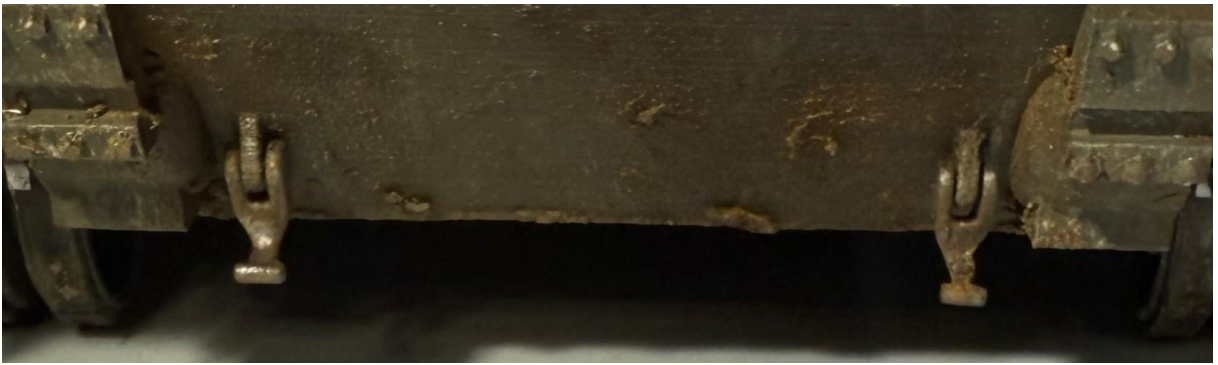
- D. Rope:** I always like to add a coiled rope to my Tanks as the whitish color stands out and adds depth to the model. On this one I could have added a Rope Keeper to the side of the Turret, but elected instead to just hang it around the Aerial Base.



- E. Tow Cable** I would have liked to have had a Schumo (part # SH0027N) Tow Cable kit to mount on the Chaffee, but they are long out of production. For this reason and there is very little room to install a cable that would not prohibit the Upper Hull from being lifted up, I did not mount any kind of cable to this model.
- F. Camo Netting:** This can be achieved by using resin castings from Value Gear or some actual material that resembles netting. I also have used first aid gauze painted green and pulled slightly apart. Whichever you choose, be sure to apply appropriate sized straps of rope to hold them down to the Footman Loops. Of course, you also should glue them on to the Tank.



- G. Shackles Front and Rear:** These are available on eBay but I cast mine in Resin. The rear Shackles have a metal pin inserted which is secured with a fine wire as a cotter pin.



- H. Commander Figure:** I decided to only have one figure on the model....the Commander. A rectangle cut out needs to be dug into the bottom of the figure so it can set over and be anchored by the LegoDEI wire harness plug. Then paint the Commander standard US tanker colors. The figure I am using also allowed me to glue a map into the right hand, which helped block the inside area. The left hand has a compass in it.



- I. **Turret Rotation Gear Ring:** When all seems to be done with the model and all wires are plugged in, be sure to secure the Turret to the Upper Hull with the Rotation Gear. Now you are ready for battle. 😊



10. **Final Finished Pictures:** Below are the pictures of my finished model.

